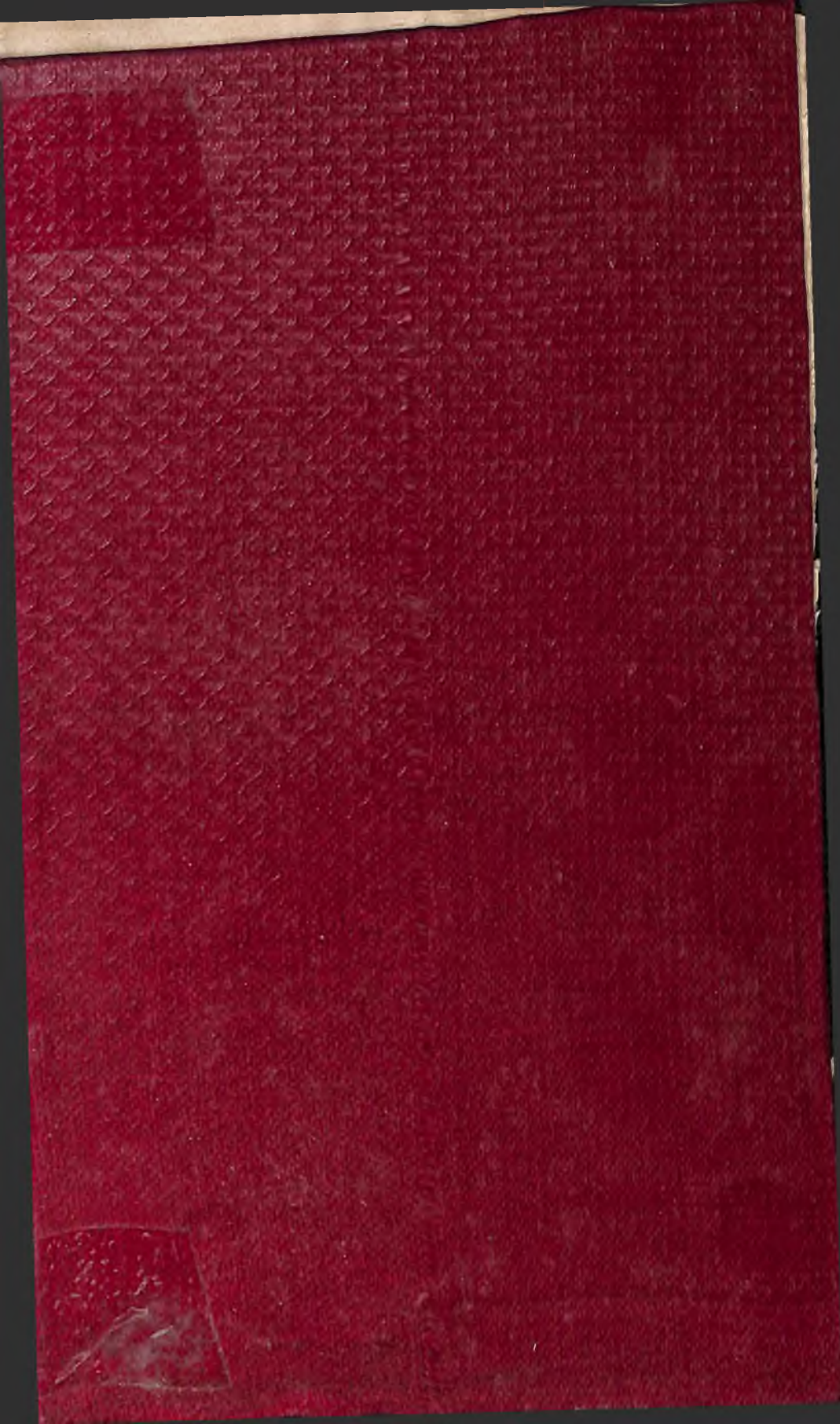




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VOL. II.

STRAY
FEATHERS

A JOURNAL OF
ORNITHOLOGY
FOR INDIA AND
ITS DEPENDENCIES

EDITED BY
ALLAN HUME

1874.

Calcutta.

1875.

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1871

The first of the year was a very dry one, and the crops were much injured by the drought. The weather was very hot, and the ground was very dry. The crops were much injured by the drought, and the weather was very hot. The ground was very dry, and the crops were much injured by the drought.

The second of the year was a very wet one, and the crops were much injured by the rain. The weather was very cold, and the ground was very wet. The crops were much injured by the rain, and the weather was very cold. The ground was very wet, and the crops were much injured by the rain.

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PREFACE.

OUR second bundle of STRAY FEATHERS has now been safely gathered in, and the Editor's cordial thanks are again due to the many friends, both in India and in England, who, during this present year, have so materially aided his work.

The successful establishment in any country of a special organ devoted to the promotion of any particular branch of science forms always a more or less important era in its progress.

Many doubted, when our first little STRAY FEATHER fluttered out into publicity, whether the time had yet arrived in India for a special ornithological Journal, and not a few protested against the step taken, on the grounds that it would inevitably draw away from the old established and honored JOURNAL of the ASIATIC SOCIETY a considerable proportion of the papers on ornithology that would otherwise have graced its pages.

To the first, the unbroken success and the almost unhopd for support that has attended this Journal during the current year, furnish the best reply that can as yet be afforded.

In regard to the second, it may be well to give, once for all, some further explanation.

When the idea of starting a special Asiatic Journal of Ornithology first presented itself to me, I at the outset consulted my late friend, Dr. Stoliczka, then Editor of the Natural History Section of the JOURNAL of the ASIATIC SOCIETY of BENGAL, as to whether there were any objections, from his point of view, to the project.

He, so far from objecting to it, espoused it most warmly ; he said that as to the advantages of a special organ there could be no doubt ; that he wished each science could in like manner obtain a special representative ; that he would himself contribute to it any ornithological papers he wrote in future ; and that the only thing to guard against was a fiasco—the publication of two or three numbers, and then the cessation of the periodical.

He was the first person who heard anything of the scheme. The latest paper he ever wrote was an, alas ! unfinished one, on the birds that winter in Kashgar, prepared specially for STRAY FEATHERS ; and the satisfaction that I, in common with, I believe, the majority of Indian ornithologists, must feel at the success that has attended this Journal, is altogether damped by the ever-present memory of the loss of that friend, whose unselfish love of science led him to cheer on from the first an undertaking which smaller men, similarly placed, might, with no little show of reason, have discouraged, and who ceased not thenceforth to aid and support it by all the means in his power.

I write no separate obituary of **FERDINAND STOLICZKA**,—a name that will survive even the marble memorial the Viceroy is about to erect to him in our magnificent museum—that has been already worthily done by his confrères in the Geological Survey and by the Government of India in its official Gazettes ; but of all who have lost by or grieved over the untimely eclipse of Stoliczka's genius, none have lost more than STRAY FEATHERS or grieved more than its Editor.

To return ; the notion that STRAY FEATHERS might possibly interfere in any way with our scientific palladium, the JOURNAL of the ASIATIC SOCIETY of BENGAL, is much like that entertained in England, when I was a boy, as to the probable effects of Railways on road and canal traffic. As a fact, the Railways have made their own traffic, and in most cases have increased that also of both roads and canals.

The establishment of the IBIS has in no way diminished the value, even ornithologically considered, of the Proceedings of the Zoological Society. On the contrary, the establishment of a special organ gave an enormous impetus to ornithology, observers were multiplied, and even old-established observers began to put their observations more freely on record than before ; and while the IBIS for many years continued *facile princeps* of all periodicals where ornithology was concerned, the proceedings of the Zoological Society also grew richer year by year in matters of interest to ornithologists.

Similar results may reasonably be here expected; and so far from our grand old Journal (hallowed to every scientific man in India by a hundred honoured memories) being in any degree interfered with by STRAY FEATHERS, it will assuredly draw fresh vigour from its youthful and humble follower.

The missions of the two are as distinct as those of the Monsoon clouds and the garden engine.

Embracing the vast scope it does,—“whatever is performed by man or produced by nature within the geographical limits of Asia”—the JOURNAL of the ASIATIC SOCIETY can allot but a very small fraction of its pages to any one science. On the other hand, field naturalists cannot drag about with them thousands of pages with which they have no peculiar concern for the sake of fifty germane to their special pursuit.

To supply Indian ornithologists with all available information in regard to their favourite science, and that only, and in as compact and portable a form as possible, is the mission of STRAY FEATHERS, and the sole source of regret is, not that it can thereby possibly weaken the JOURNAL of the ASIATIC SOCIETY of BENGAL, which on the contrary it will certainly help to strengthen, but that its special mission is still so imperfectly performed, and that its guidance and continuance seem to depend too absolutely on a single individual.

All this, however, was foreseen from the first; it was only from the skull of a Jove that a fully realized conception could spring forth in perfect development. In all things mundane some brief space of immaturity must be accepted.

Next year's Journal, with a slightly enlarged size of page, will afford room for additional matter that this year, though far exceeding our concerted limits, we have been compelled to exclude, and will make one more step in the right direction in the matter of furnishing some few illustrations of new and unfigured species. Here, likewise, too much must not be expected, and deficiencies must at first be leniently viewed. Here we have yet to find our artists, and to make our lithographers and our colorists. Up to this present date no presentable colored plate of any bird has been produced on this side of India, and it will probably be years before we can in this matter claim any sort of equality with our more favored European and American brethren.

The difficulty is great, but *solvitur eundo*, and I have great faith in what the future has in store for Indian ornithology and STRAY FEATHERS.

There remains the danger of sudden extinction. Life, in India especially, is so uncertain that no sane man could count much upon any undertaking that hinged upon a single individual. But as a matter of fact, I believe that there are already two other gentlemen able and willing to undertake the Editorship should I fail, and it is hoped that before very long it may be found possible to organize, according to the original design, a permanent association of ornithologists, whose property this Journal would then become, and who would thenceforth, whenever necessary, provide for the due discharge of its editorial duties.

The chief delay in arranging this depends on the necessity of making the Journal thoroughly self supporting before any Association assumes the responsibility for it. On its present basis STRAY FEATHERS is *now* self supporting, but its size (as more than half of Vol. III. already in type sufficiently proves) is too small, and without illustrations it is manifestly incomplete, and we have yet to learn whether in this coming year it will receive such enhanced support as will be required to cover the heavy additional outlay necessitated by the change of size and the preparation of plates in this country.

Until a financial equilibrium on this new basis is arrived at, the Editor, who is responsible for its creation, could not of course allow any one to share the burthen; but he does venture to hope that many of his zealous contributors and co-adjutors will, bearing in mind the object aimed at, do all that lies within their power to render STRAY FEATHERS entirely self supporting in its new and improved form.

A. O. H.

In Memoriam.

WHILE this number has been passing through the Press, sad news has reached us—the greatest of Indian naturalists has passed away.

EDWARD BLYTH, whose name has been for so many years an household word to every student of Natural History in this country, closed, on the 27th of December last, his long and fruitful, though, alas! sadly chequered career.

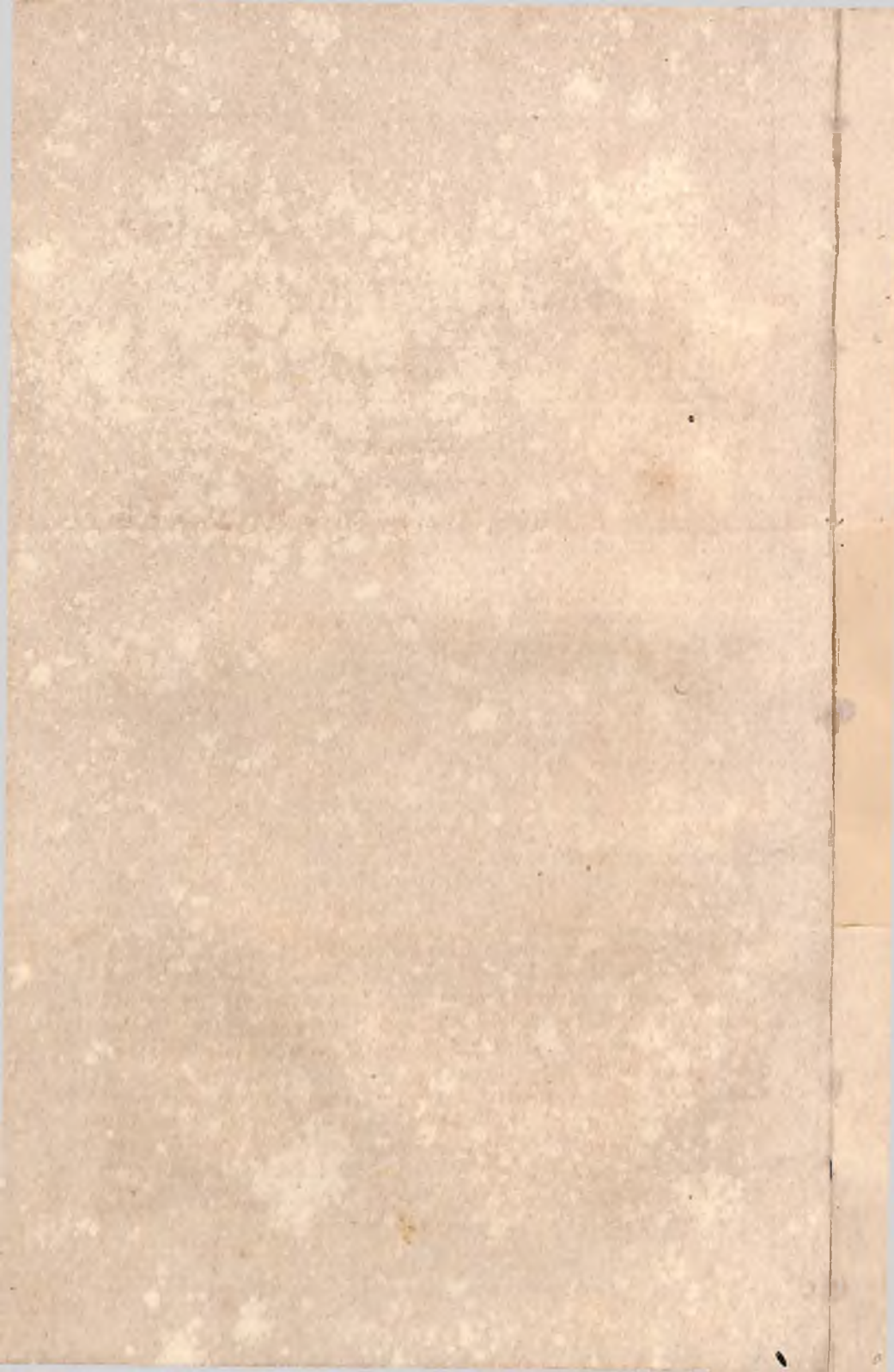
It is impossible to over-rate the extent and importance of Blyth's many-sided labours. Starting in life without one single advantage, by sheer strength of will, ability, and industry, he achieved, and deservedly so, a reputation rarely surpassed, and better still did an amount of sterling work such as no other single labourer in this field has ever compassed.

Unshaken in his devotion to science, he toiled on, unrewarded, unappreciated, by men whom circumstances, not merit, placed above him as superiors, on a pittance barely sufficient to procure here the necessaries of life. Known in those days as one of the clearest headed men in Calcutta, repeated efforts were made to induce him to devote his energies to business, and paths to what, at that time, was certain wealth were freely opened to him. But neither neglect nor harshness could drive, nor wealth, nor worldly advantages tempt him from what he deemed the nobler path. Ill paid, and subjected as he was to ceaseless humiliations, he felt that the position he held gave him opportunities for that work which was his mission, such as no other then could, and he clung to it with a single hearted and unselfish constancy nothing short of heroic.

What Blyth did and bore in those days, no man now will ever rightly know.

But a time was to come when the strong mind, worn out in the unequal contest, must succumb. A quarter of a century's incessant toil in a deadly climate, private griefs, and public troubles had sorely tried him, and a dark cloud fell upon his closing years. But with the dawn of that happier and better day which has opened now for him, the evil cloud has passed away, and we can only remember henceforth the Blyth we knew and loved in earlier and brighter days, who lives to us, and will live long after we and ours are all forgotten, in the good, honest work he did, and the beneficial influence this has so long exerted and even yet exerts in this country, on the progress of that cause in which he laboured so earnestly, and for which he sacrificed so much.

ALLAN HUME.





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JANUARY, 1874.

[No. 1.

"Die Papageien.*"

OWING to the eccentricities of my booksellers I have only

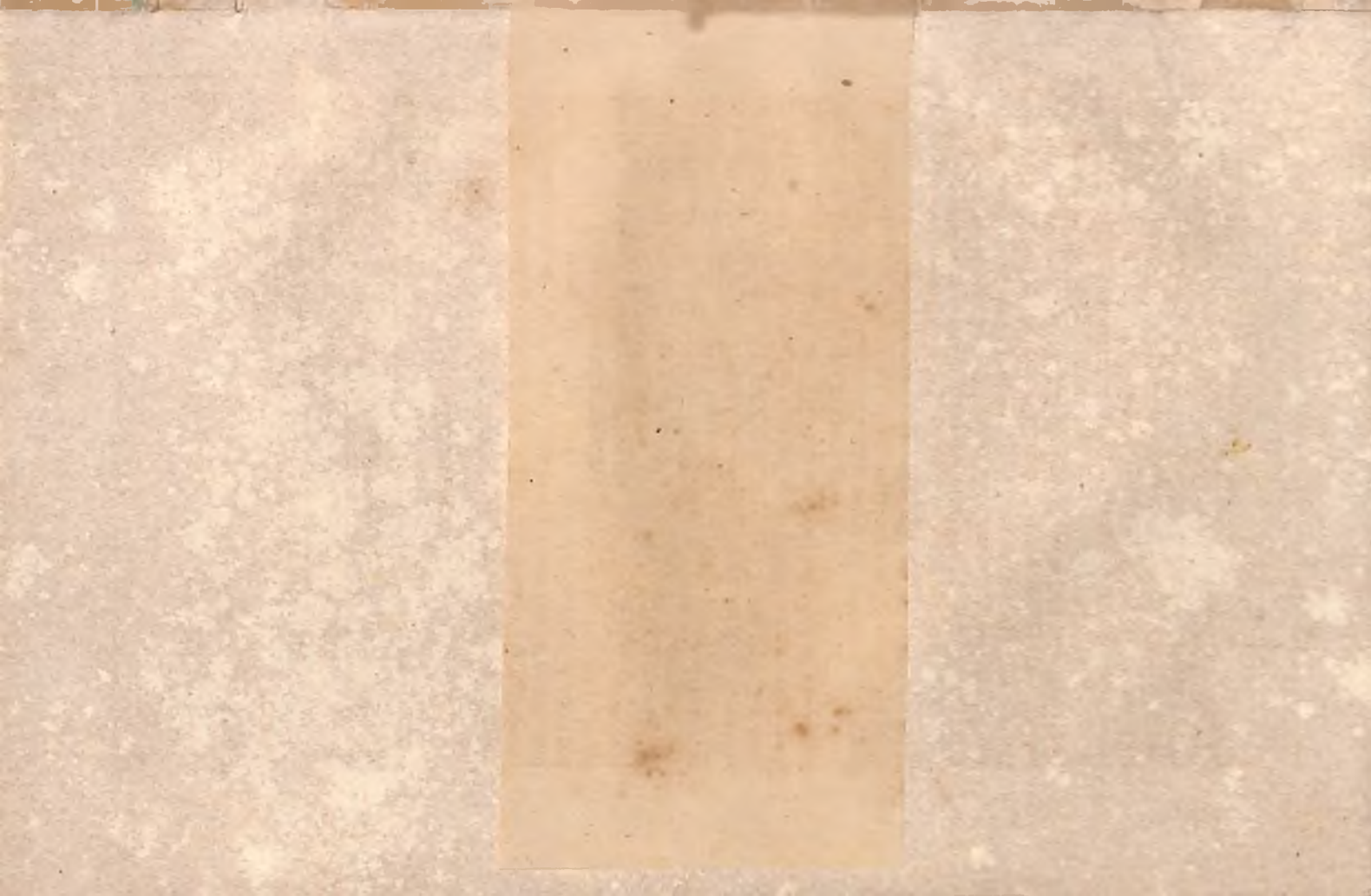
ERRATA.

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" 2, " 24, " " "	"	<i>classich</i> ,	"	<i>classisch</i> .
" 2, " 8, " bottom,	"	<i>classich</i> ,	"	<i>classisch</i> .
" 7, " 3, " " "	"	<i>Calthopæ</i> ,	"	<i>Calthropæ</i> .
" 17, note, last line,	"	<i>facile</i> ,	"	<i>facilis</i> .
" 23, line 21, from top,	"	<i>tiefes</i> ,	"	<i>tiefem</i> .

species, merit our cordial acknowledgments, while the industry and erudition which has characterized Dr. Finsch's researches into all that has been recorded in regard to this fascinating family, compel our admiration, even if it excite a sadder feeling when we have to consider *how* he has utilized the materials he has thus accumulated.

I have only, as already stated, scrutinized closely his treatment of the single well known genus *Palæornis*, but this discloses an amount of error scarcely credible in such a work. Error too entirely gratuitous, and created by the author him-

* Die Papageien, Monographisch bearbeitet von Dr. Otto Finsch. Leiden. E. J. Brill., 1868.





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[No. 1.

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OWING to the eccentricities of my booksellers I have only recently obtained a copy of my friend Dr. Finsch's great work, the Monograph of the Parrots. It never rains but it pours, and after waiting more than two years for a single copy, I received *two by post*, by two successive mails. Postage to India on large books like these comes rather heavy, and after a brief examination of the work, I am bound to confess to a feeling, that I could have dispensed very well with a second post copy of it.

I have not yet had time to study this elaborate work as it, doubtless, deserves, but I have read carefully all that is stated in regard to one genus (*Palæornis*) with many of the members of which I am, *tant soit peut*, familiar, and I can only say that if the rest of the genera are treated as infelicitously as this one, then I shall hope to see the learned author live to produce a second, and *most materially* revised edition.

As an Index of synonymes, and a work of reference in regard to nomenclature, *Die Papageien*, will always be most valuable. The minute and careful measurements and descriptions of every species, merit our cordial acknowledgments, while the industry and erudition which has characterized Dr. Finsch's researches into all that has been recorded in regard to this fascinating family, compel our admiration, even if it excite a sadder feeling when we have to consider *how* he has utilized the materials he has thus accumulated.

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self who never, probably, having seen a single wild bird belonging to the genus, chooses on hypothetical, and, as a matter of fact, utterly untenable grounds, to disregard, nay to pooh-pooh contemptuously, the recorded experience of men like Jerdon and Blyth, who for a long series of years observed the free living birds, shot and dissected them, and knew to a certainty beyond all possibility of question, the facts that they stated.

We are all liable to error, but for a cabinet naturalist, on the strength of half a dozen wrongly-sexed skins in some museum, to take upon himself to contradict the definite statements of trustworthy field naturalists like those above referred to, in regard to matters of which he can personally know nothing, appears to me to indicate a tone of thought incompatible with the philosophical investigation of any branch of physical science.

Before, however, entering into any details, I wish first to record my humble protest against the presumptuous, and I regret to say, systematic pedantry which characterizes a certain section (chiefly Continental) of naturalists, and leads them to discard the names given, too often by better men than themselves, and which by all rules of priority are entitled to permanent acceptance, for new-fangled appellations of their own, because, forsooth, their vast classical attainments have enabled them to discover that the original name is not a "*classisch gebildetes wort!*"

Dr. Finsch is a hardened offender in this respect, and cannot possibly be recommended to mercy.

Hodgson's name *schisticeps*, becomes *Hodgsoni*, "*mihi*" and Jerdon's *columboides*, *peristerodes* "*mihi*," of Dr. Finsch. *Columboides* we are told is a Latin word, with a Greek termination (a wonderful discovery truly) a thing contrary to all the rules of "word-building" and grammar. Very true, doubtless (most school boys are aware of the fact), but a *name* whether of man, or bird, *is* a name; a thing not to be altogether governed by *rules*, whether of "word-building or grammar."

Let us treat our author as he treats other people's species. "*Finsch!*" contrary to all rules of orthography! what is that "*s*" doing there? "*Finch!*" Dr. *Fringilla*, MIHI! *Classisch gebildetes wort!!*

I asked an unsophisticated field naturalist here, what he thought of these Continental naturalists, with their eternal new names, and the everlasting "*mihi*" tagged on after them.

"Well," he said "I guess the beggars can't discover any new species of their own, so they have dodged up this classical jim, to legalize their stealing other people's."

I fancy that there are a good many simple-hearted English people who hold a very similar opinion, but

"Him as prigs vot isn't his'n
Ven he's cotched 'ill go to pris'n,"

and if the learned authors escape the pillory they so richly deserve, (and it shall be no fault of mine if they do) at any rate we have the consolation of knowing, that posterity if it cannot "quod" them "will quod" their fine names and consign them to the limbo of synonymes, where..... "Requiescant in pace!"

This, however, is not the only form of pedantry against which it behoves us to protest. There is that curious custom of parading brief descriptions in what is *supposed* to be Latin; as prefixes or tags to full, sound, sufficient English or German ones.

The motives that lead authors into this somewhat meaningless practice are doubtless various. Many men I suspect merely follow, without thinking, a long established custom, which, however empty and senseless *now*, once had its use.

To these, I would say go back to your premises and see if the progress of time has not rendered this dark-age custom to which you so fondly cling, wholly obsolete? has not indeed converted it into a practice calculated to amuse rather than instruct?

When this custom originated, readers were rare; only a few learned men dived much into books; these few all understood Latin, and were scattered over the length and breadth of Europe. Modern languages were little cultivated, and foolish national jealousies rendered it rather a disgrace than an honour to be proficient in foreign tongues. It followed that every man who in *those* days desired his writings to be read by others than his fellow countrymen had, of necessity, either to write in Latin, or to append to his work a more or less complete translation in that language.

But times have now changed; every educated man in Europe, I may say in the whole world, knows more or less of English, German, and French. Nine out of every ten men interested in ornithology know these languages better than they do Latin.

If a man writing in any of these three is not content with the readers, who will understand that language, let him add a description in one of the other two, or in *both*, if he is so insatiable for admiring students of his wisdom. There will at any rate be some sense in this, he will add an hundred to his readers for one that his Latin will gain him, and he will probably be able to express what he has to say far more accurately and elegantly.

But there is another class with whom I have less patience, who only stick in these Latin tags because they think it looks

fine ; who *don't* know Latin, who never did and never will, and who with all their exertions never turn out anything but Dog-Latin, bristling with words used, not in their old classical significations, but, in those which their modern European derivatives bear. If these, doubtless estimable, *but* misguided beings could only realize how thoroughly *their* "Latin" (save the mark !) tells its own and *their* tale, they would, I think, wash their hands of the whole business, and write what they have to say in their own vigorous mother tongues, English or German, without any idle pretence to a learning they never possessed, and which even did they possess it, would be of no real use now-a-days for the purpose to which they seek to apply it.

I do not suppose that this protest of mine will have the slightest effect, but the pseudo-classicists,* may rest assured that 100 years hence, when English is spoken, as it then will be, by 500 millions of people, any of their writings that survive, will do so only in expurgated editions from which all the "Latin" has been carefully expunged.

Probably, however, they wisely do not look so far a-head, but content themselves with the present ; and, if so, it is just as well that they should realize, that instead of earning a reputation as scholars they are for the most part, however admired for their real scientific attainments, laughed at for their affectation of classicity.

And now to return to Dr. Fringilla, I mean Finsch, and the genus *Palæornis*.

On the very threshold, at page 2, I stumble on this astounding statement.

"*Sexes generally not to be distinguished*, on the other hand, the young always."

To one who has with his own hands ascertained by dissection the sexes of several hundred individuals belonging to ten species of this genus, this assertion of the similarity of the sexes, is as startling as it would be if made in regard to the *Phasianidæ*. And for the author of a Monograph of the family to assert it, is as though a man who had not learnt his alphabet should set up as a teacher of reading and writing to others !

One is at first tempted to throw the book into the fire, under the impression that such utter ignorance on such a cardinal point, must involve the entire worthlessness of the work ; a more extended perusal of it however shows, that Dr. Finsch brought to his undertaking, learning, patience, industry, a vast amount of reading and intelligence of an high order, and it

* I use this expression for the special benefit of people who are shocked at "*columboides*" and the like.

becomes therefore essential to ascertain how he could have been led into such an error on such a point.

The 84 pages devoted to this genus make the matter clear enough. Dr. Finsch, a cabinet naturalist, on the strength, mainly, of some mis-sexed specimens in museums, takes on himself to disregard and disbelieve the positive statements of working field naturalists. Most pathetically does he lament our ignorance, (he should have spoken for himself, I think, not others!) He says (p. 26).

"Unfortunately, we lack almost entirely a thorough observation of the parrots. And it must be a long time still before we are enlightened in regard to them, even approximately in the same measure as we have been, by Naumann, in regard to European, and Audubon in regard to North American birds. Only the investigator who like these men lives the day through in the forests, observes the process of development of the young from the egg to the out-flight, kills innumerable specimens, and examines closely the sex, will be in a position to inform us thoroughly on such moot points." *But*, and this is the gravamen of his offence, when such a trustworthy naturalist, who *has* lived half his life in the woods, who *has* watched the bird from its nest, who *has* shot innumerable specimens, and with his own hands *has* ascertained the sexes by dissection, comes forward and records the results, Dr. Finsch rejects them with a calm affectation of superiority and the bland remark that he "has noticed from the writings on the subject, that the investigations have not always been sufficiently exact!"

Whatever the late Dr. Jerdon's merits as an ornithologist (and I think that owing to his ill-health in later years, and his disregard for the literary side of his work, these have been *greatly* underrated) he was in his younger days, as in his prime, eminently a field naturalist. He lived out in the jungles, gun in hand, and every fact that he recorded on his *own* observation is as absolutely to be relied on as any thing in this world *can* be. I admit that his book embodies many grave errors, but on close examination it will be found that these were not his own, but those of other people whom he quoted, but (looking on his work as a mere text book), without specific acknowledgment in each case.

Most of what he says about the distinctions of the sexes in the paroquets, he says on his own authority, the result of those very processes of observation, that Dr. Finsch so much desiderates. Unlike Dr. Finsch, he could in this matter say with Newton "hypotheses non fingo"; he did not persuade himself of

the truth of a foregone conclusion,* by examining the tickets of a few specimens in a museum, but he went to the woods and the wild living birds, and there acquired the truths he has bequeathed to us.

But passing by my late friend and master (for it was from him that I first imbibed a taste for ornithology when eyes over-taxed with desk work, could no longer bear the extra strain of the microscope), are Blyth, Hodgson, Hutton, and half a dozen others who all went over the same ground and arrived at the same results, to be equally set aside in favour of Dr. Finsch's *preconceived theories*?

At any rate Dr. Finsch is an honest and simple-hearted man, or he would not have prefaced his new revelation as to the similarity of the sexes in the Paroquets with the naive admission that before investigating the matter, he had long anticipated that the facts would prove to be just as he has now stated them.

It is only fair to Dr. Finsch to quote in full what he says on the question generally, before proceeding to take up in detail his statements in regard to the ten species which I have myself dissected. He says, after lamenting *our* general ignorance about this genus :

"In the mean time we must content ourselves" (and it would perhaps have been well for him had he *done* so) "with what Blyth, Jerdon, and other Indian ornithologists impart. According to these observers, there occurs in most species a difference between the sexes, especially noticeable in the colouration of the bills which are red in the male, but remain black in the female.

"My investigations, however, have led me to wholly different results, and have confirmed the view which I had long anticipated, *viz.*, that the plumage which had been attributed to the female, in most cases indubitably pertained to the young bird.

"However much this view may be opposed to that of the above-named Indian enquirers, who were doubtless in the best position† to give us information on the subject, I still venture to maintain it. On the one hand I have noticed from the writings on this subject, that the investigations have not always been sufficiently exact, on the other hand I will in the following

* Dr. Finsch p. 4.—"My investigations however have led me to wholly different results, and have confirmed the view *which I had long anticipated, &c.*"

† Admitting this and knowing as all the scientific world who dabble in ornithology do know how accurate Blyth and Jerdon usually are, how does Dr. Finsch justify his contradicting them, point blank, on a point like this which is not one of opinion, but of fact, without himself doing as they did, *viz.*, dissecting numerous specimens of numerous species.

account bring forward evidence which must in part strongly shake the statements of the Indian ornithologists; since I can bring forward irrefragable proof* that in eight species (*torquatus*, *cyanocephalus*, *Hodgsoni*, *Alexandri*, *peristerodes*, *erythrogegens*, *longicaudatus*, and *caniceps*) the male and female are precisely similarly colored, we are certainly entitled to presume that the same is the case in the remaining species in regard to which I have not as yet been able to place the matter beyond doubt. Thus it appears to me tolerably certain that, for instance, in *P. eupatrius* and *eques*, as in *torquatus*, the old females likewise exhibit a neck ring.

"Otherwise is it with the young, which have generally been given out as females. These exhibit notable variations from the full adult plumage, partly in the absence of the neck ring, of the red breast, or lively coloured head, and partly also in respect to the colouring of the bill. The first plumage of the young may be said to be in all species, an almost uniform green. Very soon, however, the lively coloring of particular parts, which characterizes the adult, begins to make its appearance, and then we meet with every possible transitional stage of plumage. These have as yet been far too little observed.

"Another point which is infinitely more difficult to clear up than that of the coloring of the plumage is that of the bill, and here we encounter many obstacles. Namely in some species the young exhibit no, or scarcely any, difference in the colour of the bill from the old, as I was able to convince myself in the cases of *eupatrius*, *torquatus*, *eques*, *cyanocephalus*,† *Hodgsoni*,‡ *Alexandri*, and *melanorhynchus*. On the other hand the young of *Calthopæ*,§ *Luciani*, *peristerodes*,|| *longicaudatus*, *erythrogegens*,¶ and *caniceps* have always a black bill, while in the adult, it, or at any rate, its upper mandible is red.

* Absolutely no proof at all, as I shall show in the case of six out of these eight species, of which I have personal knowledge.

† This is wrong, in both the species confounded, as I consider, under this name (of which more hereafter) the nestlings have *both* mandibles pale yellow, while the adults have the lower mandible black, or blackish.

‡ This also is wrong, the nestlings have both mandibles pale yellowish horny, brownish towards the base of the upper mandible, while the adults have the basal half, two-thirds, or three-fourths, (it varies according to individuals) bright red.

§ I believe this to be wrong, the upper mandible in *both* sexes in the *young* is red. I have not dissected this bird myself, but my specimens of nestlings and birds just able to fly were sexed by Vincent Legge, and other reliable ornithologists.

|| This is certainly incorrect. *All* the quite young birds I have examined or received, had the upper mandibles a somewhat brownish red.

¶ Two species are here, in my opinion, confounded; in both, all the *very* young birds either Davison or I met with, and he saw at least 30, and I at least 20, had both mandibles red.

"We see therefore that in regard to the coloring of the bill in *Palæornis* no distinct rule prevails, which can be equally applied to all species. These manifold differences of color have in the earlier stages of our knowledge of this genus, specially amongst the earlier authors, given birth to a truly chaotic confusion of ideas in regard to species, and have led to the heaping up of synonymes in a veritably appalling manner.

"In consequence, I can with full conviction assert, that the working out of the genus *Palæornis*, has been unquestionably the most difficult part of my work."

This latter we may fully accept, for starting with a foregone conclusion opposed to facts, it is not surprising that Dr. Finsch found it difficult to demonstrate, or even to persuade *himself* that he *had* demonstrated what he desired to arrive at.

As regards these general remarks, my foot-notes contain all that it seems particularly necessary to remark, but before taking up details connected with each species, I wish to make a few general observations in regard to his list of admitted species.

This of course is a different kind of question to that we have been discussing; as to the distinctions of the sexes, the colours of the bill in the young, having myself shot and sexed *hundreds* of these birds, having taken the young from the nest at almost all ages and reared them, I contradict Dr. Finsch, and would contradict any one else who had not done the same as I have done, without the smallest hesitation. These are matters of fact, which I have seen not once but fifty times with my own eyes, and of which my museum contains overwhelming proofs, and therefore in regard to these I give in to no one, who does not examine the matter as thoroughly as I have done. But when it comes to what species should and should not be accepted, this is quite a matter of opinion, and I merely state my views for what they are worth, fully admitting that on this point Dr. Finsch is *likely* to be (though I don't think that he *is*) as correct, or *more so*, than myself.

The species he admits are as follows:

(1) *eupatrus*, Lin. (2) *torquatus*, Bodd. (3) *eques*, Bodd. (4) *cycnocephalus*, Lin. (5) *Hodgsoni*, "mihi," i. e., *schisticeps*, Hodgs. (6) *Calthropæ*, Layard. (7) *Luciani*, Verr. (8) *Alexandri*, Lin., (from Java and Borneo.) (9) *Lathamii*, mihi. (10) *melanorrhynchus*, Wagl. (11) *peristerodes*, "mihi," i. e., *columboides*, Jerd. (12) *longicaudatus*, Bodd. (13) *erythrogenys*, Blyth. (14) *caniceps*, Blyth.

Of numbers (3), (7), (8), and (12), I have no personal knowledge; though judging from the analogy of the species I *do* know,

I think I might show that Dr. Finsch is not improbably in error in regard to three of these also; but in regard to the rest I would remark, *first*, that in my opinion (1) includes at least three distinct species, which I will call for the present, (1) a. *eupatrius*, Lin. (1) b. *sivalensis*, Hutton. (1) c. *maguirostris*, Ball. Any or all of these may be entitled to bear some prior designation. I leave Dr. Finsch to work out the synonymy, which he can do fifty times better than I ever could. All I am concerned with is that there *are* three different species, the characteristics of each of which I shall point out, when dealing separately with the several species.

Second, that (4) includes two species (which as before, leaving the correct synonymy to Dr. Finsch) I will call (4) a. *purpureus*, Müll, and (4) b. *bengalensis*, Gmel., of which likewise I will later indicate the distinctions.

Third, that (9) and (10) are both the same species, the former being the male, the latter the female and young.

Fourth, that *Derbyanus*, Fraser, given as a synonym of (10), and which has, if I remember right (it is eleven years since I saw the type) a wing of 8.5, is a good and distinct species, the wing of neither (9) or (10) ever in my experience exceeding seven inches.

Fifth, that under (13) two species quite distinct, are included *viz.*, (13), a. *erythrogenys*, Blyth, and (13) b. *affinis*, Tytler, which latter name must stand, although Tytler never recognized the real distinctive characters of the Audaman bird, and merely named a black-billed female "*affinis*," because *erythrogenys* was described with a red bill, whereas, as we now well know after dissecting some fifty specimens of each species, the adult males, in both species, or if you will, races, have the upper mandibles red, while the adult females have these black.

According to my views, therefore, the species of this genus would stand as follows:

(1) *eupatrius*, Lin. (2) *sivalensis*, Hutton. (3) *maguirostris*, Ball. (4) *torquatus*, Bodd. (5) *eques*, Bodd. (6) *purpureus*, Mull. (7) *bengalensis*, Gmel. (8) *schisticeps*, Hodgs. (9) *Calthropæ*, Layard. (10) *Luciani*, Verr. (11) *Alexandri*, Lin. (12) *fasciatus*, Mull, which possibly = *melanorrhynchus*, Wagl. (13) *Derbyanus*, Fraser. (14) *columboides*, Jerd. (15) *longicaudatus*, Bodd. (16) *erythrogenys*, Blyth. (17) *affinis*, Tytler, (18) *caniceps*, Blyth.

First, to take my numbers (1), (2), and (3) which are so nearly allied, that they may well be considered together.

These three species consist of the smaller bird from Ceylon and two larger species, the one from the whole of the northern

and Continental portion of India (I cannot speak with certainty as to what species inhabits the Peninsular) and the other from Burmah and the Andamans.

The following brief particulars will, perhaps, suffice to show how the males of these three species may be distinguished :

Localities.	Black mandibular stripe.	Neck band.	Side of head and cheeks.	Base of throat below curve of mandibular stripes.
Ceylon? Southern India.	Comparatively narrow and ill-defined.	Narrow, dull pink, not surmounted by a conspicuous blue band.	Green, more or less dingy.	A slightly yellowish green.
Raipoor, Kaladoon-gee, Kumaon, Dehra Dhoon, Jheelum, and? Sikhim.	Very broad and strongly defined.	Broad, pale rose pink, surmounted by a broad glaucous blue band.	Green, more or less suffused with glaucous blue.	Dingy yellowish.
Andamans, Cocos ? Thyetnyo.	Narrow, well defined.	Narrow; bright almost crimson pink, surmounted by a narrow sky-blue band.	Bright green.	Bright yellow.

Besides these distinctions, the bills in the two latter species are nearly half as big again as in the first, and the wing-spot in *magnirostris* is altogether a brighter red than in the two former.

When we come to the females, the Ceylon bird is altogether so much smaller, that it cannot be confounded with those of the other species. In the Ceylon females, the wings do not appear to exceed 7·8, in the other two species, they vary from 8·1 to 8·4. Comparing the females of *magnirostris* and *sivalensis* (or whatever name the race may ultimately have to bear) the color of the wing-spot of *magnirostris* is so much brighter, that the birds can be separated by this alone at once. Moreover, the sides of the head in the female *sivalensis* are duller, and greyer than in *magnirostris*.

As to *sivalensis*, I am not quite sure whether the bird from Sikhim, which is Hodgson's *nipalensis*, ought to be included with the birds from the other localities above enumerated. The bill is very large, the mandibular black stripe is also very strongly defined, but the pink of the neck is rather brighter than in true *sivalensis*, the blue band is reduced to a mere trace, and there is scarcely even a trace of the glaucous tinge on the cheeks and sides of the head which so conspicuously distinguishes *sivalensis*, Hutton. If, however, the two are considered to belong to the same species, Hodgson's name *nipalensis* would have priority, but there still remains Gmelin's name *sonnerati* which may possibly be considered to apply to this species. From Southern India I have unfortunately no specimens, but from

Raipoor, Sumbulpore, and the Tributary Mahals, from the Terai, and the low valleys at the base of the Kumaon hills, from the Dhoon and the valley below *Mussori*, and from the north-west Punjab, I have large series, and all these birds are identical. From Sikhim I have only a pair, and these present the differences already noticed; but this pair agrees exactly with Mr. Hodgson's original drawings of his *nipalensis*, and it seems therefore probable that the slight differences alluded to are constant. From Burmah my only birds are from Thyetmyo, but these agree very nearly (I hesitate to say entirely) with the Andaman and Cocos birds, of which we have a fair series of eight males and eight females. The Ceylon birds stand by themselves distinguishable, it appears to me, at a glance from all those from the localities above indicated.

Of course good specimens of full plumaged adults must be compared, no one probably could separate with certainty, dirty ill-plumaged immature specimens of *sivalensis* and *maguirostris*; but the Ceylon birds, I think, could always or nearly always be separated at once by their inferior size.

Dr. Finsch did not discriminate these three species and perhaps may not admit them now, but this signifies little, for in regard to the points at issue, all three are alike, and Dr. Finsch is equally mistaken in regard to all of them. He says:

"According to Blyth and Jerdon, the specimens without neck-rings are females. What the young birds are like, is unfortunately nowhere said, and consequently there still remain great gaps which might easily have been filled by Indian ornithologists. As I can prove satisfactorily that in the allied species, *torquatus*, *cianocephalus*, &c., there is a perfect conformity in the colour of both sexes, it appears to me very probable that the same is the case in *eupatrius*, and that the pretended females, without the neck-ring, are not yet fully plumaged birds. Unfortunately, I could find in none of the specimens which I examined, any signs of transition, so that it was not possible to make certain of this."

Please note the modesty and courtesy of this passage! Dr. Jerdon and Blyth (who have examined the fresh birds) state so and so, but Dr. Finsch thinks it very probable that it is *quite* the contrary. Like the Psalmist of old, Dr. Finsch seems to have "said in his heart that all men are liars."

Some of us however venture to hope that he and his authority are mistaken. For my part I have dissected, at the *very least*, fifty specimens of *P. sivalensis*, and Davison and I have recently sexed eighteen of *maguirostris*. Mr. Oates and Capt. Fielden

have sent me numerous carefully sexed specimens of the Thayet-myo birds, and Messrs. Legge and G. Nevill, of Ceylon birds; Capt. Hutton is quite a paroquet fancier, and always has a lot of all ages alive about his house, and we are all, I fancy, ready to aver, that the female in this group of species, or sub-species, *never* has the rose colored neck-ring, and *never* has the broad black mandibular bands which are continued in the males, as black lines on the sides of the neck.

"What the young birds are like is unfortunately never said." Well, let Dr. Finsch hear what Capt. Hutton says:

"The nestling bird at two months old has the bill large, powerful, and massive, especially in the male, and of a coral red, inclining to dusky at the base above; there is an incipient dusky, somewhat bristly narrow line from the eye to the nostril, but by no means approaching to black, while in some, there is no trace of it at all. A large elongated purplish red patch near the bend of the wing in both sexes even from the nest; in some, but not in all, there is a dusky indication of what at a later period will become the black demi-collar on the side of the neck; these are males. The sexes can be distinguished by a practised eye by the size and shape of the head; in the male, the forehead from the base of the bill backward to just behind the eyes, is well arched, but thence passes back to the nape, flattened and straight, giving the head an elongated appearance; whereas in the female the head is both smaller, and well arched, from the base of the bill to the nape. There is likewise a marked difference in the form and massiveness of the beak; in the male it is wider along the culmen, and well rounded out on the sides; in the female it is flatter on the sides, that is to say, more compressed, and the culmen is consequently sharper; the lower mandible is punt shaped in both sexes. At first the pupil of the eye is entirely black without any iris, but when about two months old, a pale ashy white iris begins to appear. Gradually from this time the white iris becomes more and more apparent, and is encircled by a faint narrow bluish outer border, and the edge of the eyelids becomes granular and reddish. The feet are of a dull greyish leaden hue."

I can confirm the greater portion of this from personal observation. As for what Dr. Finsch *can* prove, about *torquatus* and *cianocephalus*, we shall see hereafter, in the meantime in regard to the present group of species, I would remark, that if Leith Adams really says he found any one of them common in the "Forest districts of Ladakh," I will not contradict him, *but* I can only say I have been all over Ladakh, twice, without being so fortunate as to meet with any Forest district, and that I never myself met

with the large rose ringed paroquet in Ladakh, nor have I seen it in any of the twenty odd collections (made there by natives and Europeans) that I have examined.

Dr. Finsch says, that *eupatrius* never frequents gardens or towns, but I may mention that the last time (November 9th, 1867), I was up the minars of the Juma or Badishahee Musjid at Lahore, a huge flock of *sivalensis* were wheeling and screaming round me, several from time to time perching within a few feet of our party.

Let us turn now to (4) *torquatus*, and first hear what our learned Dr. has to say.

He remarks, "If we may then consider the question 'whether more than one species is included under the name of *torquatus*,' as tolerably cleared up, we have yet to discuss a point which has been no less insufficiently demonstrated. This relates to the pretended green colour of the female which has been asserted by Blyth, Layard, and Jerdon. The last remarks in his well known work "The Birds of India," that the female wants the rose-colored neck ring, in place of which it has a clear emerald green one. In regard to the colouring of the young birds, unfortunately nothing is stated.

"It had for a long time seemed to me very doubtful whether these green birds were really only females, for not only was I able to examine several specimens in which the red neck-band very clearly made its appearance, but I also saw in the Zoological Gardens at Antwerp as many as thirty uniformly green birds which had been brought direct from West Africa, and which could by no possibility have been all females.

"A complete solution of the question however I first obtained in the beautiful collection of Major Kirchhoff, at Schäferhof, in which I found a female which had been killed by Brehm on the Blue River, and dissected with his own hand, which was colored exactly like the male, that is to say, with the black mandibular stripes and red neck band. Later, Dr. Brehm (whose observations of nature no one could question) verbally assured me of the fact. Likewise I ascertained from Herr Consul Bornstein who has often kept *P. torquatus* in his charming chamber menagerie, that the green birds, as time progressed, assumed a red neck-ring; this is moreover established by Wagler on the ground of similar observation. Thus all sufficient proofs are at hand to demonstrate that these uniformly colored green specimens are only the young birds, and that the males and females in full plumage do not differ.

"Moreover, this demonstration is all the more important, as through it we can with tolerable certainty assume a similar

condition of things in other species, in which likewise a distinction between male and female has been asserted to exist, which has however, in all probability, been based upon a misconception of the immature plumage."

Here then are Dr. Finsch's strong proofs; proofs which in his opinion justify his speaking of what Jerdon, Layard, Blyth, Hutton, and a dozen other Indian naturalists have stated as facts, the result of their personal observations, as "*pretences*."

Let us examine these proofs. First, there is an African specimen, with a rose coloured ring, sexed by Dr. Brehm as a female. Dr. Finsch says that the African and Indian birds belong to the same species; I do not contradict him, I know nothing of the African bird, but, *if* Brehm *correctly* sexed the African bird, and it was not a monstrosity, such as we often meet with, specially in the *Anatidæ* and *Phasianidæ*, of old females, barren, or with diseased ovaries, putting on the male livery, *then* I positively assert, that the African species *is* different from our Indian bird, in which (I must have sexed 100 specimens in my life) the female *never* has the red neck ring.

Then there is a gentleman who has seen the green birds assume the red ring, and Dr. Finsch has himself seen 30 green birds all together (*African* again) which could not all have been females! Considering that even in our Indian species *all* the young are colored like the females, and that the red ring is only assumed about two years after birth, I fail to see the force of *these* proofs.

Then..... but we have already exhausted, I find, Dr. Finsch's "strong proofs!"

Is it conceivable, that on evidence like *this*, any man should deliberately contradict, and that as it seems to me by no means over-courteously, the statements of trustworthy and acute practical observers like Blyth and Jerdon? He has positively not adduced *one* single fact or even argument bearing upon the *Indian* birds, in regard to which, alone, they asserted anything.

The females of the African birds *may* have the black mandibular bands and the rosy neck ring and *may* be exactly like the males; I should not have expected it, but if any trustworthy naturalist who has sexed only one-fourth as many African as I have Indian specimens asserts the fact, I should not dream of contradicting him, *but* in our *Indian* Birds it is *certainly not* the case.

Nothing, we are again informed, is said of the young. Well let our oldest Indian naturalist, who knew all about these parquets long before Dr. Finsch was born, enlighten him.

"The nestling is of a uniform pale green, without any mark-

ing whatever; the tail feathers bluish, and the bill pale coral, red above, black inside the mouth and at the base of the lower mandible; the feet, plumbeous grey.

"The ring round the neck, which is a miniature of that of *P. eupatris* does not appear until the bird is two years old. Most writers say the third year, but this is erroneous, as from the hatching in one year to the breeding season of the third, is more nearly two years, and it is then that the ring appears."

Whilst we are dealing with *torquatus*, let me notice a curious circumstance.

Both sexes have the mandibles colored alike, and from all localities the upper mandible is red. The color of the lower mandible however would seem to vary somewhat according to locality. In birds from Ceylon and the extreme south of India, as from Anjango, it is black. Birds from the N. W. Panjab, Sindh, and Rajpootana, have the lower mandible more or less mingled with red; some few specimens have the lower mandible nearly wholly black, but *most* of them, have more or less of the basal portion red. Birds from further North and East, Etawah, Kangra, the Dhoon, Kumaon, commonly have the lower mandibles red, more or less blotched with dusky, though here also *occasionally*, it may be met with black, while birds from Sikhim, Dacca, Calcutta, Thayetmyo, have the lower mandible, so far as my experience goes, almost entirely red.

The above holds good in the forty odd specimens in my museum, but does it do so always? I have not sufficiently attended to this point hitherto, but I hope other observers will.

Of *eques*, Bodd., I say nothing, Mr. Newton can probably tell us whether the bird, which I gather that he sexed as a female, and which our author puts down as a young male, was really so, and whether the adult females in this species ever acquires the neck ring.

We next have *cynocephalus*, Linn. Here, according to my views, Dr. Finsch has combined two distinct species. In the one, which I will call *purpureus*, Mull (Dr. Finsch will set me right, doubtless, about the synonymy), which is from Ceylon, Southern, Central, the whole of Northern and Western India and the Himalayas, as far East at any rate as the Dhoon, the adult males have a brighter and more crimson wing spot, than in the other, the under wing coverts and axillaries are *glaucous or verditer blue*, the head peach-bloom, or more correctly, a beautiful red, shaded with blue on the occiput, nape, and more faintly so on the cheeks, and black mandibular stripes continued as a collar round the back of the neck. The adult females want the black mandibular stripe and collar and the red

wing spot, and have the whole top, back, and sides of the head a sort of lilac, browner generally on the sides, and with a more or less distinct yellow ring round the neck at the termination of the lilac cap. In both sexes, the upper mandible is yellow, varying from a wax to a somewhat orange yellow, and lower mandible, black or dusky.

The quite young birds have the whole top and back of the head dull green, rather darker than the back, contrasting with the latter and indicating where the colored cap will ultimately be; *both* mandibles are in these pure wax yellow and even the males want the red wing-spot. At an older stage the young males are like the adult females; at a little later stage, the lilac of the head becomes slightly darker, a ruddy tinge begins to shew out at the base of some of the feathers, a few of the feathers of the forehead change to the same color as in the adult male, and the place of the red wing-spot is marked by *conspicuous orange tip-pings* to the feathers (Edwards, pl. 292.)

The other species (which I will call *bengalensis*, Gmel.) is very similar in all its changes to the preceding, but in both sexes the wing lining and axillaries are *green*. The *female* as *well* as the male has the red wing-spot, and this in both sexes is a deeper and more maroon red than in the male of the preceding.

The youngest birds I have yet seen had the red wing-spot but I have no nestlings now by me of this species as I have of the other. This species comes at any rate from Sikhim, Dacca, and Eastern Bengal generally, Assam, and Upper Burmah, as from all these localities I have specimens now before me.

I do not entertain the smallest doubt that Dr. Finsch is in error in uniting these two forms; but be this as it may, he is unquestionably wrong here as elsewhere, in asserting that the adults of both sexes are alike.

This assertion is founded on *one* specimen, sexed as a female (and *wrongly* sexed, if it has a peach bloom colored head) in the "Museum Heineanum" and on sundry specimens exhibiting the change from the female plumage (which the young male assumes when about a year old) to that of the adult male!

We are told that "Alas! the Indian ornithologists give us no satisfactory answer to many of the most difficult questions. Jerdon only says, that the female has a blue head and that the young are green."

But what more would Dr. Finsch have? Who could foresee his particular idiosyncrasy? When *Pavo cristatus* is mentioned, who thinks of writing an essay to prove that the hen does *not* normally assume the gaudy plumage of the cock? Does he

want a "full, true, and particular account" from one who has taken scores of *purpureus* from their nest-holes and reared them by dozens? Let Capt. Hutton speak; his synonymy is faulty, he is no cabinet naturalist, but he knows the *birds* as well as he does his own children. He says:

"The nestling bird has a pale yellow beak, but neither wing-spot nor coloured head; it is uniformly of a pale yellowish green, with a still lighter coloured ring round the neck, and the upper surface of the tail exhibits a little blue.

"In the second year the head becomes of a fine bluish cast, with a yellow collar round the neck, when it becomes the *P. cyanocephalus*, and in the third year, the head of the male becomes a most beautiful rich peach blossom, shading off to the black ring into a soft azure blue. In the third year the full plumage of the adult is acquired, and each subsequent year, for some time, only adds to its richness of colouring."

I should extend this paper beyond all reasonable limits if I were to specify all the mistakes into which, it appears to me, Dr. Finsch has fallen, but I may mention that the yellow or rather orange yellow wing-spot, which seems to puzzle him so sorely in Edward's and LeVailliant's figures, is I believe a normal stage of the young male's plumage in *purpureus* (and possibly also in *bengalensis*), just prior to the assumption of the red wing-spot. Poor LeVailliant has sins enough to answer for, and need not here, I think, be accused (as Dr. Finsch *good-naturedly* suggests) of manufacturing his plate out of Edwards; orange yellow wing-spot birds are common enough, and if he will pay the postage and *return** the specimen, I will send him one to look at.

Next we have my (8) *P. schisticeps*, Hodgson, which Dr. Finsch is pleased to name afresh, the combination of a word "derived from the Greek $\sigma\chi\iota\zeta\omega$, with the Latin *ceps*," being too much for his sensitive classical nerves!

Of this species he remarks, p. 32:

"According to Blyth" (and he might have added Hodgson who described the bird, Jerdon, and a dozen others) "the females are only distinguished by the absence of the red-brown wing-spot." Blyth of course being *no* authority any more than other Indian ornithologists, Dr. Finsch continues, "I am much more inclined to conclude that the red brown spot would appear also in the full plumaged female," in other words he through his supreme wisdom without having examined a single bird in the

* This is not a matter of course, because a naturalist who begins by appropriating his neighbour's species, may end by annexing their specimens. As Dr. Finsch would doubtless say "*Facile descensus, &c!*"

flesh, is intuitively better acquainted with the state of the case than skilled practical naturalists who have dissected scores.

Let me tell Dr. Finsch, that I personally must have sexed some thirty specimens of this species, and that the following is my experience :

The female *always* wants the deep maroon red wing-spot. In both sexes in the adult, the basal half, two-thirds, or three-fourths of the upper mandible are bright red, the rest of the upper mandible and lower mandible yellow, varying from bright yellow to pale yellowish horny. In the young bird, in both sexes, the black mandibular stripe and collar, (defining the slaty dusky head, in the adult) are entirely wanting, and the whole top and back of the head is green (the cheeks a somewhat brownish green) only on the back of the neck a faint paler green band defines the cap. *Both* mandibles are a pale yellowish horny, brownish towards the base of the upper mandible.

I cannot however flatter myself that this statement will affect Dr. Finsch's views ; there are some who 'will not believe, even if one went to them from the dead,' and I question whether if I sent him a bird of this species that could talk (and they speak very well at times) Dr. Finsch would believe it, even though it said itself "I'm an *old** female," if it wanted the wing-spot ?

As I said before, I have not taken in hand to catalogue Dr. Finsch's errors, I confine myself for the most part to those in which with the truth set before him clearly by men like Blyth, Hodgson, and Jerdon, he has perversely erred, through an excess of self-reliance, but really when I find it stated that *P. schisticeps* "is found throughout the greatest portion of the Indian Continent," I am compelled to point out that this species occurs in barely one-fiftieth part of that vast tract. Except in the extreme East, it is almost rigidly confined to a narrow zone on the North, lying between the bases of the sub-Himalayan ranges and the first high snowy ridge. In the extreme East, it occurs on the higher ranges running down from Assam to Burmah and is found on the Arracan Hills, as low down at any rate as the 19° North Latitude.

When we turn to *Callthropæ*, Layard, it is the same story ; on no evidence, but his own personal conviction, on the contrary in the face of all existing evidence, Dr. Finsch calmly says : "Questions in regard to differences in the adult plumage, and to whether the male and female are always differently colored, still lack in this species an altogether more rigorous investigation.

* But query, would any *female* admit that she was *old* ? P. D.

The numerous phases of plumage which I have seen, permit me to assert with tolerable certainty an entire similarity in both sexes.

"Noteworthy and wonderful however, always remains the black color of the bill in the younger birds."

But as a matter of fact, no further investigation is required, because a dozen different observers have cleared up the main point at issue *viz.*, the colour of the adult female's bill, but our author absolutely ignores all this because it is irreconcilable with his theory!

Unlike the other species with which I have previously dealt, I have never myself shot or dissected examples of *Calthropæ*, but I have more faith in human testimony than our author apparently has, and having a large series of specimens carefully sexed by three different European observers, I can state the following with "tolerable certainty" independently of what far better naturalists than myself have already recorded to a similar effect.

The adults of both sexes are nearly alike, but in the male the upper mandible is bright red, pale yellowish horny towards the tip where it is abraded. The lower mandible is a pale brown or reddish brown, yellowish horny towards the margins where abraded. In the adult female, the upper mandible is invariably black, or nearly so, the lower mandible similar to that of the male, but dusker and darker. In the female also the narrow frontal band, lores, and orbital region are a duller and paler green than in the male. The young of both sexes entirely want the black mandibular stripe, and all the grey or blue grey which characterizes the heads of the adults in both sexes; the whole head is green, the cap defined by an indistinct brighter green collar. The upper mandible in *both* sexes in the young is *red*, at any rate if Mr. Vincent Legge and others have correctly sexed the specimens of young they sent me, as I entertain no doubt that they have.

Of (10), *Luciani*, I *know* nothing, but in opposition to Dr. Finsch who, by his diagnosis, leaves it to be presumed that the adults of both sexes are precisely similar, I venture to predict that whenever the habitat of this species is discovered, and a sufficiency of properly sexed specimens are obtained, the adult females will prove to have black upper mandibles, while those of the males are red.

In regard to (11), *Alexandri*=*Javanicus*, Osb, (but *not* as I think *fasciatus* Müll, which is probably rather our Indian bird), Dr. Finsch tells us that adults and young, alike, all have both mandibles red, and that further, the adult males and females are in every respect perfectly similar in plumage. This is wholly contrary to my experience in the ten species of this genus, of all of

which I have dissected numbers, but as Dr. Finsch tells us (p. 61) that he has himself ascertained this by *dissection*, I unhesitatingly accept the fact.

Next we have Dr. Finsch's (9) *Lathamii*, and (10) *melanorhynchus* = my (12) *fasciatus*. Here the male is elevated into a distinct species, as *Lathamii*, while his (10) is the female. When dealing with *Alexandri* (p. 62) he digresses to tell us that he has examined at least ten specimens of his *Lathamii* (I have shot and sexed twice as many in *one day*) and has always found the upper mandible red, but the lower, on the contrary, black. And that this, and the examination of more than a dozen black-billed birds "showed him clearly that these could in no wise be the females, as Jerdon and Blyth set forth" (poor Jerdon and Blyth, always wrong! Finsch, the clever fellow, *always* right!!) "but on the contrary, constituted a separate species." He adds with that deliciously bland assumption of superiority and omniscience which irradiates his pages, "it appears to me also that the change of colour in the bill of which these ornithologists speak, is an erroneous conception."

Yet the erroneous conception is wholly on Dr. Finsch's part; here I speak positively, having myself sexed a great number of specimens of this species in Upper India, and Davison having recently done the same in the Andamans; having obtained the young males with black bills, and seen the colour of the bill gradually change, and possessing numerous specimens exhibiting just that change, in every stage of transition, of the colour of the bill which is so authoritatively pronounced to be "an erroneous conception."

Let Dr. Finsch rest assured, that "*unfortunate*" as it is (p. 69) that he has never *yet* been able to meet with any but old, red billed birds, of his *Lathamii*, fate is against him, and he never *will*!

I too, who have seen thousands, and shot hundreds, of these black, and red billed paroquets, have equally never *yet* been able to meet with any but old red billed birds, and what is more I have never been fortunate enough to meet with a female amongst these red billed fellows, nor a full plumaged male amongst the black-billed ones! Young males enough have I seen, with black upper mandibles, and had them tame (they are very gentle birds), but confound them! as they grew up, *they* too, got some *erroneous conception* into *their* pretty heads and actually (regardless of the whole family of Fringillidæ) went and changed into the other species! What they meant by it, Dr. Finsch obviously cannot tell, and of *course* no one else can, so we may be content to leave this amongst those insoluble mysteries of nature, which "no fellar can understand!"

In the youngest birds that I have seen, taken, when just able to fly, from the nest hole, while two birds, one a specimen of *Latham* (which I *erroneously conceived* to be the father), with a red upper mandible, and the other a specimen of *melanorrhynchus* (which I erroneously conceived to be the mother), shrieked round us, which two specimens curiously enough, on dissection, did prove (unless I *erroneously conceived* the fact) to be respectively male and female; I say these young birds (hybrids doubtless!) had both mandibles blackish.

I should state that the narrow line of vinaceous red bounding the posterior margin of the grey cap, and the green hue suffusing the forehead and cheeks on which Dr. Finsch lays stress in his diagnosis of his *melanorrhynchus* are characters of the young male at one stage only of its plumage.

It may be well also to mention that in this paroquet, the changes of plumage, and in the color of the upper mandible in the male, do not always take place in the same order. I have one young male for instance, in which the upper mandible is quite red, while the red on the breast is only just beginning to appear, and the tail is not half developed; on the other hand, I have another young male with a nearly perfect tail and rich blossom red breast, in which the upper mandible is quite black except a narrow red streak on the culmen, and another on either side.

Before passing on to the next species, I am compelled to notice a not very ingenuous attempt to saddle Dr. Jerdon with blame for not discriminating the Javan and Bornean bird from the Indian; from the way our author writes, it would seem as if Dr. Jerdon had, on his own authority, pronounced that the species were identical. As a fact, all Jerdon knew, or pretended to know, was the Indian species, of which he wrote—he probably never saw (as I have never yet seen) a decent specimen of *alexandri*; but he found that other ornithologists had asserted the identity of the two, and naturally accepted the fact (which he was in no position to verify), and with it the synonymy. It would be well if Dr. Finsch had no more serious errors to answer for; not least amongst his transgressions I hold his putting forward this mistake, as a ground for doubting what Dr. Jerdon asserted on his own knowledge in regard to the Indian species which he had himself observed.

Columboides, Jerdon, disguised under Dr. Finsch's new name *peristerodes*, is the next species dealt with by that author.

Really the wonders disclosed by this work pass human comprehension! Dr. Finsch records an adult male, from the Himalayas, in the Leyden Museum, and an adult *female*, *precisely*

similar, to the male, also from the Himalayas !! in Heine's Museum.

What *Himalayan* female *columboides* may be like, no mere Indian ornithologist could presume to say. We leave that to Dr. Finsch ; but of the species which we, perhaps, *erroneously conceive* to be *columboides*, whereof no straggler even approaches within 1000 miles of the Himalayas, it is as well that he should know that the adult female *always* differs from the male in entirely wanting the bright green collar, which in the latter succeeds the black neck-ring, in wanting the green lores and green about the orbital region, and in having the upper mandible, black, or nearly so, instead of bright red as in the males. The point of the bill in both sexes, where abraded, is paler, a sort of a horny white ; the lower mandible in both sexes is similar, a sort of dingy reddish or orange brown, pale yellowish horny where abraded. The quite young bird, I may add, has the grey of the adults replaced by green, more or less tinged with blue upon the head, entirely wants both green and black collars, though the latter soon begins to shew on the throat and sides of the neck (not extending to the back of the neck till a good deal later) and apparently at one stage in *both* sexes has the upper mandible a somewhat brownish red, and the lower mandible a paler somewhat orange brown, both mandibles being paler (a sort of dingy horny white) at the tips.

Dr. Finsch tells us in his usual strain "according to Jerdon" (who must have shot scores, as it is very abundant on the ghats which he so exhaustively worked) "the female at every age exhibits a black bill, but in regard to this I" (who appears to have seen four skins, one wrongly sexed, and two of them ticketed from localities where the species never by any chance occurs) "must raise well-founded doubts, since, notably, the specimen in the Bremen Museum shows so clearly the change from the black to the red colouring."

Is Dr. Finsch quite sure that it is not just the other way, a change from red to black ? There is, I admit, one point yet doubtful, and that is, does the male at any stage exhibit a black upper mandible. That the adult male has a red one, and the adult female a black one is certain ; that the quite young of both sexes have reddish ones, I hold to be certain, but as this statement is based upon the examination of only four nestlings two males and two females ; any one who likes may reasonably still doubt it ; that in the female the reddish bill of the nestling, changes later to black, I consider (but from observations on only two females) also certain ; but whether this same is the case with the young male, I cannot say. Dr. Finsch tells us that

"Blyth is uncertain, and says of the black-billed birds, 'female or young,'" but had he asked Mr. Blyth, he would I think have found that that gentleman never doubted that the adult *females* had black bills—all he did doubt was, whether or no, the young males had the same at any stage.

Finsch tells us that this species is found in Madras; if he means the town or *district* of Madras (Chingleput) then he is certainly in error—if he means the *presidency* of Madras, then since the places he enumerates, the Malabar Coast and the Nilghiris, are both *in* this Presidency, it is, to say the least, surplussage, calculated to mislead,* as no one reading that the bird occurs on the Malabar Coast in Madras, and on the Nilghiris, would conceive that Madras here signified the Presidency, and not the town or district.

As usual, Dr. Finsch laments our ignorance in regard to all these species. It is really a pity that he will not be content to speak for himself. That *he* has still somewhat to learn is patent in every page, but the Indian ornithologists whose distinct statements he so unceremoniously ignores, puts aside, or directly contradicts, unfortunately for his reputation, are not quite so much "in tiefes Dunkel" as himself.

My (15), *longicaudatus* does not occur within *our* limits, so far as I *yet* know, and I have never examined a fresh bird.

Turning to *erythrogenys*, (No. 13), of Dr. Finsch, I do not pretend to find any fault with him for uniting the two species which respectively inhabit the Nicobars, and the Andamans, and Cocos under this one name. Till we recently worked out in good earnest the avifauna of these groups, no one *certainly* knew, though Lord Walden, I gather, suspected that the birds *were* distinct, and it may be as well to enter somewhat into details, in regard to this matter.

We brought home 114 carefully sexed specimens of the red-cheeked paroquet, from all parts of the Andaman and Nicobar Groups, from Preparis on the North to the great Nicobar on the South, and we find that the birds from the two groups differ persistently in both sexes, both in size and plumage.

To illustrate properly the difference in size, I must give the measurements of the wings of a large series of both males and females, in fact of every entirely full plumaged, perfect winged adult now before me.

PALEORNIS ERYTHROGENYS. *Males*.—Kondul, 7.62; 7.5. Terressa, 7.45; 7.5; 7.65; 7.65. Car Nicobar, 7.6; 7.3. Montschall, 7.4. Triunkut, 7.5; 7.45; 7.4; 7.4; 7.5; 7.5. Pilu Milu, 7.5; 7.5. Camorta, 7.7; 7.4; 7.4; 7.5; 7.4; 7.6; 7.5; 7.4; 7.5.

PALEORNIS ERYTHROGENYS. *Females*.—Car Nicobar, 7.3; 7.35;

7.55; 7.3. Kondul, 7.35; 7.35; 7.55; 7.5; 7.5; 7.4. Camorta, 7.3; 7.3; 7.3; 7.15; 7.1; 7.1; 6.95. Trinkut, 7.

PALEORNIS AFFINIS. *Males*.—Port Blair and its neighbourhood, 6.8; 6.95; 6.8; 6.6; 6.75; 6.95; 6.9; 6.82; 6.7; 7.05; 6.82; 6.7; 6.6; 7.12; 7; 7.12; 6.95; 6.75; 7; 7.1; 6.75. Port Mouat, 6.8; 6.8; 7.08; 6.8. Macpherson's Straits, 6.85. Great Cocos, 7. Little Cocos, 7.2. Prepara, 6.7; 7.2; 7.

PALEORNIS AFFINIS. *Females*.—Table Island, 6.99; 6.75; Little Cocos, 6.7; 6.55; 6.6. Port Blair and its neighbourhood, 6.8; 6.7; 6.25; 6.4; 6.3; 6.7; 6.75; 6.8; 6.75; 6.6; 6.55; 6.55; 6.95; Macpherson's Straits, 6.85; 6.7.

No one who compares these figures can fail to perceive that the Nicobar bird, as a race, is persistently larger than the Andaman bird. The largest Andaman male has the wing only 7.2, and this is *very greatly* above the average, while the smallest Nicobar male has the wing 7.3, and this is considerably below the average. Only one Nicobar female has the wing at all below 7, and not one Andaman female has the wing as much as 7.

There is a similar difference, though less marked, in the size of the bills; 0.93 is about the maximum length of the Andaman bird's bill, measured from nostril to point. While 1.0 is a common dimension for the Nicobar bird, and they run to 1.03.

Dimensions alone would not justify specific separation, but the coloration also in both sexes is different in the birds from the two groups of Islands.

In the Nicobar females, the mandibular stripe is black except just at the end where it becomes greenish. In the Andaman females, the entire stripe is a deep green, becoming paler, and brighter towards the tip. In the males, the difference is even more strongly marked, but is less easy to express in words. The nape and back are much more strongly suffused in the Andaman bird, with a lilac and glaucous tinge. And the breasts again in the Nicobar birds are a yellowish green, but in the Andaman specimens are suffused with a lighter shade of the back tinge.

In other respects the birds are similar, but any one can separate at a glance the birds of either sex belonging to the two groups of Islands, and it appears to me that they are entitled to specific distinction.

But these two species (or one species as it was considered when Dr. Finsch wrote) form no exception to the general rule, that where our author *possibly* can make a mistake about the distinction of the sexes, he *does* make it.

On the strength of "an old female in the Vienna Museum" (palpably, to us who know the species, an old *male*) "which is

entirely similar to the male, even as regards the coloring of the bill," he tells us "Blyth's description of the female, as distinguishable by the more or less black upper mandible and the want of the greyish green tint on the hind neck and mantle, relates therefore to the young bird."

Unfortunately, for Dr. Finsch, it does nothing of the kind. Apud Finsch, Blyth is always wrong and Finsch is always right, but the real facts as Madame Delacroix used to remark "are so much to the contrary, that they are quite to the reverse." And in every single instance in which in regard to species of this genus, Dr. Finsch has questioned, disputed, or denied the correctness of Jerdon, Blyth, and other Indian ornithologists' statements, it is *he* and not *they* who have erred.

This, let it be clearly remembered, is not a matter of opinion, we who have carefully sexed with our own hands, not single specimens, but scores of most of these birds *must* know; in one, two, or even possibly three cases, a man might be mistaken, but *not* where he deals with dozens, and *à fortiori* not where his results are confirmed by those of several others working independently, and we positively affirm, that in both the Nicobar and Andaman races (or species) even the oldest females are distinguished by the more or less black upper mandible and the want of the glaucous, or greyish lilac tint on the hind neck and mantle, and moreover by the red cheek patch being smaller and duller in colour, and lastly, by the mandibular stripe being entirely green, as in the Andaman bird, or at least having its terminal one-fourth greenish as in the Nicobar bird.

Thank goodness, we have now only *caniceps* left to speak of; one grows weary of exposing these perpetual and perverse blunders. As usual, we are told, "the old females are colored like the males, and have like these, red upper mandibles." As usual we find, "according to Blyth and Dr. Cantor, the black-billed specimens are females. I can however only accept them as young birds, and I am convinced that in adult plumage both sexes are similarly colored. This was thoroughly established by the researches of the Novara Expedition, for a female killed in Kondul, the sex of which was ascertained by dissection exhibits an upper mandible just as red as the males," and allow me to inform our author, *was* unquestionably a male, and had been, dissection or no dissection, *wrongly* sexed!

We shot and sexed 25 adults of this species, (besides the young ones that we got from natives) and we *know* beyond the possibility of a doubt, that Dr. Cantor and Blyth were perfectly correct, and that Dr. Finsch has been too hasty in his conclusions.

These are a few of the facts which I have to record from personal observation in regard to the genus *Palæornis*, in refutation of Dr. Finsch's *theories* and in corroboration of the *facts* stated by Jerdon, Blyth, Hodgson, Hutton, and other Indian ornithologists.

It must not however be supposed that I delude myself with any vain hopes, that any thing *I* can say will influence our author's views, which he had, as he himself admits, already virtually formed before he investigated the subject. The ornithologist so perfect in his own eyes as to be able to set aside contemptuously, on the strength of foregone conclusions, the testimony of "masters" like those above-mentioned, will scarcely heed any thing that their humble disciples may urge. In vain may we press upon him the simplest facts, such as the difference in the sexes of *P. torquatus*, known not only to every European in India, who has the slightest taste for ornithology, but to millions of native children; he is not one to be taught from the lips of babes and sucklings, and to all we can say, like *Le médecin malgré lui* he will, doubtless, answer with a smile of calm superiority "*nous avons changé tout cela !*"

It is not however for Dr. Finsch that I write. Truth must be vindicated, and authors, no matter how great their industry or erudition, must not be allowed to impede, unchallenged, the progress of science by foisting on the public *theories* evolved out of their own moral consciousness in the seclusion of their cabinets, in place of the *facts* that nature herself sets before us.

Moreover, these remarks have indirectly a wider application than to the genus *Palæornis*, or to Dr. Finsch.

After all, it is but a small matter in itself whether the adults of both sexes in certain species of paroquets are or are not precisely similar. No man ever did any real good work in any branch of natural history, without falling into numberless errors as grave or graver than those which I have pointed out in Dr. Finsch's work. It is not these errors at which I carp, it is against the spirit which led him into them (a spirit which in various forms, seems to threaten seriously the advancement of knowledge) that I emphatically raise my voice.

In all branches of Natural History (and I have been an earnest, though humble student of many), but specially in ornithology, I notice a tendency on the part of the compilers of other men's observations, to exalt themselves above the observers, to forget that, however useful their labours, they themselves are for the most part mere book-makers and not naturalists in the true sense of the word. They lose sight of the fact that the compiler of a jest book is by no means necessarily a wit, and rich

in borrowed, and too often, misplaced, and ill-dressed plumes, treat with an affectation of superiority, which to all thinking men is as sad as it is ungrateful, the opinions and the labours of the men who alone constitute their *raison d'être*.

I most freely admit the utility of both classes of workers ; the cabinet naturalist is to the field observer (the *real* naturalist as I hold) what the head of the gun factory is to the general. But *ne sutor*, &c. Let the cabinet naturalist stick to his synonymes, his formal schemes of classification, and his main work of compiling, comparing, and cautiously generalizing from the observations of the field* workers ; but let him avoid the presumption of disputing and denying the facts stated by admittedly trustworthy members of this latter class, because they happen to run counter to his own theories.

As *they exalt themselves*, so also do too many cabinet naturalists unduly exalt (and as they are the chief *writers* and *talkers*, half persuade the world to exalt), the work they seem so specially to delight in, the rectification of synonymy. They seem to lose sight of the fact, that the only object of a name is to enable men to communicate to each other their observations in regard to particular genera and species, without wasting time in re-defining or describing these each time they have to mention them. It is quite right and very desirable to adopt one uniform system of nomenclature and so smooth the path for neophytes, but correct synonymy is not the end and aim of Natural History ; it is only a *small* adjunct for facilitating our progress in the study of this, and if we could only ensure that our fellow students should make no mistake as to the species of which we wrote, it would not signify one iota, so far as our *real* objects are concerned, what names we used.

After all, names are at best to the naturalist only what the cross-threads of the copying frame are to the engraver. Valueless in themselves, useful in so far as they serve as fixed points of departure for his work and facilitate the transcription to his pages of some faithful, though colourless, copy of the great picture.

No real artist will waste his time in microscopic investigations into the texture of the threads, when he can be studying the picture, and no real naturalist will waste much thought over synonymy or nomenclature when he can be studying nature. The naturalist's real work is to collect and record, to verify and combine *facts*, in regard to the beings represented by that nomenclature, in such wise as to throw some fresh light on the general

* At the risk of being charged with partiality for a fellow countryman, I would point to Mr. Sharpe's Monograph of the King-fishers, as a model of what a Cabinet Naturalist's work should be.

design of the great Master's work, or at any rate to furnish reliable materials to enable others to do this hereafter.

Few and far between are those to whom the time and talents are vouchsafed, to do more than collect a few sets of facts, which some more favoured brother, some Darwin of the next generation, may combine together with the work of many others like ourselves, into some harmonious whole.

But, if we cannot be architects, at least let us honestly make our tale of bricks—let us observe and record facts and not waste much time or thought over inessentials. Viewing the Naturalist's work in its true light, how futile appears all the discussion about synonymes, the fuss about purely classical names, and the like? What does it signify whether A or B first described the species? Pray Dr. Finsch how can it advance our real objects one atom, to call a bird that every one recognizes as "columboides" by your *truly* classical name "peristerodes?"

In conclusion, if I have criticised what appear to me to be Dr. Finsch's foibles without much ceremony, in plain out-spoken language, it must not be fancied that in so doing I am animated by any personal feeling. On the contrary our relations have always been most friendly, and I for one look forward confidently to his doing greater and better things for the cause we ought all to have at heart than he has yet attempted, or perhaps, even thought of, but I should ill fulfil my duty as editor of the sole Indian Ornithological Journal, if I did not rebuke, *sans façons*, his slighting treatment of the men to whom every Indian ornithologist owes so much, and if while appreciating and cordially acknowledging the zeal and industry which he brings to the work I did not protest, so far as in me lies, against systematic defects, which threaten to impair so materially the scientific value of that work.

A. O. HUME.



Contributions to the Ornithology of India.

The Islands of the Bay of Bengal.

I.—*Physical Aspects.*

IN pursuance of the general scheme which I had sketched out some years ago, for working out gradually the ornithology of the outlying, and comparatively imperfectly explored, provinces and dependencies of the Indian Empire, the Andamans, Nicobars, and other islands of the Bay of Bengal, came last cold season under review.

Through the liberality of the British India Steam Navigation Company, a fine steamer, the *Scotia*, was placed at my disposal on very favorable terms for a month's cruise amongst these islands; several extra boats and boats' crews were added to the vessel's usual complement, and every possible arrangement, in the way of stores, ice, and the like, made for the comfort of our party.

Anxious to make the most of an opportunity, such as had never occurred before (indeed we visited islands on which no European had ever previously landed), and which might not again occur for many years, I asked Dr. Stoliczka and Mr. Ball of the Geological Survey, and Mr. Wood-Mason of the Indian Museum, to accompany me, and with these and some others (including the officers of the ship) who, though not naturalists or ornithologists, were perfectly ready to shoot everything they saw, and collect everything they came across from a sea-slug to an Andamanese skull, we constituted, supported by a pretty strong staff of taxidermists, a very tolerably efficient exploring party. We were able usually, to turn out eight guns daily, whenever we touched land, which, by steaming at night and laying to at different islands during the day, we managed to do on about 20 out of the 30 days we were away.

Before giving any account of the details of our trip, it would be perhaps simplest, and will save repetition, to give a short sketch of the general physical characters of the islands.

It must be understood that in "the islands of the Bay of Bengal," I only include Prepara, the Cocos, the Andamans, the Nicobars, Barren Island, and Narcondam. I do not include the islands of the Mergui Archipelago, which I consider may be treated as an integral part of the Tenasserim Provinces, which we are now working, and in regard to which I shall hope to have something to say next year.

The accompanying sketch map will show, sufficiently clearly for our purposes, the position of these islands. It will be seen that, neglecting Narcondam and Barren Island, the whole of the rest of the islands constitute a broad, irregular, curved chain (many of the links of which, however, are broken and missing) connecting Cape Negrais, the south-western point of Pegu, with Acheen Head, the north-westerly point of Sumatra.

Close to Cape Negrais terminate the Arrakan Hills, part of a series of ranges which run down from the Eastern Himalayas dividing Assam, Cachar, Chittagong, and Arakan from Independent Burmah and Pegu.

Just south of Acheen Head we have the Golden Mountain and other hills, and looking at the map it seems difficult to avoid the conclusion that the whole of the chain of islands above referred to, is nothing but a continuation southwards of these Arakan Hills, of which, owing to a general subsidence of the tract of country they traverse, only the more elevated portions now remain above the sea level.

It cannot, however, I fear, be asserted, that this very simple and obvious explanation of the origin of these islands derives *primâ facie* much support from a consideration of their fauna; and if they ever were in uninterrupted connection with the Arakan Hills, it must, apparently, have been at an immensely distant period, since not only are almost all the most characteristic species of the Arakan Hills, as we now find them, absent from these islands, but these latter exhibit a great number of distinct and peculiar forms, constituting where the ornis is concerned, if we except the cosmopolite waders and swimmers, considerably more than one-third of the whole number known.

As for Narcondam and Barren Island these lie altogether outside of the main chain. Both are entirely volcanic, and the latter a still smoking volcano, and it is curious that in the valley of the Irawaddy, hot springs and other evidences of volcanic action occur in the same relative position to the Arakan Hills that these two islands occupy in respect to the Andamans. There seems little doubt that both these islands belong to the same great line of volcanic disturbance that

extends right through Sumatra, Java, and the rest of that chain of islands, to New Guinea.

The relative positions and dimensions of the several islands may be gathered from the sketch map already referred to, but it may be useful to note, once for all, the lengths of some of the more important breaks, and links, in the chain.

These islands have never yet been very accurately surveyed; in fact the chief materials for the chart of the Nicobars are derived from the very partial surveys executed by the Novara Expedition, but the distances below noted are approximately correct. From Cape Negrals to Preparis, 85 miles; Preparis to Great Cocos, 50 miles; Great Cocos to the northernmost point of the Great Andaman, 45 miles; total length of the Great Andamans, 135 miles: Macpherson's Straits divide the latter from Rutland Island, which is about 10 miles in length, and distant about 35 miles southwards lies the Little Andaman itself some 27 miles in length. Then comes a blank of 80 miles before we reach Car Nicobar, the northernmost of this group. Tillangchong and Teressa, which are about 40 miles apart, are each distant some 60 miles from Car Nicobar; and from this latter, Camorta Harbour, which lies in the middle of the four central islands, Nancowry, Camorta, Katchall, and Trinkut, is distant about 90 miles. From Katchall to the Little Nicobar is about 35 miles; the Little and Great Nicobar together are some 50 miles in length, and between 60 and 70 miles south-east of the latter we come to Pulo Way, one of the small islands lying off Acheen Head.

In regard to the climate and meteorology of these islands, I prefer, instead of recording any crude notions of my own, to quote a brief note kindly prepared for me by Mr. H. F. Blanford, our first Indian authority on such subjects.

"The temperature of the Andamans, as might be expected in the case of tropical islands, is very uniform; the coolest month (January) has a mean temperature of 78.9° ; the warmest month (April) one of 83.9° , a difference of only 4° . The highest and lowest temperatures recorded during the six years 1868-73 were 96° and 67° , respectively, and the absolute range during the period has, therefore, not exceeded 29° . In most months of the year the average daily range is from 8° to 10° . From February to April it is somewhat higher, and in March, in some years, it is as much as 14° .

"The mean humidity of the air is about the same as that of stations on the Arakan coast of the Bay, and in the day time averages between 62 and 88 per cent. of saturation. March and

April are the driest months, and the highest humidity coincides with the time of the south-west monsoon. The rainfall of Port Blair amounts to 117·8 inches on the average of six years. The monsoon rains set in, in the early part of May, occasionally even in April, and last till the beginning of November. Heavy showers are not infrequent in February, but March is always a dry month, and January somewhat less so. While, therefore, the total rainfall is only about half of that on the coast of Arrakan, the monsoon rains begin somewhat earlier and end later at the Andamans. On an average, rain falls on about 180 days in the year.

“On the Andamans, the annual variation of barometric pressure, as compared with the mainland, is but small. At 61 feet above sea level the mean pressure is 29·853 inches in December, and 29·718 inches in June. The mean annual oscillation on the averages of the months is, therefore, about 0·14, while in Madras it amounts to 0·29 and at Akyab to 0·31 between January and June.

“The Andamans are situated full in the course of the monsoon currents of the Bay of Bengal. The change from the south-west to the north-east monsoon takes place in October, in which month the winds are, as a rule, more or less conflicting and sometimes from S. E. But by the beginning of November the N. E wind blows pretty steadily, and generally continues from that quarter up to the end of April. In May the south-west monsoon sets in accompanied by heavy rain, and prevails without intermission up to the end of September.

“At the change of the monsoons, stormy weather is common at the Andamans, as elsewhere in the bay; and many of the most severe cyclones, that visit the Indian and Burmese coasts, originate in the neighbourhood of these islands and the Nicobars. But although thus situated near the cradle of these storms, the records of the last few years do not show that they have actually been traversed by any one of them. Those that are formed to the westward travel to the west or north-west, while those that are formed in the Andaman sea appear generally to travel northward.

“Judging from the evidence of a meteorological register kept at Nancowry in the Nicobar Islands during the south-west monsoon of the past year, and also from the general similarity of geographical conditions, that group would appear to enjoy a climate differing but little from that of the Andamans. During the period in question, the average temperature was from 1° to 3° lower in the Nicobars, (except in the month of July) while the humi-

dity was somewhat higher. But the rainfall amounted to only 70 inches against 99 at the Andamans. The register for so short a period is of course a very imperfect criterion of the average climate, more especially in respect of rainfall."

As regards their flora and its relation to that of circumjacent sub-provinces, Mr. S. Kurz, the only eminent botanist who has made it, as well as the floras of Burmah, Tenasserim, Malayana, and Hindostan a special study, furnishes me with the following remarks :—

"ANDAMANS.—The geographical position of the Andamans, and more especially the tertiary sandstone, of which a large area of these islands consists, point to a former connection with Arakan on the one side, and on the other with the Nias Archipelago on the west coast of Sumatra.

"In accordance with these indications we find the bulk of the Andamanese flora to be Burmese, while not a few purely Malayan species find their northern limits in the Andamans. Among these Malayan forms may be mentioned *Dracontomelum*, *Trina*, *Peltophorum*, *Ternstroemia Penangiana*, *Cycas Rhumphii*, *Lindsaea davalloides*, *Ptychosperma Kuhlii*, *Ryparia*, &c.

"Several of these extend also to Tenasserim, a province which must be considered as having a similar extension of the Malay flora.

"The flora of the Andamans is not related to that of Hindostan and India Proper—a circumstance which can partly be explained by the insular climate and difference in soil. *Dalbergia emarginata*, Roxb. which has been identified with *D. latifolia* (the blackwood of the west coast) occurs in the Andamans according to Roxburgh, and if so, it is the only example of a purely Indian tree found in the island.

"Some stray and most unexpected Ceylon plants are found in the Andamans, such as *Mimusops elengi*, *Freycinetia radicans*, *Pandanophyllum zeylanicum*, and a few others, while the prevalence in the forests of the Cingalese *Dipterocarpus insignis* is still more remarkable, because the fruits of this tree, although winged, are not at all adapted for transport to remote localities, being of a very perishable nature and of low vitality.

"However it remains to be discovered whether these Ceylonese species may not also occur in Sumatra, and if they do occur there, it is possible that they may have spread from thence to Ceylon itself, for the flora of the south-east part of the latter island indicates an affinity with that of Sumatra, so far as that of this latter island is known.

"The sea coast flora of all India and of the Archipelago is so uniform that a description of the vegetation of the Gange-

tic Sunderbuns answers very well for any Malayan shore and also for the Andamans. The only coast plants in these islands which are not Indian are Malayan in character, such as *Carapa moluccensis*, *Licuala paludosa*, and *Hydriophytum formicarum*. The little palm *Phoenix paludosa*, which is common to Burmah and Bengal, occurs also in the Andamans.

"NICOBARS.—The flora of these islands is very imperfectly known, and only fragmentary notices of it exist. Chief among these are some remarks by Diedrichsen in the Journal of Botany, Vol. II, p. 1, *et seq.*, and stray notes by members of the Austrian Novara Expedition in certain German periodicals. These, however, are superficial in character. The plants brought by our own garden collectors, whom you took with you from these islands, are scanty, and consist chiefly of coast species, most of which are found also in the Andamans. They afford quite insufficient data for forming any idea of the flora. It is highly probable that it will be found to resemble that of Sumatra."

From Mr. Kurz also I quote the following interesting sketch of the geology of South Andaman and Rutland Island. Mr. Kurz is, I believe, almost the only European who has had an opportunity of exploring the interior of these islands; and what renders these remarks of his still more valuable is, that, so far as may be judged at present, most of his remarks, in regard to the physical geography and geology of the Southern Andaman, are equally applicable to the middle and northern one:—

"The whole of South Andaman and Rutland is a hilly country traversed by narrow and steep ridges of no great height, and encircled by a complete barrier-reef, on which a line of breakers is foaming during the rise of the tide.

"These dangerous reefs are formed chiefly of *Caryophyllia*, *Madrepora*, *Porites*, *Meandria*, and other reef-forming corals. Between high and low water-mark there exists in some places a swampy mass formed by a large number of yellow and flesh-colored carious sponges, covering the coral reefs, and exhaling a disagreeable smell in the neighbourhood.

"The principal ranges all run from south by west to north by east, thus somewhat in the direction of the lines of out-crop of the different strata. They are most developed along the eastern, coasts, where they attain sometimes a height of 1,200 to 1,300 feet, sending out numerous spurs towards the sea. Ford Peak on Rutland Island may perhaps exceed 2,000 feet in elevation, and the Saddle Mountain in North Andaman is rather more than 3,000 feet high. Towards the western coasts they gradually become lower; and nowhere on that coast are higher ridges observed than

from 200 to 300 feet elevation, bounding usually fertile valleys of comparatively large size. Some isolated hills, however, may be seen further inland, which I estimate to be between 500 and 600 feet high.

"The whole surface appears to be intersected everywhere by numerous steep ravines, which open out in all directions, and cause great difficulty in penetrating to the interior parts of the islands, which, I suppose, lies in general at a very low level.

"The hills and ridges slope very precipitously along the sides towards the sea, commonly at an angle of about 43° to 45° , and often far more. On their sides, towards the interior, this angle is generally reduced to 20° or 25° , but exceptions can be seen everywhere.

"The geological formations of the whole of South Andaman and Labyrinth Archipelago, as well as of the southern parts of Middle Andaman, is, as Mr. W. Blandford, of the Geological Survey, informed me, quite indentical with those of the Arakan coast.

"A broad strip of an indurated chloritic rock, probably some kind of green stone or trap, pervades the interior from Mangrove Bay and Watering Cove northwards in the direction of the higher ranges of the eastern coast, and reaches the eastern sea shores at Middle Andaman. The same rocks appear also on Termoklee Island (one of the Labyrinth Islands), where they come in contact with coarsely stratified serpentine rock. This indurated rock appears to be rather felspathic, it is of a greenish color, scarcely stratified, but intersected by veins of quartz and calcareous spar. Small cavities occasionally occur in the rock, exhibiting on the interior of the walls a large number of quartz crystals, and other minerals. It is remarkable that, so far as my observations allow me to judge, this green rock seems to occupy the greater part of the level lands, but it does not form ridges or hills of any height worthy to be noted; but we know, in fact, nothing about the formation of the hills in the interior parts.

"The next rock, which covers a great area of South Andaman, is a grey sandstone, dipping to south by east with an angle of from 43° to 45° or thereabouts. This sandstone is throughout of a very fine grain, showing a large proportion of silica, and occasionally being rather micaceous. The strata exhibit usually a distinct cubic structure. The rock itself decomposes easily, and forms in general a good clay soil.

"Along the western coast at Port Mouat this rock is excavated and variously worked out by the sea, exhibiting there many fantastically formed rocks, resembling in appearance the limestone rocks on the Mingan Islands.

"Often, as for instance very finely on Bird Island near Viper, this sandstone is interlaid with thin layers, colored rusty by oxide of iron.

"Serpentine rocks are found chiefly to the south of Corbyn's Cove in a south-western direction, and including nearly the whole eastern part of Rutland Island (but also occurring on Termoklee Island). This formation is easily traceable all along the coast by the reddish color of the rocks, or by the brick-colored soil, which originates from its decomposition. The strike and dip are in general the same as that of the grey sandstone.

"At Bird-nest Cape, where these rocks attain a height of 70 feet or more, a cubic structure, similar to that of the common grey sandstone, can be observed.

"The unaltered rock is mostly of deep green color, as impure serpentine rocks usually are. The stratified portion of the rock, however, which is much more decomposed, exhibits chiefly a reddish brown color, and is very ferruginous in some places. It would be, perhaps, worth smelting, but I saw no limestone at hand.

"At Macpherson's Straits a dark-green variety of serpentine rock with diallage is seen, not only in isolated rocks in the sea, but also on the low ridge of the coast.

"Conglomerates, formed of coarse pebbles of quartz, chloritic serpentine and sandstone, have been observed in large quantities at Muddy Creek, at Shoal Bay, and on Termoklee Island. They occur principally in the sea."

In regard to the Nicobars I shall, in preference to saying anything myself, reproduce portions of what Dr. Hochsetter has recorded in regard to their Geology and Physical Geography in the *Reise Novara*, as translated by Dr. Stoliczka.

"CAR NICOBAR is a low island, the average height of which, above the level of the sea, amounts to about 45 feet; only two ridges, which may be from 180 to 200 feet high, rise in the interior above the forest, which covers nearly the whole island. The west, south, and east, coasts are flat and sandy, and the north-west and south-east monsoons accumulate gradually higher and higher upon them fragments of corals and shells, which pass over the fringing reefs surrounding the whole island. The south coast is in part swampy, only the northern, or rather the north-western, coast, forming the shore of the bay of Sauí, is precipitous, allowing a view of the geological structure of the island; the section of this coast is loose coral and shell-sand; dead coral banks; indurated rock-beds of dead corals and shell-sand; plastic-clay with bands of sandstone.

"The eastern shore of the bay gradually rises from north to south up to a height of about 60 feet, and includes two small lateral bays in which massive banks of a grey clay crop out below upheaved coral banks which form the projecting corners of the cliff. It is very characteristic that the boundary of calcareous and clay strata on the surface of the coast terrace is at the same time a sharp limit of vegetation, inasmuch as on the clayey ground the *cocoa-palm* is replaced by *Pandanus*, *Casuarina*, and grass, forming locally quite extensive grassy plains. The clay deposits, without

any distinct stratification, show a cubical cleavage. The prevailing color is light-grey, only single bands are darker colored, others are ferruginous, containing numerous clay-ironstone nodules. The clay is a little calcareous effervescing with acids. In the southern lateral bay also appears between the clay beds a more solid stratum from two to three feet thick, and from its projecting part larger and smaller plates are broken off. On one of these plates I observed the impression of a large species of *Fucus* (*Chondrites Nicobarensis*, Hochst.) The strike of the strata is from S. S. E. to N. W. in both bays; the greatest thickness observable in the strata amounts to 20 or 30 feet. This clay deposit, on the northern coast of Car Nicobar, is characterized as a marine formation by the numerous *Foraminifera* which it contains, but I did not succeed in finding any recognizable remains of *Mollusca*, except indistinct and badly preserved bivalves (*Pelecypoda*).

"Farther towards the south, the clay beds again sink under the level of the sea, and in their place again appear coral banks, the precipitous coast becoming constantly higher, but at the same time gradually more inaccessible. On this coast the sea has washed out deep hollows, and the coral banks are overlaid by massive banks of a white rock consisting of shell and coral sand, and rather soft on the weathered surface. On the Areca river, in the innermost corner of the bay of Sauí, the plateau of about 60 feet rapidly terminates with a fault, and the southern shore of the bay only exhibits a flat sandy strand richly overgrown with cocoanut trees, being at the same time thickly populated. Judging from a few lumps in the gravel, which I found on the northern as well as on the southern side, I conclude that there is somewhere in the interior of the island a grey fine-grained sandstone with little flakes of white mica, and also compact limestone *in situ*. The natives used the sandstone from the gravels for grindstones.

"BATTY MALVE is a small rocky island with precipitous shores all round. It rises on the south-eastern and eastern side in two terraces to about 150 feet. On the western and north-western side it runs into a low flat cliff; judging from a distance of two or three nautical miles—we did not come nearer—the island is inaccessible. The extreme shore seemed to be covered with grass only; the interior was a low jungle, the crown of a cocoa-palm being here and there visible at its margin. Only opposite Car Nicobar can the island give an impression of a "relatively bare rock," as Steen Bille says. The rocks to be found on the island are most probably the same as those of Car Nicobar.

"TILLANGCHONG.—Situated opposite Car Nicobar is a narrow mountainous island with precipitous cliffs, stretching from N. W. towards S. E.; it consists of two rugged mountain ranges, separated by a depression of only 30 feet in depth. Where, on the S. E. both ranges meet, a deep bay is formed, which, during the north-west monsoon, offers an excellent place for anchorage.

The less precipitous south-western coast is accompanied by a few rocky cliffs, while the north-eastern coast is highly precipitous all along the shore. The highest hills are situated in the northern part of the island, apparently rising to an elevation of about 500 feet. Serpentine and gabbro form no doubt the great mass of the island.

"In the small bay on the south-western coast, Novara Bay, in which the frigate was lying at anchor for a few hours, the irregular and cliff-like shores are composed of common serpentine, often traversed with veins of hornstone, and the same is the case with the thickly wooded mountain slopes, as far as could be observed in the small rocky beds of streams. The shore exhibited a very great variety in the color of the serpentine, jasper and hornstone pebble; besides these, however, there were noticed numerous pebbles of a dark green diallage rock, which must no doubt be *in situ* somewhere on the same coast at no great distance.

"From the angular fragments of serpentine and other masses in the course of decomposition, a ferruginous breccia is formed at the foot of the hills, while in the breakers the serpentine gravels are being cemented by coral and shelly sand forming solid sandstone and conglomerate banks which recall the Verde-antique, (Ophicalcite). The plateau of the coast reefs extends 200 to 300 feet from the precipitous shore into the sea. The whole of the island was covered with thick primeval forest which thrives well, even on the serpentine ground.

"In passing along there were observed, on the southern part of the island and on the eastern coast, thin bedded rocks with a high dip; these were in massive cliffs almost perpendicular in the south-eastern bay with a columnar structure; their true nature remained, however, unknown to me, for I was unfortunately obliged to use the telescope in place of the geological hammer.

"CAMORTA, TRINKUT, NANCOWRY with KATCHALL form the middle group of the Nicobar Islands. Trinkut is situated in front of the eastern entrance of a channel between Camorta and Nancowry; it is a low island surrounded by coral reefs, and on its southern coast whitish-yellow argillaceous marls crop out. *Camorta* and *Nancowry* exhibit a greater variety of formation, gabbro and serpentine; breccia and tufa; clay marl with sandy beds; coral rocks. The channel between the two islands, Nancowry harbour, has numerous small bays and corresponds with a transverse cleft, while the Trinkut channel is a longitudinal cleft. The precipitous shores of the former offer, therefore, the most instructive geological section.

"The narrow western entrance to the Nancowry channel is marked by two projecting rocks, which have been washed out by the force of the waves, making thus a natural gateway of rocks. Both cliffs rising almost perpendicularly to about 80 feet, are formed of a coarse breccia, composed of angular fragments of serpentine and gabbro firmly cemented. I could not observe any stratification in

this rock on the Camorta side; it is here in cliffs with large quadrangular blocks. On the Nancowry side, however, coarser bands alternate with finer tufa-like ones, with a strike from S. S. E. to N. N. W., and dipping about 85 degrees towards the west. On the Camorta side, there crop out at two places below heaps or masses of rocks, which Rink very properly regarded as friction-breccias, cliffs of a more or less serpentine or gabbro-like massive rock.

"Among the pebbles on the strand, I also met with numerous fragments of a reddish-brown rock, traversed by white calcite veins, the rock which Rink called eurite.

"These phenomena, at the western entrance to Nancowry harbour, are thus perfectly identical with those which Rink has observed at the entrance of the Ulala Bay, situated only a few miles to the north. Further to the north the mostly bare hills on the west coast of Camorta, recalling by their external shape conical volcanic forms, attain a height of from 400 to 500 feet; they no doubt indicate the further extension of the serpentine and gabbro rocks, which on Camorta and Nancowry are traversed from S. S. E. to N. N. W. by a longitudinal cleft.

"In the interior of Nancowry harbour, wherever the rocks are exposed on the projecting angles, they appear to be well-bedded, whitish-yellow, clayey marls, alternating with banks of a fine-grained sandstone, with serpentine and gabbro tufas.

"Most instructive in this respect is the precipitous south-eastern corner of Camorta, at which the coast line bends into the Trinkut channel. The argillaceous marl formation is here well exposed in cliffs of from 30 to 80 feet high. On the southern side of the corner the transverse section of the strata can be observed, dipping at 25° to 30° towards the west, while on the eastern side, parallel to the longitudinal break, the beds crop out horizontally one above the other. The argillaceous marl does not contain fossils, is of a yellowish white color, and on the perpendicular walls it was covered with inch-long, white, very thin, crystals of a silky lustre. The examination of these showed them to be sulphate of magnesia. The clay itself contains, according to Rink's analysis, besides silicate of alumina, iron-oxide and magnesia.

"The whitish-yellow clay marls of Camorta and Nancowry being entirely free from lime have become famous since Professor Ehrenberg (Berl. Akad. Monatsberichte, 1850, p. 476), by an examination of the samples brought by Dr. Rink, has shown that they are true *Polycistina*-marls, like those of the Barbadoes. Ehrenberg discovered in 1848 about 300 species, which were by Professor Forbes believed to belong to miocene (tertiary) deposits. Ehrenberg says:—'Especially well developed is this material on Camorta, where, near Frederick's haven, a hill 300 feet high is covered all over with variegated *Polycistina*-clay, while the Mongkata hills, on the eastern side of the island, are, according to Rink, entirely composed of a whitish-clay resembling meerschäum; this

is, according to my analysis, a nearly pure agglomerate of beautiful *Polycistina* and their fragments, beside numerous *Spongiolites*. The species of *Polycistina* on the Nicobars are, according to Ehrenberg, the same which compose the similar marl on the Barbadoes, situated in nearly the same latitude; but there are also some new forms.

"Near the level of the sea the clay marls, which locally contain angular fragments of serpentine and gabbro, alternate with more solid strata of psephitic rock, which is composed of strongly-cemented angular fragments of serpentine and gabbro, and can therefore be best designated as gabbro-tufa. It is remarkable that this rock again includes larger and smaller pieces of the clay marl. On the eastern coast, near the village Inaka (Enaca), a reddish micaceous sandstone appears between the clay marls.

"Similar are the geological conditions on the northern coast of Nancowry. Between the villages Inúang and Malacca, the whitish-yellow clay marls crop out in slightly inclined strata; between Malacca and Injáong, however, lies a precipitous cliff, on which these strata rise almost perpendicularly, and are gradually replaced by an accumulation of fragments of serpentine and gabbro. At the projecting corner itself, the traveller faces a precipitous cliff of about 60 feet in height, but being cracked and decomposed, the true nature of the rock is recognised with difficulty. On a fresh fracture, however, one soon observes a massive diallage rock, the laminar diallage being clearly traceable in the nearly solid mass of felspar. Narrow veins of quartz pass through the rock.

"From here up to the village Injáong the strand is again flatter, and nowhere nearer than on the other side of the village, high, dark-colored, rocks are a second time visible, indicating a massive rock. These are the two places which Rink also has marked on his maps as plutonic rocks.

"TREIS AND TRACK.—On the north-western point of the small island of Treis, highly upheaved banks of a fine-grained argillaceous sandstone of a greenish-grey color form a low precipitous shore. The same stratified rock alternates with thin-bedded sandy slates on the south-eastern coast of the small island Track. Besides a fault, the strata form a saddle and strike from S. S. E. to N. N. W. In a sandstone bank I found here imbedded a rolled fragment of a bituminous coal, the same of which I met with a larger but equally rolled fragment on the strand of the island of Treis. Of coal seams there was, however, no trace to be detected; what might be mistaken for them from a distance was only the shadow of softer sandstone banks, deeply weathered out, or the darker color of some strata.

"PULO MILU, a small island on the northern coast of Little Nicobar, which Dr. Rink has so excellently described in all its peculiarities, consists, in the higher parts, of a grey, fine-grained, micaceous and calcareous sandstone in massive banks. Very often

spheroidal concretions are to be observed showing on the soft weathered surface like cannon balls. No trace of fossils could be found. The massive banks have thin-bedded sandy slates interstratified. The strata strike from S. S. E. to N. N. W., dipping to east at an angle of 45° . Dr. Rink mentions a fossil resin in the sandstone of Milu.

"Pulo Milu was particularly instructive for me, because the dependence of the vegetation on the soil and its geological basis could be perfectly well recognised. The vegetation and the geological formation of the ground stand in the closest relation to each other. The sandstone hills are covered with jungle; the coral (calcareous) ground with high forest trees; the saline calcareous sandy ground is occupied by cocoa-palms, and in the fresh water swamp on the declivity of the hill range which resembles in its curve a horse shoe, thrives the finest forest of *Pandanus* which we have seen on the Nicobar Islands.

"We have not visited the coast of Little Nicobar, the mountains of which rise to an elevation of 1,000 feet above the sea.

"KONDUL,—between Little and Great Nicobar,—consists of a hilly ridge, one and a half nautical miles long and half mile broad; its strata strike N. N. W., and dip at 70° towards east. The western side is the precipitous one. The strata represent an alternation of more or less sandy or clayey beds. The sandstone predominates, it is yellowish-white, with ferruginous reddish-brown particles. The clayey beds partly consist of a greasy plastic clay, partly of a crumbling yellowish clay marl, with intercalated thin-bedded sandy slates. The only organic remains which I found were indistinct traces of *algæ* and small rolled fragments of coal.

"GREAT NICOBAR.—What shall I report of Great Nicobar? With the exception of some sandstone hills on the northern coast, and the sandstone ranges on the eastern side of the Galatea Bay in the south, I have not seen anything. Great Nicobar, with its mountains rising up to 2,000 feet, is geologically quite a *terra incognita*.

"A very remarkable earthquake, which is said to have lasted from the 31st of October to the 5th December 1847, on the Nicobar Islands, at which time also earthquakes occurred in the middle and western part of Java, is described from the *Penang Gazette* in *Junghuhn's Java* (part II, p. 940). On this occasion fire is said to have been seen on one of the mountains of Great Nicobar.

"Can the highest mountain of Great Nicobar be a volcano? Its form is that of a volcano, but as Junghuhn says that one could land on the southern coast of Java, wander about many days among sandstone and slate rocks, without obtaining through any of the phenomena even a trace of the stupendous volcanic nature of Java; in the same way there may be in the interior of Great Nicobar rock-formations hidden, of which one does not get an idea along the coast. However, I do not attach any importance to the rumour that fire has been seen on Great Nicobar, though

the description of the earthquake seems trustworthy, as I had myself occasion to observe on Kondul the mountain-slips referred to in the account.

"These few observations, combined with those of Dr. Rink, give us the following, probably still very imperfect, idea of the geological nature of the Nicobar Islands:—

"Among the various geological formations on the Nicobar Islands, three are the most important:—1—*An eruptive serpentine and gabbro formation*; 2—*Marine deposits, probably of a later tertiary age, consisting of sandstone, slates, clay marls and plastic clay*; 3—*Recent coral reef formations*.

"The serpentine and gabbro formations of the Nicobars is characteristically of an eruptive nature. The tertiary sandstones, slates and clay-marls appear forcibly broken through; their strata are partly inclined, partly bent in flat, parallel, wave-like undulations. These rocks are accompanied by coarser and finer breccias composed of angular fragments of these same rocks, and they can partly be regarded as friction-breccias, partly as sedimentary tufas in which beds of an argillaceous marl are interstratified. The eruption of these plutonic masses appears, therefore, to belong to a time when the formation of the marine deposits was partly completed, partly still in progress. They broke through on lines of fracture of which the principal strike from S. S. E. to N. N. W. agrees with the longitudinal extension of the islands. On the middle islands, the serpentine and gabbro attain their greatest development; on Tillangchong, Teressa, Bompoka, Camorta and Nancowry they form bare hill-ranges of from 2,500 feet elevation, and their configuration often marvellously resembles those of later volcanic formations. The elevatory force has, however, acted most strongly on the southern islands, and has here upheaved sandstones and slates probably to heights of 1,500 to 2,000 feet above the level of the sea; on the low northern islands that force was, on the contrary, weakest.

"The clays and clay-marl formations of the northern islands, Car Nicobar, Teressa, Bompoka, Camorta, Trinkut, Nancowry, and the sandstones and slates of the southern islands, Katchall, Little and Great Nicobar, appear to be only petrographically different products of one and the same period of deposition. There are at the same time very few materials from which the age of the marine formations could be determined, as the only fossil remains which have been found in their strata are fragments of *drift wood* changed to brown coal, plant impressions resembling *Fucoids*, *Foraminifera* and *Polycistinae*. But all these remains indicate more or less distinctly a late tertiary age.

"The same conclusions are derived from a comparison with the geological conditions of those islands which lie on the same line of elevation as the Nicobars; I refer especially to Sumatra and Java.

"I have not the least doubt that the clay-marl and sandstone formation has its perfect analogue among the tertiary deposits

of Java, which I had myself the opportunity of studying and comparing in their distribution and lithological character. These became first known through the late Fr. Junghuhn, whose researches on the physical geography of Java are of such merit.

"According to the reports of the Dutch Mining Engineer, Huguenin, a repetition of the geological formations of the Nicobars appears to be met with in the Tjiletuk Bay (the southern lateral bay of the Wykoop Bay on the southern coast of Java). The prevalent formations here are sandstone-conglomerate and highly developed greenstone-breccias, besides plutonic rocks of the greenstone group. From specimens which I had an opportunity of seeing in the local collection at Beutenzorg, I found that these plutonic rocks are serpentines, gabbros, and aphanites, exactly similar to those of the Nicobars. Equally identical with those occurring on the Nicobar Islands, appear to be the chalk-white clay-marl in the middle portion of Bantan, and the fine white marls in the southern portion of Tjidamar, mentioned by Junghuhn.

"I suspect that to the upper Miocene group of Java correspond the tertiary deposits of the Nicobars, although fossils confirming the suggestion have yet to be discovered. It is also beyond doubt that these deposits are not wanting on Sumatra, in certain respects a connecting link between Java and the Nicobars. Junghuhn (*loc. cit.*, p. 8) justly remarks:—'The tertiary formation appears to have a sub-marine extent over the whole of the Indian Archipelago, because wherever within this Archipelago the earth's surface rises above the level of the sea, this Neptunian formation is observable. I know this for certain as regards Northern Sumatra, where the tertiaries are especially found in the Batta districts (Battaländern). With the exception of the trachytic island Dungus Nasi all the islands in the Bay of Tapanuli (situated exactly in the prolongation of the Nicobars), besides the adjoining low shores of Sumatra, and partially also the mountains near Tuka, are composed of more or less upheaved sandstone strata, containing, though sometimes rarely, tertiary shells.' Thus it appears to be principally on the southern coast of Java and the south-west coast of Sumatra that we find a repetition of the geological conditions of the Nicobars.

"The commencement of the eruptive formation is in Java inaugurated by serpentine, gabbro, massive rocks resembling diorite (greenstone trachytes as in Hungary); more or less typical trachytic rocks follow, and the grand volcanic eruption, extending up to the present time, forms the termination of the enormous eruptive phenomena in the Indian Archipelago. At the same time it appears that the eruptive line has been shifted slowly on Java from S. to N., and on Sumatra from S. W. to N. E., so that this line would strike east as regards the Nicobar group in the same longitude in which east of the Andamans it re-appears on the volcanic Barren Island and Narcondam.

"The third class consists of coral formations, belonging to the most recent or the present period. Coral banks of great thickness are found on Car Nicobar, Bompoka and several other islands; they consist partly of a compact coral limestone, partly of a coral or shell conglomerate upheaved up to 30 and 40 feet above the present level of the sea; on all the islands, the original area is to be observed enlarged by coral-land, which is only separated by the higher sand dunes along the shore, from the still continuing formation of the coral-reefs surrounding all the islands in the character of fringing-reefs. Although these raised coral banks are a decided evidence in favor of the long-continued upheaval of the islands—that in connection with the eruption of the serpentines and gabbros—the formation of the flat coral land elevated only a few feet above the level of the sea can, on the other hand, be explained by the accumulation of coral fragments, of sand and shells by the waves and breakers on the shallow surface of the fringing-reefs.

"Vegetation in its original state always indicates the character of the soil, provided the atmospheric conditions are the same. This is remarkably true in this case of the Nicobars. Neither the difference in the latitude from the most northern to the most southern islands ($2\frac{1}{2}$ degrees), nor the difference of the absolute elevation (the highest hills on Great Nicobar only attain about 2,000 feet above the sea), is large enough to produce on the single island, or parts of them, such a difference in the climatal conditions, that on it alone an altered character of vegetation should depend. Rocks, soil and vegetation are, therefore, on the Nicobars in such a degree related to each other, that the areas marked on a map as indicating various rocks would almost coincide with those indicating the varieties of vegetation.

"The results of these observations may be seen in the following tabular view:—

Geological character of the underlying rock.	Character of soil.	Respective character of vegetation.
1.—Salt and brackish swamp, damp marine alluvium.	Swampy ground not capable of cultivation.	Mangrove-forest.
2.—Coral conglomerate and coral sand, dry marine alluvium.	Fertile calcareous soil; principal constituents, carbonate and phosphate of lime.	Cocoa-palm forest.
3.—Coral conglomerate and coral sand, beside dry fresh-water alluvium.	Fertile calcareous sandy soil.	Large forest trees.
4.—Fresh-water swamp and damp fresh-water alluvium.	Swampy ground, capable of being cultivated.	Pandanus forest.
5.—Plastic clay, magnesian clay, marls, and partially serpentine.	Not fertile, clayey soil, principal constituents, silicate of alumina and silicate of magnesia.	Grassy plains.
6.—Sandstone, slate, gabbro, dry river alluvium.	Loose clayey sandy soil, rich in alkalis and lime, very fertile.	Jungle (the true primeval forest).

"*The Mangrove forest*.—Several deep channels, rich in fishes and navigable by the canoes of the natives, occasionally extend in serpentine turns through these mangrove-swamps. One not uncommonly meets at the end of such channels, in a hidden locality, the villages of the natives, as for instance, on Trinkut the village Janoba.

"The Brackish-water alluvium, the ground of the *Rhizophori* and *Cerithia*, must, therefore, be considered as a soil perfectly unfit for cultivation. It occupies only a small area as compared with that of the islands, but it is nevertheless of a mischievous importance. For it can justly be said that the Nicobars owe their unhealthy climate principally to these brackish-water swamps, as they occasionally extend for miles from the mouths of the rivers into the interior. In these swampy districts, the change of the fresh to salt water causes a decay of the organisms, which can only exist in the former, the reverse takes place in salt water changing to fresh water. The ebb exposes large areas, and decomposition of organic life takes place, filling the air with most poisonous miasmas.

"Dr. Hochstetter says that he especially had an opportunity of studying these marked changes on a grand scale on the northern coast of Great Nicobar (west of the Ganges harbour). On the other hand the coral land appears to be at once fertile, capable of cultivation, and healthy, and the dry marine and fresh-water alluvium, to which on the sea coast belongs the cocoa-palm forest, and further inland extending to the base of the hills, a beautiful forest of various kinds of large trees. This is the ground which the natives of these islands have selected for their abode, finding here all the necessities of life.

"*The cocoa-palm forest* is described by Dr. Hochstetter as the picture of life, and he thinks that if the cocoa-palms had not been there, the islands would have been probably uninhabited up to this time. He further states that, taking the number of the inhabitants of all the islands to be 5,000, there would be about five and a half millions of nuts required for annual use. The annual export of cocoanuts can further be estimated as about ten millions, for Car Nicobar alone exports between two and three millions. This gives fifteen and sixteen millions of cocoanuts to meet the annual demand. On the northern islands the cocoa-palms occupy comparatively a larger area, while on the southern islands, especially on Great Nicobar, they are nearly altogether wanting. The northern islands are, therefore, the most thickly inhabited, and the cocoa-palms are there divided as property, but on the southern islands they appear to be the free, common good of all.

"The Nicobarian not only lives on, but also in, the cocoa-palm forest, having selected for himself not only the most comfortable place for his hut, but being on the dry coral ground, exposed to the current of the wind, also the most healthy situation.

"*The high forest.*—This is chiefly composed of large trees with rich foliage. Several valuable timber trees, and others, useful on account of their fruits, are here mentioned.

"The finest high forest I saw on the southern coast of Car Nicobar.

"*The Pandanus forest*, in which this remarkable tree suppresses all other vegetation, except a few *Areca* and *Rotang*-palms, occurs only on the swampy fresh-water alluvium along the course of rivers and streams, especially near the sea where the rivers form more or less permanent basins. Here it is *Pandanus melleri*, the largest kind of *Pandanus* which forms the forests. I believe that what we saw of the *Pandanus* forest on Pulo Milu was one of the most peculiar pictures of tropical vegetation seen during the whole of our journey.

"The *Pandanus* is not cultivated on the Nicobars; it is most flourishing in a wild state, and is, after the cocoa-palm, the most important plant for the natives as regards food: it is the truly characteristic plant of the Nicobar Islands.

"*Grassy plains.*—If one has succeeded in marching from the flat coral land through the high and *Pandanus* forests, he generally reaches the foot of hills, rising on the larger southern islands, Great and Little Nicobar, to a height of 1,000 to 2,000 feet above the sea, but on the northern islands they are not above 500 to 600 feet. This hilly land certainly occupies $\frac{3}{4}$ to $\frac{1}{4}$ of the whole area. It is composed of rocks of the gabbro and serpentine formation, and of the clayey and sandy tertiary beds formerly noticed. The eruptive rocks are comparatively of small extent. Where felspathic gabbro forms the ground, this, being produced by the decomposition of the rocks, may be said to be fertile; it is covered with thick forest, but even the Serpentine Island Tillangchong has a flourishing primeval forest. On the other hand, a remarkable difference is perceptible in the vegetation of the tertiary ground.

"The hills of the northern islands are to a great extent only covered with grass; those of the southern, however, chiefly with a thick forest vegetation. This distinction rests upon an essential difference in the composition of the ground. The hills of the northern islands consists of a sterile argillaceous soil; those of the southern islands, on the contrary, of a fertile calcareous, sandy-argillaceous soil.

"Where the most favorable tropical climate could produce nothing else but stiff and dryalang-grass (*Imperata*), and rough Cyperaceæ (*Scleria*, *Cyperus*, *Diplacrum*), surely there nature has clearly enough left the stamp of sterility; yet just between such grassy hills, which from a distance look so homely, resembling fields of corn, have the colonists on the Nancowry channel established their houses and gardens. The grass grows now high enough above their burial grounds; the breakers play with the bricks with

which they built the houses, and enclosed their gardens and fields; every path has disappeared. On Car Nicobar I saw these grassy plains partially cut down, because the natives use the grass for thatching their houses; and on Camorta large strips were in flame.

"The grass vegetation, says Rink (*loc. cit.*, p. 136) which to the greatest extent covers these islands is, in the valleys at the base of the hills, very thick and high; it becomes, however, higher up, thinner and shorter. On the places which are sufficiently damp many soft grasses may occur rich in juice; but on the tops of hills, where the dry magnesian claystone locally penetrates through the scanty layers of soil, and is also partly covered with a coarse ferruginous sand, while the showers of rain carry all the finer particles which may be produced by decomposition into the valleys, there, as a rule, only dry and rough siliceous *Gramineæ* and *Cyperaceæ* are to be met with.

"The area which may, therefore, in future be successfully cultivated is that of the southern islands, composed of sandstone and slate, producing a fertile argillaceous sandy soil. On Little and Great Nicobar with the small Islands Pulo Milu and Kondul, the hilly land may be estimated at nearly two-thirds of the total area. These islands are therefore in point of colonization the most important, and a comparison with Ceylon and Pulo Penang shows what could thrive where now impenetrable primeval forest covers the whole surface.

"*Primeval forest*.—This is of great extent, and the coast inhabitants of Great Nicobar tell of the existence of a wild tribe, forest-men, ("jungle-men") with long hair, inhabiting small huts or trees, and living upon honey, roots, and game. But no European eye has yet sighted these forest-people."

II.—*Diary of our Trip.*

It was about 3 P.M. of the 1st of March that we got fairly off. Steaming slowly down the Hooghly, little, as might have been expected, was to be seen in the bird line, except innumerable Kites, mostly *govinda*, as I identify Sykes' Bird, with a few *affinis*, intermingled, but no *major*. This too is exactly the case in the streets of Calcutta, where I have been for some months past closely scrutinizing the myriads of Kites one sees daily, and which are ten times more numerous in our streets than Sparrows are in those of London. Here and there a Brahminy Kite (*H. indus*) in brilliant white and chestnut garb, and with a more aquiline flight, contrasted with the sombre *Milvi*, but beyond these and a pair or two of Crows (*C. impudicus*) and Mynahs (*A. tristis*) perched on the rigging of some of the anchored ships that we passed, not a single bird came in view. At sunset we anchored

at Budge-Budge opposite the Gloucester Mills, interesting as for shadowing the gigantic industrial success, already looming in the future of our Indian Empire.

Masters and men may fight as they please at home, and organize antagonistic combinations, each seeking to wrench from the other an undue share of the joint profits of their labour and capital, but they struggle only to effect the ruin of both, and before, blinded by mutual jealousies, they realize the madness of the contest, India's 200 millions will have learnt to supply their own wants with better and cheaper manufactures than England, divided against itself, can now, it would seem, afford to furnish them.

At daylight we were off again. The same birds as yesterday, but in diminished numbers, hung about us still, and on the low muddy banks a few small white Herons (*E. intermedia*), and several little parties of Curlew-billed Stints (*T. subarquata*) were seen. Occasionally a Tern or two (*G. nilotica* and *S. aurantia*) passed us busy fishing in the early morning, and sailing about slowly backwards and forwards in front of a little muddy creek, or it may have been the mouth of some nullah, I saw a single grey Pelican (*P. philippensis*.)

About 9 A.M. we anchored, there not being water enough to permit of our crossing the shoal known, only too well, to every vessel that ever made Calcutta, as the "James and Mary." Most people believe this name to be derived from some hapless vessel wrecked here long ago, but as a fact the name is merely an example of the tendency that unlettered people have to convert foreign words, which to them have no meaning, into any somewhat similar words in their own language which they can more easily remember.

So buffetier became beef-eater, our "volunteer" *bulum tir* (spear and arrow) of the natives, *molan khali* of the Hooghly appears in the chart as Melancholy, and the native *jor or juma mari*, or the meeting of the rivers, as the dreaded "James and Mary."

This latter shoal has been the scene of innumerable disasters, the latest and one of the most noted being the simultaneous loss, during the Abyssinian War, of the *Ethel* and *Agamemnon*, two of the finest vessels in the port. The *Ethel* had already anchored, the *Agamemnon* was turning to anchor, the flat-bottomed river steamer (all the best sea-going tugs had gone to the war) on which the *Agamemnon* depended to turn, dragged through the water. The *Agamemnon* fouled the *Ethel*, both vessels drifted on to the sand, and in ten minutes were out of sight. This is the frightful, and to me inexplicable though well-

established danger of this shoal, the moment a vessel is on it she is sucked down, and in an incredibly short space of time not even her top-masts are visible.

The tide rose and we, at any rate, passed the fatal shoal comfortably enough. A little lower down we came across a small party of Gulls (*L. ridibundus* and *brunicephalus*) all in winter plumage, except one *ridibundus* which had assumed the deep reddish-brown hood characteristic of the breeding plumage. Near Diamond Harbour a large flight of Golden-plover (*C. fulvus*) passed close over the ship; a pair of Indian Rollers (*C. indica*) came and perched on the rigging, and had a jaunt of at least a dozen miles down the river, free of charge. Lower again, a party of the Little Tern (*S. minuta*) joined us and hung in our wake, in company with a few Kites (strangely unwilling as it seemed to say farewell to us), until we anchored at night-fall a little above Saugor Island.

The delay at the James and Mary was most unfortunate; but for our enforced halt in the morning we should before dark have been out in blue water, and have been speeding the whole night through on our journey, instead of lying idle at anchor in the midst of this wide, dreary, desolate waste of liquid mud, the only accurate description of the Hooghly. We had lost one day, a terrible loss to us, with only exactly one month from port to port at our command, and all the demoniacal legions of the Financial Department eager to dock with fiendish glee our poor salaries if we overstayed our leave an hour.

It was very sad, but the green cloth and two new packs of cards ushered in whist and peace of mind; exhilarating beverages crowned the board; Nicotiana's balmy breath perfumed the chill evening air; and all went merry as a marriage bell. When hark a deep sound breaks in! It was much too loud for the wind, and it certainly could *not* be "the car rattling o'er the stoney street." It was as the roar of mighty waters, growing nearer and nearer--and so it proved to be, in other words the bore coming up the river in unusual force. "I guess it shook the old ship about considerably," as Mr. P., the second officer, remarked next morning, but it soon passed on. The bore never gives much trouble so low down the river, especially at this time of the year. Indeed there was no business to be any bore at all, but things were somehow out of joint (what *can* you expect when the Municipal Commissioners and their Chairman are always quarrelling as they chronically are in Calcutta?), and the very day before we started, the old *Scotia*, under the influence of the bore, had bent in all the

head iron piles of the Commissariat Jetty where she lay. With the bore came the wind, which freshened rapidly, and some of us began to hope for a capful of wind down the bay that Noddies, Boobies and the like might come on board! but our Palæontologist dissented strongly, assumed a recumbent position, and admitted that he was a

“Luxurious Slave

Whose soul would sicken o’er the heaving wave.”

Being all in an amicable frame of mind, we unanimously agreed that we would have fine weather, and nothing but fine weather, and most of us were soon lulled to sleep by the gentle rocking of the ship and the murmurs of our Crustacean, who, though quiet enough by day, woke up into a state of extreme liveliness at night, when the rest of us were beginning to nod.

3rd.—Passing Saugor Island numbers of Gulls followed in our wake; the great majority belonged to the species seen yesterday, but there were also a good many of the Great Black-headed Gull (*L. ichthyæstus*) and a few of the Herring Gull (*L. argentatus*). Of the Dark-backed Herring Gull (*L. occidentalis*, Audubon) so common on the opposite side of the Peninsular, *e. g.*, at Kurrachee, (STRAY FEATHERS, 1873, p. 273.) I did not see a single specimen.

Just after we parted with the pilot a large Sea Tern appeared at our wake, and as it was important to know the species, I shot it and dropped a Herring Gull with the second barrel. We pulled up and lowered a boat, a good deal of sea was on, and in jumping down from the rope ladder to the boat, I unfortunately sprained my back,* a bad beginning for a hard cruise. The Tern proved to be the Large Dark-backed Sea Tern *S. bergii*, Licht. (*vide* STRAY FEATHERS, 1873, p. 283.)

By 5 P.M. we were well out into blue water, and had parted company with all Gulls, Terns and bird life generally.

4th.—Out at sea—a perfect calm—a few flying fish scudding about, but, there being no wind, scarcely rising above the surface.

About noon we passed a water-logged cocoanut stem, on which was perched a single dusky little Petrel, and later we came across a mass of drift and floating debris, about which a number of these same Petrels were hovering; we tried but failed to get a shot at these. It is a curious fact that during all these years

* I am sorry to say this greatly crippled me throughout, so that often I had to crawl along or lie on the beach, or be rowed along reefs, when the others were working through dense jungle.

I have never succeeded in obtaining or even having a chance of examining a specimen of the small dark Petrel so common about the upper portion of the Bay of Bengal. Towards evening a pair of Boobies (*S. fiber*) crossed our bows, hunting flying fish, and we saw several small parties of medium-sized Blue Petrels (*Prion*, sp.?) which also proved too much for us. Indeed where sea birds are few and far between it is very difficult to procure specimens in the open sea; you can't get near them in the steamer; you can't keep a boat towing alongside indefinitely, and long before you can stop and lower a boat they are beyond all chance of pursuit.

5th.—At sea. The brightest look-out kept the whole day, but not a single bird was seen, except a party of three small dark Petrels and a pair of Boobies.

At daylight (6th) we passed between the Cocos, but it was too dark, and they were too far off for us to see anything. All day we were running down parallel to the Great Andaman, as the three barely separated, North Middle and South Andamans are usually called. At the distance at which we passed they appeared like a nearly straight, range of densely-wooded hills of moderate elevation. Saddle Hill, south of Port Cornwallis, and now estimated at over 4,000 feet in height, towering conspicuous above the rest of the ridge.

Not one single land or sea bird was seen during the whole day.

Early in the morning (7th) we ran into Port Blair. The place is too well known to require any detailed description. A fine landlocked harbour, more or less surrounded by low magnificently-wooded hills, the highest of which, Mount Harriet, rises on its northern shore to the height of nearly 1,200 feet. Ross Island, the head-quarters of the settlement, is situated at the mouth of the harbour. It is rocky, composed of grey sandstone, interstratified with softer shales. It is very small, about 200 acres in extent altogether rising in the centre to an elevation of perhaps 200 feet and pretty well covered all over now, from beach to summit, with bazars, barracks, huts and houses, interspersed with cocoanut palms, and a few other trees. Where we anchored between Ross and Chatham Islands we appeared hemmed in on all sides by land, except where, through a narrow break on either side of Ross, a glimpse of the sea was obtained. The water of the harbour, brilliantly clear, has a very high density, the question has never yet been properly investigated, but the extra saltness of this water, especially during the drier and hotter portion of the year, is undoubted, and proves most

injurious to all iron immersed in it, buoys, chain cables, iron barges and the like oxidizing with unusual rapidity. Not one single sea bird was to be seen about the harbour.

The neighbourhood of Port Blair has been already so thoroughly worked by Davison, whom I sent down three months ago, and who is now awaiting us at Camorta, that we would not waste time there, and so the moment the steam barge, which General Stewart most kindly placed at our disposal, could get up steam, we started in her to Macpherson's Straits, where the *Scotia* was to pick us up on her way to the Nicobars.

Although we ran down close in shore the whole way to Bird-nest Cape, every one eagerly on the look-out, we failed to see one single bird of any description. The South Andaman, which we thus coasted for some 14 miles, presented, throughout the same characters, a ridge of rocks or reef on which the surf was breaking lustily, glittering and sparkling in the bright sun, little strips of the whitest possible coral beaches, fringed and bounded by dense mangrove belts composed of trees of many species, those nearest the water low and of the brightest emerald green, those behind more lofty and of a bluer tinge, all backed up by magnificent evergreen forest trees rising tier above tier to the summits of the ridge of low hills (from six to eight hundred feet in elevation) that run down the whole way near the coast. Only at Bird-nest Cape itself, we have a small bare treeless promontory, whose grey weather-beaten rocky precipices contrast strangely with the intense verdure of the rest of the picture. Rounding the Cape we stood on inside Macpherson's Straits, and landing some of the party at Escape Bay, we steamed on right through the Straits.

Nothing could exceed the beauty of the scene. The Straits vary from a quarter to nearly a mile in width; the water still, as in some little mountain tarn, clear as crystal, here green, there blue of an intensity known only in the tropics, everywhere paved with coral reefs and plateaus, clustered over with marvellously colored sponges, zoophytes, and corallines, and haunted by innumerable shoals of still more brilliantly tinted fish; it was like looking down into a garden of another world to that in which my work-day life had passed. On either side rising from the very bosom of the water the mangroves stretched a broad unbroken emerald zone around the base of the hills, which overlook, in places almost overhang, the Straits throughout, and on their southern shores, on Rutland Island, rise to an elevation of 2,000 feet. Magnificent forests clothe these hills. Huge trees, amongst which the *Mimusops indica* and

Hemicyclia andamanica are conspicuous, rise tier above tier, in a luxuriance nowhere to be surpassed; the foliage is of the most varying tints everywhere, and is relieved by tall straight stems, looking like slender silver columns supporting a multitudinous-storied hanging garden. In places enormous creepers hang in gigantic garlands and festoons from tree to tree, an almost unbroken wreath down half a hill side.

As we steamed slowly back a noble Sea-eagle (*Cuncuma leucogaster*) which we had somewhere disturbed, swept past us (well out of shot) over the tops of the mangroves without one single movement of wing or tail, and with an even firmness of flight that impressed one strangely with a sense of power. It seemed as though it could have held its course unchanged in the teeth of a cyclone.

Overhead parties of the Andaman Paroquet (*P. affinis*) kept passing to and fro with straight flight, screaming as they flew *à qui mieux, mieux*, mostly out of shot, though we did succeed in dropping a couple. Huge Fruit-pigeons (*C. sylvatica* and *palm-boides*) kept perpetually crossing from the hill sides on one shore to those on the other, sometimes singly, sometimes in flocks, but almost always high in air.

Burmese Stork-billed Kingfishers (*P. burmanica*) were common, but fled with a harsh, chuckling call whenever we neared them, and in one tiny dark mangrove shaded creek we dislodged a lovely purple Kingfisher (*H. coromanda*) that darted through the mangroves and was lost to sight before it was possible to raise a gun and fire. On the mangroves sundry Blue Reef Herons (*D. sacra*) were perched, contemplatively digesting their last meal, but not so lost to the external world as to permit of our securing many. Several Whimbrel occupied similar positions, but these were still more wary.

About midway in the Straits is a conical rocky islet, perhaps half an acre in extent, rising to an elevation of 70 or 80 feet, and crowned by trees of an equal or greater height; these trees seemed to be a favourite half-way house of the Fruit-pigeons. During the half hour that we hung about, and remained on, the island we must have seen a couple of hundred. They were always perched on the tops of the highest trees; we could see them perfectly from a boat at a distance of 150 yards, and examine them with binoculars almost as well as if they were in the hand, but directly we landed they became invisible. With my half-broken back I could not climb, but my companion crawled up to the summit. There at the very roots of the trees, on which they were sitting by dozens, though he could hear their deep coo,

their clattering amongst the leaves as they alighted, their fluttering and the whirr of their wings as they flew off, he could see nothing. He fired once or twice by the sound, but I do not believe the shot ever got through the dense, unbroken, massive sheet of foliage that protected them. His shots, however, disturbed two Burmese Kingfishers, of one of which I caught a passing glimpse through the mangroves in whose shade I was resting and rolled it over, a splendid specimen; and immediately afterwards I shot a small Woodpecker, running up a stem, that I took at the moment for *P. Macei*, but which proved to be the Andaman Spotted Woodpecker (*P. andamanensis*.)

Part of the shore of this islet was rocky and free from mangroves, and there we shot a couple of Common Sandpipers (*T. hypoleucos*.)

Returning, as the sun was setting, towards the eastern mouth of the Straits, we were joined by the party that landed in Escape Bay; they brought several specimens of the White-breasted Kingfisher (*H. smyrnensis*), conspicuous for their wonderfully dark and brilliant coloring, unlike what I have seen in any birds of this species procured elsewhere in Asia; the Red-whiskered Bulbul (*O. emeria*), the Indian Red-breasted Paroquet (*P. fasciatus*), the Andaman Minivet (*P. andamanensis*), the Small Indian Minivet (*P. peregrinus*), the Andaman Kingcrow (*D. andamanensis*), and Tree-stare (*Calornis Tytleri*). Along the shore they found the Common Sandpiper abundant, and they saw, but failed to secure, a large Stone-plover, clearly an *Esacus*,* but scarcely I should think our Indian *recurvirostris*, this being essentially a fresh water bird, haunting the banks of rivers, and never, as far as I yet know, (of course I write subject to correction) the sea coast.

We anchored for the night in mid channel; a soft cool air sprung up, and we were soon enjoying a repast such as only native servants can concoct, *al fresco* at half an hour's notice, with none of the means and appliances which the humblest cook in the west deems indispensable.

Within five minutes of our anchoring some of the convict crew had lines and a little net out, and in another five minutes they had pulled out a couple of large buckets full of miraculously colored fish, things which had I merely seen them in paintings I should have pronounced Turner-esque dreams of piscine impossibilities; such shapes, such colors, above all such incredible combinations of colors. They were mostly I think

* This proved, when we later obtained specimens at the Cocos, to be the Australian *E. magnirostris*.

(I am *very* feeble in ichthyology) what are called rock cods (*Seranus*, sp.) of half a dozen different species, orange, magenta, crimson, blue, green, black, buffy, one bright color spotted with another, and the broad fins and full round tails, fringed and banded with another. Some of these were upwards of 4lbs. in weight, and one of them a gorgeous crimson and blue creature, appeared to us a quarter of an hour later, perhaps because we had fasted long, as delicious on the table as it was lovely in the water.

There were numbers of other species, but I will not try and describe them, I have not the requisite knowledge, and the majority of my readers, who have not seen *alive* the fish that haunt the coral reefs, would fail to realize or even credit their unearthly beauty. Alas! that ichthyologists have yet to invent a process of preserving unchanged the "hues of paradise" that adorn them.

The last thing I heard that night was our Geologist enjoining silence on our Invertebrate; "Peace"—he said in a low sweet voice, "I would fain be in the land of nod, where Crustaceans cease from troubling, and even Stick-insects are at rest."

It was scarcely daylight (8th) when we were all stirring; some took a dip over board, heedless of probable sharks, the more prudent contented themselves with buckets. A small stock of provisions was hurriedly shipped, and we landed in two parties along the northern coast of the Straits.

I landed on a tiny coral beach hemmed in on all sides by mangroves, which elsewhere extended far out into the water. The upper part of the beach was thickly carpeted with a dense growth of a beautiful trailing sand convolvulus *Ipomœa*, sp., one sheet of dark green glossy leaves, studded with large pale pinky-lilac blooms.

The mangroves immediately around were of the most intense and vivid green (mostly *Rhizophora* and *Cerriops*) as close and dense set as a well-trimmed garden hedge. Sitting here quiet in the shade, a small party of Pallas' Sand-plover (*A. mongolicus*) suddenly made their appearance at the waters edge; I caught sight of them just as they alighted. They lit perhaps a score of them within a circle of a couple of feet diameter. For a moment all stood perfectly still, with their heads low as if listening; then after a series of queer little jerks, each stood, I might say on tip toes, their heads raised to the utmost possible extent, looking round in all directions. I was lying down, I did not make the slightest movement, and in my dull grey brown suit, they took me, I dare say, for one of the weather-

beaten half decayed trunks (and I fear they were only too correct in their estimate) which strewed the beach. After a full minute's survey two or three separated from the group, but then immediately returned. Then they all ran about in amongst each other, much as if they were dancing in a 16 set, the last figure of the Lancers, and then *presto!* off they were (I suppose they had scented my cigar) but not quite quick enough to save all hands, three dropping to my shot a dozen yards or so out in the sea. It was very shallow, and I waded out and picked them up; while doing this, I heard several shots fired lower down the coast, and just as I regained the shore a White-collared Kingfisher (*H. chloris*) chuckling noisily made his appearance going westwards apparently in a tremendous hurry; I had just time to ask him to stop, which he very kindly did, and I feel sure we have neither of us subsequently regretted this fortunate meeting.

Then I pushed into the mangroves, which soon grew open enough below, as they grew higher and higher, and became mixed with other and very differently foliaged species to those that fringe the shore. Some were conspicuous for a general glaucous tinge (*Sonneratia*, sp.) recalling the blue gum of Australia, now so thoroughly established on the Nilghiris, while others exhibited shining leaves, almost black in the dark intensity of their green. Huge broad leaved liliaceous plants (*Crinum*) quite palm-like in their appearance, cycas, screw pines (*Pandanus*) many thorned, flexile canes, hanging in graceful garlands of glossy multifid fronds, dwarf date palms, feather-leaved bamboos bending in fern-like curves and many other strange and beautiful tropical forms, scattered here and there, recalled the pictures we have all tried to conjure up for ourselves of the teeming flora of the carboniferous era. Inside of the mangrove belts I saw many of the glossy Tree-stare, (*C. Tytleri*) usually in parties of at least a dozen, and of the Andamanese Oriole (*O. andamanensis*), singly or in pairs, flashing like golden beams through the green coolness of the forest. Blyth's beautiful Hurriul (*O. chloroptera*) was uttering its peculiar whistled coo, invisible in the tops of the highest trees, only obtainable by a rapid shot as high over head they crossed, like wind-driven leaves, some little bare patch of blue sky. It was like shooting from the bottom of a deep well, and it would be disingenuous to pretend that the results were satisfactory. I got one bird out of ten shots. Just as I secured the prize, my companion made his appearance with half a dozen, and as he had only fired about twenty shots wanted rather to crow over me,

but as it proved that they had all been basely potted (it must be admitted that I never got the chance) it may naturally be conceived that *that* cock would'nt fight.

We were all on board again by about eleven, the others had seen and shot much the same birds as we had, and over and above these several of the Andaman Mynah (*Temenuchus andamanensis*) which we had failed to secure, a couple of the Southern Brown Flycatcher (*A. latirostris*) and a specimen of the Indian Loriquet or Love bird (*L. vernalis*) so common about Port Blair.

We now steamed in and out through the Labyrinth Islands, the most delightful little excursion I think I ever made. Our course lay through narrow sapphire blue channels, fringed everywhere with emerald green mangroves, and overlooked and overhung by mounds and hills of the most various hues foliage. For the first two hours the weather was glorious, then of a sudden, a little squall swept over head, veiling the blue sky in murky dimness, and then down came the rain lashing the water into a lather and blotting out everything ten yards distant from us. We anchored instantly, but in less than ten minutes the squall had passed, and but for the wonderful sparkle on the dripping foliage, and for thin films of foam floating everywhere around us, nothing remained to remind us of the visitation, only perhaps everything seemed, if possible, brighter and more beautiful than before.

As we threaded our way through the still channels (which are much more numerous and intricate than are indicated by the map, several of the smaller islands having been omitted) we noticed Sea-eagles, Reef herons, Kingfishers, Fruit-pigeons, and most of the birds already mentioned (conspicuous amongst which were endless parties of the Andaman Paroquet, flying to and fro from island to island), but nothing new.

Later we returned and anchored at the smaller Jolly Boy, (there are three though only one appears on the map) which was unanimously christened Jolly Boy Junior, and toasted in various sparkling beverages before landing. This little island is devoid of mangroves, and is surrounded everywhere by a broad snowy coral beach, inside which it is densely wooded. This island looks out on the open sea, and has to bear the whole brunt of the south-west monsoon, the consequence is that the forest is very low on the western side and gradually rises to the eastern, the tops of the trees forming a regular solid-looking slope, mown to this shape by the sharp scythe of the monsoon

gales. Everywhere to the south of the island stretches out a huge reef, just above water at low tide, and dotted over with channels, pools, and natural tanks.

To this reef I devoted myself, as from far off I had descried along the reef face large flocks of black and white Waders that could be no other than those curious birds the so-called, and correctly called, Crab-plovers (*Dromas ardeola*).

To reach these birds, whose acquaintance I so earnestly desired to make, involved a trudge of nearly a mile in soft, pure white, deep coral sand, glaring in the full rays of the afternoon sun, and so hot that it positively burnt one's boots and blistered one's legs; after this there was more than half a mile of reef to cross, a perfect *cheval de frise* of living coral, continually giving way under foot and letting one's wretched extremities down with a jerk for half a yard through a forest of knife edges; innumerable natural canals and ponds, some nearly up to one's breast, had to be waded through, the salt water getting into every cut and scratch, and stinging with renewed vigor at each immersion; my back was aching terribly, and I foresaw that if ever I did get to the sea-face of the reef I should have to float back with the rising tide; but this was my first real introduction to the Crab-plover; I held on somehow and got to within about 150 yards of a flock. Directly I tried to get nearer, off they flew. Then I tried another flock with a similar result, and then another and another. There was not the smallest cover, no possibility of a stalk. Before one could possibly get within shot, they always rose, flew along the sea-face of the reef, for about $\frac{1}{4}$ of a mile and then lit again, scattering themselves on the reef to a distance of perhaps a couple of hundred yards from the sea-face. I watched them carefully with binoculars from about 150 yards off. They ran hither and thither, moving as a rule rather steadily and demurely, picking up food about the reef, and in all their movements and actions recalling precisely those of *Esacus recurvirostris*, which I have so often watched on the banks of our Indian rivers, and which I take to be their nearest ally, everything that has been written to the contrary notwithstanding.

On the reef were a multitude of 'Turnstones, of which I shot several; of the larger and Pallas' Sand-plovers (*A. Geoffroyi* and *mongolicus*), Grey Curlews, (*N. lineatus*?), of the Common Sandpiper, and some others that I could neither shoot nor discriminate, besides a few Reef-herons, both blue and white (*D. sacra*. and *Greyi*). As usual a pair of Sea-eagles (*C. leuco-*

gaster) were wheeling about overhead, disturbed by the rest of the party who were fusilading in amongst the trees, as though they had got up a bush fight on their own account.

Presently I saw one of the party coming towards me along the reef. Between us were several flocks of Crab-plover, and near me one single block of dead coral, torn up, and hurled upon the surface of the reef, by some storm. Behind this I knelt; presently I heard a shot. M. was never particular about distance; if he could 'nt get nearer than 150 yards why he fired at 150 yards; the results were not proportionate to the expenditure of ammunition, but it seemed to relieve his feelings; and if so why should'nt he? Were we not out emphatically on a pleasure trip, and who was to limit his indefeasible right to do a little fancy shooting when the spirit moved him?

I sat quite still, and as I expected, a minute later past swept a flock of *Dromas*; not however as I had hoped close along the edge of the reef, but well out at sea. Then another shot, then another party, and a few seconds later a single bird, not above 80 yards distant; a green cartridge A. A. from a heavy No. 10 double that I was carrying dropped him like a stone. The question now was how to get him. The sea and wind were rising rapidly, there was getting up a great surf at the edge of the reef which went down a dozen fathoms deep almost perpendicularly; a minute's watching showed that a current was carrying the bird southwards. Any one could have swam the distance, the thing was to get clear of the reef, and then land again without being dashed to pieces. One of the free lascars with me volunteered to make the attempt, (I would rather have done it myself, but my strained back quite crippled me) and choosing his place and time, he did get out safely. It was touch and go at one time; he was thrown back twice to within a few yards of the edge and we all got drenched and nearly drowned, standing ready on the brink, over which the water was now rolling, to catch him and prevent his being ground (a very unpleasant operation for a naked man) against the coral. However by diving like a grebe to escape the rush of the surface water, he got clear of the surf and turmoil that fringed the reef, and soon secured the bird, and then holding this above the water with his left hand, swam, using his right arm only, some $\frac{1}{4}$ of a mile down the reef to a place where the water was now deep above its edge, and whence he easily made his way to land. The moment we saw the bird secured we became aware of the fact that the sea, now up to our waists, was really down upon us, and invigorated

by the cool breeze and the salt douche, we scuttled and splashed landward with a truly *saute qui peut* agility and distanced the sea, which, a quarter of an hour later, was rolling unbroken over the whole reef.

On the island I noticed two pairs of the Bow-billed Corby (*C. Levaillantii*), several Burmese Stork-billed Kingfishers, and others of the birds observed elsewhere, and we shot for the first time the Andaman Goat-sucker (*C. andamanicus*, STRAY FEATHERS, 1873, p. 470); Honey-sucker (*A. andamanica*, STRAY FEATHERS, 1873, p. 404); and Coucal and the Large Grey Cuckoo-shrike (*G. Macei*). Several of the party also saw another large Coucal, of the *rufipennis* type probably *eurycercus*, Hay, and an unmistakable *Lyncornis*.

We were anchored close to the shore, and just as we were going on board somebody told us that the Crab-plovers driven from their feeding grounds, by the rise of the tide, had all congregated on a couple of small isolated rocks lying about a mile due north of us, midway in the broad channel between us and Pluto Island. So the Philosopher and the Geologist and myself started in the gig to look them up; the sun was just setting and perfect stillness feigned everywhere, but we made the men row carefully and slowly, and we soon sighted a large white patch, in the middle of the water, towards which we steered our course. In order not to hamper each other in firing I got into the bows, while the other two remained astern; as we neared the patch, we made out that about 200 of the Crab-plovers were gathered as closely as they could pack, on the smaller of the two rocks, a flat table about 20 feet square, and, now that the tide was high, about a foot above the water level. When about an hundred yards distant they took the alarm, rose, and flew away; the great majority went off towards Rutland Island, but some 30 or 40, after wheeling round and round, commenced settling on the second and larger rock. Perfectly silently we began to creep towards this, not steering straight *for*, but as though we would pass, the rock at a distance of 50 or 60 yards; as we drew near, I did not like to fire before my learned friends, I dared not speak or make the least sign, but I kept turning my head in their direction, making the most horrible faces, which I intended to signify "why on earth don't you fire," but which in the dim twilight appear to have been scarcely appreciated. As, for the last time, I turned towards my august companions determined that if they would *not*, I *would* fire, I saw both suddenly raise their guns; I looked round but the birds had

disappeared in the growing darkness and the thin mist that had been gradually rising. Now *I* felt rather aggrieved, and was certainly not prepared for the vials of wrath that were poured out upon *me*; but the Philosopher glared at me awfully through his spectacles "och!" (how shall I syllablize that guttural Teutonic expletive of mingled disgust and contempt) "why did you not fire, you should have killed fifty; a hundred." The more placid Geologist said nothing, but the intense displeasure frowned from his manly brows was terrible to look upon. In vain I pleaded that politeness alone had kept my finger from the trigger, that I was waiting and waiting for *them* to shoot, they were deaf to all my blandishments, and could not or would not forgive my misplaced courtesy.

It was a regular case of

The Earl of Chatham, with his sword drawn, stood waiting for Sir Richard Strahan.

Sir Richard, longing to be at 'em, stood waiting for the Earl of Chatham!

And I suppose that, as in our own case, Sir Richard and the Earl, to the end of their days, each considered the other entirely answerable for the *fiasco*.

We returned to the barge, but by this time the moon had brightened the scene, and we rowed quietly up the eastern side of the island, hoping to come upon the Crab-plovers, the great majority of which had originally come this way. We saw nothing of them, but as we were returning thousands of huge flying foxes (*Pteropus nicobaricus*, they proved to be) poured out from the higher trees on this side of the island in one continuous stream. We shot five or six; those that were not quite dead we retrieved as they floated, but those that were killed outright sank like stones, and we only succeeded in fishing up one of these that we marked exactly, and then saw lying black on the coral bottom that shone up white and bright in moonlight.

All this while a terrific fusilade was going on from the barge, and naturally when we reached it we asked to see the spoils. Our Invertebrate, who *appeared* entirely occupied with a drag net, said he *thought* he had heard one or two shots, and that was all the information we could extract.

A number of lovely fish had again been caught, and dinner somewhat soothed my indignant companion's ire, who, however, could not quite forget those wretched Crab-plovers. Later the one I had shot in the morning was produced and partially dissected; it proved to have made a meal, entirely off one

species of crab, a reef-liver, *Gonodactylus chivagra*; so at least said the Crustacean, and he *ought* to know.

The rest of the party were all soon asleep, but I was restless and in pain, and so I sat down for a whispered chat in the bows with the Captain of the steam barge, a noble old Pathan from the far north-west, a life convict.

His story was a sad one, and I could hardly help feeling that convict as he was, he was a man of whose friendship the best of us need not be ashamed.

It appeared, (I tell the tale as 'twas told to me) that long ago, before the kingdom of the five rivers had passed into the hands of the British Government, his father, a small landholder in the Peshawur district, had mortgaged his estate to an usurer of Umritsur. Under native rule this transaction could not lead to any permanent alienation of the land. The money-lender might at worst have been placed temporarily in possession, and told to recoup himself out of the profits, as well as he could, within a given number of years; but this even was almost unheard of, and the consequence was the land was little more than a nominal security, and the interest therefore charged was enormous.

Time passed, the British Government established itself in the province, and with it courts, a law of sale of land for debts and the like. Through all these years a running account had been going on, the land-owner paying yearly what he could afford, and periodical settlements of accounts being made, under which of course the debt rather grew than diminished, though the capital had been paid ten times over.

So long as native rule prevailed the money-lender never dreamt of wishing even for more. The land was of no use to *him*, it had no saleable value then, he had a good annuity out of it, and this was all he had ever hoped for, and more probably than he had ever seriously expected.

But when land rose in value under our rule, and he saw not only that under our laws land was sold for debt, but that ours was a strong-enough Government to maintain purchasers against hereditary proprietors, the creditor laid his plans accordingly.

He had one of his customary settlements of accounts with the unsuspecting old Pathan, had as usual a new bond drawn, this time on stamped paper, in which interest and compound interest were all consolidated into a new capital, and then after waiting another two years, and recording the payments made during these by the land-owner on the back of the deed, payments of

course quite insignificant as compared with the terms of the new bond, put the case into court.

In vain the Pathan implored, in vain in the courts he tried to explain the real facts of the case, the net was well woven, there was no escape, decree was given against him, and the usurer was ordered to be placed in possession of the property.

Now the Pathan was very old and feeble; he belonged to a generation that would far rather die than be disgraced, and to whom to yield one foot even of his ancestral lands was the direst and most utter disgrace. He had two sons trained in the same school, and when his enemy came down to take possession he told them to defend the land or never see his face again.

The law must be upheld. I quite admit this, but for all that to these two sons it was an unavoidable and sacred duty to obey their father in this matter. Had they hesitated, their whole kin would have disowned them, their sons like themselves would have been outcasts, their little daughters must have grown up as prostitutes, as no Pathan would have married them. Thus at least they viewed the case, and thus doubtless the case *then* stood, but as we know a very few years have sufficed to change even the Pathan's views on these subjects. That this change has been in a great measure due to the stern punishments meted out in this and some similar cases, I do not doubt; it justifies the administration of the time, it cannot lessen our pity for the individual victims to a mistaken notion of duty.

So the two sons called together sundry cousins, and went out to meet the usurer and his servants, who, relying on the strength of the iron British hand, went boldly down to take possession, escorted only by one little wretched Hindustanee clerk, but he a *noker-sirkar*, a servant and representative of the ruling power.

Angry words ensued; the clerk of course disappeared; blows followed (everybody in the Peshawur district was in those days armed to the teeth) and in the *mêlée* the usurer and one of the brothers were killed, and half a dozen others on each side were wounded.

My poor friend and party escaped into foreign territory, but this was just after the mutiny, it was absolutely necessary to punish with a high hand all such outrages; the native police pounced upon the old father and the women of the family, and to save them from disgrace he came in and gave himself up. He was sentenced to death, but some glimmering of the abstract merits of the case seems to have reached the authorities, for his sentence was commuted to transportation for life, and he was one of the first batch of convicts sent to Port Blair.

He has now, for fourteen years, lived here a blameless life. He has for long been one of the most trusted men about the Settlement, and when our late beloved and honored Viceroy, on the first day of his fatal visit to these islands, desired the Superintendent to prepare a list of men whom he might properly pardon, this poor fellow's name was one of *the* first on the roll.

We all know what prevented that kindly design being carried out; the crowning hope that had cheered the sturdy old Pathan for so many years was dashed from him, just as it seemed about to bless him, by the same fanatic's hand that robbed, us of the kindest, and noblest and India of one of the best and ablest masters, we or she ever have had or will have, and as the old man told me of the bitter disappointment of that day, of the destruction of all his cherished visions of seeing once more his home, his wife, his sons, large tears, that even he, hardened to suffering as had been, could not wholly restrain, trickled slowly down his weather-beaten cheeks.

Then he got up without saying another word, went aft, and busied himself, seeing the watch changed, and looking after crew and boat and I saw him no more until, after I had laid down and had slept some hours, just as I opened my eyes at dawn, I saw him standing alone in the bows, looking sadly across the mist-shrouded waters, towards his mountain home—alas! so far away.

9th.—The whole party was soon up and off. We expected the *Scotia* to be off the eastern entrance of the channel at noon or thereabouts, and so had no time to lose. Most of the party landed on Jolly Boy Junior at once. I rowed about a little, and in a small cave in one of the islets we found a number of Horsfields' Swiftlet (*C. linchi*) breeding. The nests were all halves of little saucers or shallow cups, composed of moss glued together by gelatine (entirely inspissated saliva it is asserted) and fastened to the rock by a film of the same cement. Most of the nests were empty, but a few contained young ones, and perhaps a dozen contained eggs, two in each nest, pure white, almost glossless, elongated ovals. The nests were placed haphazard about or towards the roof of the cave which was about eight feet high at the highest place and some 30 feet deep. In some places a dozen were clustered together, in others the nests were quite solitary. To judge from appearances at spring tides the waves must reach to the furthest end of the little cave, and the floor, for the first ten feet in, was perfectly smooth white, composed of coral sand and shells, and looking as if daily washed, as it doubtless is, at high tide.

Yesterday we had noticed none of these, to-day this little Swiftlet and the Common Swallow (*H. rustica*) were hawking to and fro everywhere, the flight of the former being conspicuously lighter, swifter, and more graceful.

Landing on the Jolly Boy Reef I found that M. had shot three Crab-plovers, and a number of the same birds that I noticed and shot there the previous day, and had so thoroughly frightened everything that it seemed hopeless endeavoring to shoot. So I turned my attention to shells, and soon secured a dozen magnificent cowries (*Cypræa*), each as big as my fist (and I am not blessed with small hands) whom I caught sidling along in the reef pools. When you first see them they are all covered with their thick fleshy black furry-looking mantle, but with the least touch this is all retracted, and the beautiful glossy spotted shell left bare. Buried in the sand with only the edges of the broader ends yet visible, I found enormous *Pinnæ* some two feet in length, and fixed firmly in the coral reefs, their orange-tipped mouths a little open, and showing the blue animal inside, huge Clams, one of which would have furnished a meal for half a dozen men.

In the pools were millions of great sea-slugs, trepangs, Bêche de mer, or what you please to call them (*Holothuria*) some of them 3 feet in length and 6 inches in diameter, not merely smooth black things, such as I have elsewhere seen, but many colored, greyish white, olive yellow, green and brown, plain or combined in patterns, and covered with tubercles and ridges of all shapes, but in each species perfectly symmetrically arranged so as to produce very striking and even beautiful forms.

The rest of the party, shooting amongst the trees of the islands, procured more specimens of most of the species already noticed, and besides these several specimens of the Imperial Green Pigeon (*C. aenea*, Lin., or if distinct *C. sylvatica*, Tick.)

Steam being up we started in the barge for Bird-nest Cape where we were to meet the *Scotia*. About half way we found two large canoes full of Andamanese of the Rutland Island tribe waiting us. One of the party, who had been previously at the Andamans, had met two of these the first day we reached the Straits, and had told them when we were to return, and desired them to collect shells, turtle, and a variety of other things. It must not be supposed that he knew Andamanese, no one does except Mr. Homfray, but one of the men he met knew a few words of English, and thanks to these and of repeated signs and gestures he had managed to make them understand something of what we wanted, and that *Mom-joora* ("our protector," as the Andamaese call Mr. Homfray,) was our father and

brother. Moreover some of the tribe had been with him on collecting expeditions during his former visit; and knew his harmless madness for collecting what they considered utterly useless articles.

So the Rutland Island chief (the *Munshi* as the Europeans and convicts call him), his wife and some dozen of his followers, male and female, were duly waiting for us, with a score or so of fine nautili, fish, crabs, and sundry other natural products.

We stopped the barge, and they were soon alongside, and speedily scrambled up. They were little square built, very powerfully made folks—stark naked,—only the ladies wore, instead of the traditional fig leaf, a single small narrow linear lanceolate leaf, fixed by a thread, which descended from a ring of beads worn round the waist. Climbing up on to the deck of the barge, these leaves got naturally a good deal displaced, some turned on one side, some cocked right up, but this put the ladies in no way out of countenance, and with easy grace they readjusted them (just as one sees other ladies in society adjust their dorsal protuberances on rising,) patting them from side to side till they had assumed that perfectly vertical position so essential, at any rate if *any* thing was to be veiled from public gaze.

As the ladies completed their toilettes, each gently abstracted a cheroot from one of our mouths and placed it between their own charming lips. After a few minute's enjoyment of the fragrant weeds they indicated a desire to return them to their owners. We, however, with ready politeness pointed to the male members of the party to whose appreciative mouths they were at once transferred.

The princess now first caught sight of our Invertebrate, who it appears had been present at her wedding some six months' previously, and eagerly hurrying up to him with many self-satisfied little pats on the rounded central portion of her figure she proclaimed to him with a ludicrous expression of conscious pride that she was already in that way, that ladies fain would be who love their lords.

The gestures were tolerably significant, but the words interpreted to us by one of the old convicts were conclusive, and I fear that the trusted recipient of this delicate confidence had little peace on the subject in which it was assumed that he *must* have some very special personal interest.

Be it however understood that in reality these poor naked, monkey-men and women are virtuous to a degree; such a thing as unchastity is absolutely unheard of, and despite this

curious confidence, despite their utter nakedness, despite their repulsive ugliness, these women really *looked* and impressed one with a sense that they were modest.

The natural dorsal development of the ladies cannot possibly be exceeded by that of the Venuses of the Cape. The princess, a young thing of about 17 years of age, had a well-marked shelf posteriorly some 6 or 8 inches broad, on which she quite naturally laid anything given her. Not a particle of hair appeared to be left by either sex on the head or on any part of the body, and several of them were partially or wholly covered with a coating of red ochre-like clay, fully a rupee in thickness.

These Rutland Island folks belong to the same race that inhabit the coasts of the whole of the southern and the southern half of the Middle Andaman. They are all, thanks to Mr. Homfray's exertions, quite friendly now. Interview Island and the coasts of the Northern Andaman, and the northern half of the Middle Island, are inhabited by the same kind of people, who, however, talk a somewhat different language. These, too, though not yet perhaps to be absolutely trusted, are also becoming, through the instrumentality of Homfray's Andamanese, friendly and less suspicious than they were.

In the interior of the islands a distinct race exists, of which nothing definite is known. The Andamanese call them savages, cannot understand them, and are much afraid of them. Little has been seen of them. A party of them not long ago pounced upon a party of convicts working in the jungle, tied them up and stripped them of everything, but did not hurt them; on the contrary after stripping them, hugged them, cried over them, patted them affectionately, and took their departure. These are probably the aborigines, and are similar to the jungle race, the oorang-utan of the Nicobarese, who inhabit the dense forests of the mountainous interior of the Great Nicobar. Then on the Little Andaman we have a distinct people, whom our Port Blair and Rutland Island Andamanese cannot, in the smallest degree, understand. Very unreclaimed savages, whom it has hitherto been found impossible to conciliate in any way, and who murder all strangers the instant they can. They are not, however, cannibals as has been asserted; the bodies of ship-wrecked persons and others killed by them have always been found intact lightly buried in the sand.

None of the inhabitants of these islands, I may remark, appear ever to have been cannibals. Mr. Homfray has particularly enquired about this, and his people ridicule the idea. Writers

have noticed that they wear skulls suspended about their necks, and have thence inferred a sanguinary disposition, but in reality these are only tokens of love, and when a man dies, his widow and all those who knew and liked him, wear his skull in turns in remembrance of him.

They are all as low in the scale of humanity as any race of which I have ever read; they have no conception of God or of a future state; they neither plough nor sow; they build no houses, wear no clothes, and make no provision for any wants besides those of the immediate moment. They live normally on shell and other fish, with a little pork and a few jungle roots and woody fruits as a change. Until recently they but rarely succeeded in killing a wild pig, but of late years Homfray has got them a number of dogs, (there were six in one and four in the other of the two canoes that boarded us), and with the help of these they now get as much pork as they desire.

They are very fond of their dogs, and it would seem very kind to them; they appear to be amongst themselves, good-tempered, generous, sharing everything they get, and virtuous in their sexual relations.

They have a supreme contempt for money, but have conceived an intense devotion for tobacco, and we divided amongst our visitors our whole stock of cheroots to their great delight. We got from them bows, arrows, numbers of splendid nautilus, shells, and other curiosities.

Time was passing rapidly; we had had these visitors already at least three hours on board, and now wanted to be moving; the men, when we succeeded in making them understand, went off one by one, but the ladies, especially the princess, would persist in laughing and jabbering *ad infinitum*. We lifted her gently on her feet, pointed to the men who were already in the canoes, and in fact did everything we could think of to induce her to go, but go she would'nt. At last the Geologist, in hopes of quickening her movements, gently prodded her from behind with one of the blunt arrows she had given him; the effect was magical! Each grade of society has its own special etiquette; clearly he had gone too far; even in the most innocent manner you must not, it seems, according to Andamanese etiquette, prod a princess's nude natural bustle with a blunt arrow. She turned round with a look of offended dignity, that no Duchess, suddenly slapped behind by a passing street-imp as she got into her carriage, could have surpassed, and stalked off statelily to her canoe; in another moment we were off.

Directly we passed Bird Island and opened up the mouth of the Straits, we found the breeze freshen and could see the heavy surf beating on Bird-nest Cape. As we neared Escape Bay, the barge, a great clumsy, dockyard sort of thing, began to roll about in a rather helpless way, and moreover to pitch so vigorously that the screw was continually entirely out of water. The barge, an iron one, was very broad, her bows reminding one no little of those of the fair craft we had so recently parted company with. She was, however, very strong and sound, well decked, with only two hatchways, which we secured and covered with tarpaulin, and the engines in a separate compartment aft. There were no bulwarks, only stanchions and ropes, and as we got out of the Straits we found a very nasty jerky cross sea that deluged us. *M.*, a thorough seaman, who had taken charge of the barge, directly she showed an inclination to be too lively, piloted us out however all safely, to where about a mile out the old *Scotia* was lying off and on, waiting for us. *Everything* had been stowed below, but how none of our people went overboard is more than I know. The old barge would lie over on one side till her deck was at an angle of 60° , then stand almost on her nose, her screw far out of water, rattling round a hundred to the minute, then sweep round till she was gunwale under on the other side, and lastly heel down at the stern, so that it was touch and go that the engine compartment, which of course was open, did not fill.

However we got her all safe alongside the *Scotia*, on board of which we and all our traps were safely shipped, and then we bid farewell to our convict captain, (the old Pathan) and his convict crew, who steamed away due north to Port Blair, while we shaped our course southwards for the Nicobars.

We steamed away all day and night; the *Scotia* is a dear old thing, and one of the strongest vessels for her size, that ply to and fro Calcutta, but rapidity is *not* her forte; still very early next morning we sighted Tillangchong. This island is long and in shape much like the Italian Peninsular. It has a high central mountain ridge, mostly densely wooded, but with some few bare grassy slopes such as are unknown in the Andamans, though characteristic of the Northern Nicobars. The foot points south, the heel lies east, the toe westward. We landed just at the instep. As we neared the shore we noticed numbers of cocoanut palms, of which none are found wild in any part of the Andaman group. The beach, a rather steep one, the usual white coral, studded with numerable shells, was soon crossed, and then we found ourselves in a dense

pandanus or screw pine jungle surrounding a small fresh water swamp and pond. The island is here very narrow and level, and a struggle of about 150 yards brought me out again on the beach of the beautiful open bay which forms the hollow of the foot. From this level piece low ridges rise and run down the foot and into the heel, and a lofty ridge runs northwards up the leg. Except in the immediate vicinity of the pond where trees are open and the pandanus dense; every other part of the interior that I explored was thickly covered with huge forest trees, in the shade of which grew a vast variety of those strange weird, antediluvian looking tropical forms, that I had so admired and wondered at in Macpherson's Straits, but here even in greater luxuriance. But I had little time to notice these things, the island swarmed with birds. There were eight guns on it, almost all breech-loaders, and the rattle of a strong company file-firing is a joke to the row we made. First and foremost the trees were alive with the Blyth's Imperial Pigeon (*C. insularis*) who came in parties of from 3 to 10 to see what the fun was the moment you fired a gun. The island is uninhabited, and though Burmans, Malays, and Nicobarese, come occasionally to collect cocoanuts, very few Europeans have ever previously visited it, and guns and white faces are things heretofore practically unknown to its feathered inhabitants. These magnificent Pigeons were so tempting, they gave such splendid flying shots through the trees, and even if you missed them the shot at once attracted half a dozen others who calmly perched high over head, looked down inquisitively to ascertain how you made that jolly row! Then there were Black-naped Azure Flycatchers (*M. azurea*) and Nicobar Bulbuls (*H. nicobariensis*) the latter, the first most of us had ever seen of the species and highly desirable as specimens. The Nicobar Paroquet (*P. erythrogastrus*), beautiful Bronze-winged Doves (*C. indicus*), Blyth's White-collared Kingfisher (*H. occipitalis*), the first glimpse of which satisfied me that it was a good and distinct species, and of which there being great numbers, we secured a stock, and lastly the Nicobar White-eyed Tit (*Z. nicobariensis*), were also all common. About the pond we shot the Chestnut Bittern (*A. cinnamomea*), the Yellow Bittern (*A. sinensis*), and greatest prize of all the Malayan Tiger Bittern (*Goisakius melanolophus*). Here too we picked up several White-breasted Water-hens (*P. phasianus*) and saw, but failed to secure, a large handsome banded Rail. Two or three of the party also saw single Nicobar Pigeons (*Calenas nicobaricus*), and as I was furreting about the jungle on the hill slopes, I came upon what I took to

be a whole drove of Jungle-fowl. I could not get a shot but followed them down closely, driving them towards the Geologist, who, catching a close glimpse of one, made such a sudden rush at it that it was compelled to fly being knocked down by a shot before it had time to drop again on its own account into the dense, though not high, jungle. Then we found that this was a Megapod (*M. nicobariensis*), the first fresh bird we had ever seen of this anomalous species. Altogether it was a day of white stones; a little hot doubtless, everybody was wet through, sopped, dripping, with perspiration, and the thorns *were* trying; but then the birds! and when you went out for a few minute's rest on the beach, (where Horsfield's Swiftlet was gliding rapidly to and fro, and the Common Sandpiper was of course to the fore), the delightful cool breeze and the delicious young cocoanuts brimming full of the most fragrant, wholesome and thirst-quenching beverage ever discovered or concocted! *Mafoi*, ones heart leaps yet at the thought of that first glorious day at the Nicobars. How we ever got on board I don't know. It was necessary to get into Camorta harbour before it was too late, in the first place because the navigation is somewhat intricate; secondly, because we wanted to leave again early next morning, and there were stores to be landed and a variety of things to be done. But the steamer had hoisted any number of flags, had fired three guns, and was obviously getting into a painful state of excitement, and yet it was impossible to make a start. A. B. and C. were got with great difficulty together on the beach. C. went off to call D. and E., but before they arrived A. and B. had both seen something in the jungle and off they had gone, and so on, and so on. Nor were the lascars a bit behind hand, they kept running to the boats loaded with cocoanuts, and when half were down at the boats, the other half were away.

Fortunately in practice these things do come to an end, and somehow we got off about three hours later than we should have done, but still, as it turned out, in plenty of time to make the harbour, and one way or another get through all we had to do there.

We did not desire to remain longer than was absolutely necessary at Camorta, for this has often been visited and described, and Davison, who has joined us here, has been working this little group (Nancowry, Camorta, Katchall, and Trinkut,) for the past month, but we could not possibly leave till to-morrow morning, so we rowed about the magnificent harbour, landed at several of the Nicobar villages

visited the huts and made friends with the people, only returning on board (it was a glorious moonlight night) very late indeed.

The harbour is merely a broad channel running east and west, dividing Nancowry and Camorta Islands, more than a mile wide in the middle, and little more than 100 yards broad at either extremity. It looks therefore like a lake, and forms a most perfect haven of refuge. It is a most lovely place, the shore mostly wooded down to the water's edge, with the most varied and luxuriant tropical vegetation. Palms, ferns, screw pines, mangroves all mingled with a vast variety of forest trees. Here and there extend little coral beaches, and on them amid clumps of coconuts, and a perfect forest of the tallest bare poles and bamboos, to which innumerable rags and pieces of cloth are attached, (this being the Nicobarese antidote to the devil,) ! little clusters of the beehived-shaped huts of the inhabitants, well raised on poles, peep out here and there. The whole harbour is paved with live and growing coral, and the southern and shallower portion of it presents one of the most striking marine parterres I have yet seen.

We saw but little in our line, the usual Blue and White Reef-herons, (why is it that the white ones are so confoundedly wary? The blue you can shoot by the dozen, the white never); White-bellied Sea-eagles, Blyth's White-collared Kingfisher (*H. occipitalis*), the Common Swallow, the Nicobar Paroquet, the eternal Common Sandpiper, and a few Bronze-winged Doves where we landed, were all that I can remember.

In the stomach of the Megapod which we shot at Tillang-chong, which was enormously strong and muscular, we found a good deal of sand, fragments of quartz and specimens of *Scarabus plicatus* and one of the little *rare* (in museums, it is common enough here) *Helicina Zelebori*. Of the former the largest was about three quarters of an inch long and contained the animal. We also found portions of larvæ.

We had entered at the eastern mouth of the harbour, and early next morning (11th) we steamed out at the western, and set our course due south for Galatea Bay.

We have taken with us two Nicobarese, who style themselves Captain Long and Captain Short, and a good canoe, as this may be useful for landing where the surf is heavy. Every Nicobarese, I may remark, who possesses a single article of European clothing (and they attach greater value to this than even to tobacco or rum) styles himself Captain. Black chimney hats seem the most coveted article; and a gentleman wholly nude, save for a strip of rag three fingers wide, but mounting a terribly

had black hat, considers himself in full dress, and is seriously offended if not dubbed "Captain."

All day long we ploughed our way southwards passing near to Meroe, Track, Treis, Montschall, the Little Nicobar, Cabra and running down the western coast of the Great Nicobar till towards evening we were off Galatea Bay. As we neared the latter we had some slight squalls; the bay very broad and open was ringed with a tremendous belt of surf, no chart of the bay exists, and the evening was closing red, angry, and stormy, with a heavy sea driving into the bay from the southward. On the whole it seemed wisest not to attempt to run in, but rather to lay off and on, well clear of the shore until daylight, and this we decided to do much to the dissatisfaction of the Philosopher who had a strong objection on principle to be played "pitch and toss" with. Throughout our trip as yet we have seen no single sea bird, Gull or Tern, *anywhere* about the islands. At sunset, however, outside the bay, we came across a floating log on which was perched a solitary Black-naped Tern. (*O. melanauchen*)

Running down the east coast of the Great Nicobar, the whole island seemed a chain of densely-wooded hills, some of them I should judge over 2,000 feet in height. There are reefs everywhere about these islands, and our worthy Captain is the most cautious of mariners, so that we never approached within a mile of the coast and had only a panoramic view. We ran into Galatea Bay early (12th); a good deal of surf was still breaking on the white beach, but by the help of Captains Long and Short and their canoe we all got safely ashore. Huge Barringtonias covered with yellow blossoms overhang the beach, which was strewn with their large four-sided pyramidal fruit. My companions all hurried away into the jungle; my broken back never permitted my attempting to keep up with them; and as soon as I was alone, pacing the shore slowly, the first thing that struck me was that directly I stopped, the whole beach around me moved, while when I moved the beach stood still. The effect was for a few moments bewildering, but it was soon understood. The whole beach was coated with a layer of dead shells, and every other shell, big and little, contained a hermit crab. These crabs were of all sizes, there were millions and billions of them; they were as the sands of the shores they haunt, or the stars in the sky; their numbers were alike incredible and bewildering; from the waters edge well into the jungle, and in and about every hole and cranny in all the outermost trees up to heights of at least 20 feet, it was crabs, crabs, crabs. A few

of *Diogenes* and *Paguristes* at the water's edge, but practically all them *Cenobita*'s. *Olivieri* a bright scarlet, brighter than that of any boiled lobster, *rugosa*, a beautiful purple, and *clypeata*, mauve with a blue or brown spot on the big claw.

I was perfectly fascinated with these crabs; their omnipresence to begin with was overwhelming; I had never conceived that the whole world could hold so many, let alone one single spot. Then they were so amusing, everywhere were little breakfast parties. A great *Barringtonia* fruit, as a *pièce de resistance* surrounded by a small family circle, individuals of all sizes, all eating away as if their lives depended on getting down the greatest quantity in the smallest possible time. Here two would be seen fighting very lustily, there persuing each other; between my very feet, as I stood motionless watching the busy crowd, a large red-fellow came along in a most disreputable shell clearly too small for him, and meeting a small purple chap in an eminently desirable residence he pounced upon him, had him out of it in a jiffy, and slipped into it himself, while the evicted tenant had in another minute suited himself with a new abode, and straightway toddled off as lively as if nothing had happened. Now how did the big crab get the smaller one out? You may hawl away from outside and pull the thing to pieces you can never get him out, and I want to know how the other crab managed it. If he had had a cheroot it would have been different, but he *had'nt*! It is easy enough, as I soon discovered, to turn them out, if you *have* a cheroot. You keep the lighted extremity against the upper end of the shell and puff vigorously; the crab begins to show signs of uneasiness, he looks out and feels about with his claws, sees something hideous (yourself,) concludes that the sun is rather hot and retreats to continue his siesta. After another minute or so he decides that the sun is really getting unbearably hot, and that he will go off and finish his nap in the shade. Out again come the claws and legs. "Hullo," he says, "nothing to be touched, very odd this, something up," and pops back again; then you bend slowly down till the shell just touches the beach, and by this time he has come to the conclusion that his house is certainly on fire, and he scuttles away shell-less, dragging his slimy slug-like posterior extremities after him without much difficulty for about a yard, after which he sits down, having wriggled his tail between some stones and shells, to consider the position of affairs; presently legs and claws are all extended, and flicker about, feeling here, there, and everywhere; then a shell is

drawn nearer, closely examined, and rejected, then another, and another, but none suit, and he drags himself away another foot, and as usual immediately collapses and remains motionless in a doubled-up position for a minute before he resumes his search for a suitable lodging. Here again several shells are examined and rejected, at last Eureka! he has pleased himself, he places the shell conveniently, turns round and pops in. But it is very clearly a misfit, despite which, obviously considering it better than nothing, he starts off in search of a better dwelling, which he at last meets with a few yards ahead. I turned more than a dozen ruthlessly out of house and home, just to see how they would behave; some dropped into new shells as if by magic, one failed altogether, during the whole time I watched him, to please himself, but the majority comported themselves as I have above described.

After a while I strayed into the jungle, and almost immediately came on a party of Megapods, and had strange to say a good, though very long, shot at one, and missed it. There were numerous Megapod mounds about, some quite old and deserted, some apparently in use. I amused myself digging, or making the natives I had with me cut, a careful section* into one of them, and then I got hold of one of the resident Nicobarese, a civilized enough fellow, who can scarcely have seen an Englishman before, and yet who, like all the Camorta people, talked a little English, and pumped him as to Megapods and things in general, but without any very great success, though he showed me a mound out of which he averred that he had recently obtained a number of eggs.

In the jungle I twice caught a momentary glimpse of a bright-colored Ground-thrush (*Pitta*) which I took to be *moluccensis*. Others of the party also saw it, but no one got a shot at it. Further I noticed the Black-naped Azure Flycatcher (*M. azurea*), the Allied Paradise Flycatcher (*T. affinis*), Tytler's Tree-stare (*C. Tytler*), the Nicobar Bulbul (*Hypsipetes nicobariensis*), Tytler's Racket-tailed Drongo (*D. affinis*), Blyth's Imperial Pigeon (*C. insularis*), and the Bronze-winged Dove (*C. indicus*), but except the first none of these were numerous, and I wandered I dare say for a couple of miles through high forest, with comparatively little undergrowth without seeing more than one or two of each of the others. On the beach again the Common Sandpiper (*T. hypoleucos*) as usual put in an appearance, Sea-eagles soared about overhead, an occasional Kingfisher (*H. occipitalis*) passed, noisily expressing the

* I have given further particulars when treating separately of this species, p. 280.

unpleasant surprise that our presence occasioned him. Several Blue Reef-herons and a couple of Whimbrels were perched on the Barringtonias, and a party of Pectoral Sun-birds (*A. pectoralis*) hovered about the yellow blossoms of these latter. I saw nothing more; I never reached the river that runs into the head of the bay where others of the party shot the Green Bittern (*B. javanicus*), the Cattle Egret (*B. coromandus*), and a beautiful Stork-billed Kingfisher hitherto identified with *P. Fraseri*, but which appears to me to be nearer *P. leucocephalus*, and probably distinct from both.

As I was dragging along my weary way towards this river, I was aware of an inky black squall coming up rapidly from the south, that meant, as I well knew, wind and rain and plenty of both. I retreated at once into the jungle far enough in to be perfectly protected from wind. Made my men cut at once sticks, and on the top of an ancient Megapod mound, and with the trunk of a tree some ten feet in diameter immediately to windward, we rigged up in ten minutes (thatching with the huge leaves of the great littoral *Crinum*, and a stemless plantain-like *Corypha*) as comfortable a hut as one would want. Then I emerged again on the shore and watched the storm. It was coming steadily on like a black wall; it already spanned the bay; on it drove, hurling a huge roll of white foam before it; another minute and it was half up the bay; then the *Scotia* was absolutely blotted out; the cold chill herald wind that always proceeds these squalls was soughing in the trees under which I stood at the margin of the beach; it was high time to go to kennel, and I was hardly safely ensconced there before it burst upon us. Individually we were sheltered from the wind, but it roared and raved in the tree tops, and behind us all along the margin of the forest, and for a minute peeping out before the rain had come in force, I could see three cocoanut trees, just visible from the corner of our hut, bent down like whips, and then a roar, dull and indistinct but yet overpowering all other sounds surged round us, and a dense curtain, hiding everything around and making darkness visible, dropped upon us.

This was rain with a vengeance, not in drops but *en masse*. Nothing like it have I ever witnessed; but our hut kept us and my guns dry, and I smoked my cheroot with much patience, greatly comforted in the cramped position in which I had to sit, with three natives clustered round me as closely as if we had all been put into one camp bed, by the reflection that the rest of the party must infallibly be much worse off than myself.

As it turned out they were all drenched to the centres of their cartridges, but they were most of them thoroughly wet *à ne pouvoir plus*, beforehand so it did not much signify. It appeared that when they reached the river, which is some 20 or 30 yards wide, they wished to cross it. There was a canoe on the other side, and Davison, in an excess of politeness, took off his clothes, swam across and brought it for them. The Geologist, D., and I believe another, got into it and paddled happily to the deepest part of the stream, where the canoe, old and rotten, quietly subsided. Somehow they got safely to land, but though several of the natives dived time after time and recovered the only missing gun, they had to mourn the loss of many cherished little belongings, hunting knives, &c., and their whole stock of ammunition rendered unserviceable for the moment.

The rain lasted about two hours; its violence gradually decreasing after the first quarter of an hour. As it ceased I emerged, nearly stifled from my hut, and was soon on the beach where I met the indomitable Philosopher, wearing such a pitiously drowned-rat appearance that my spirits revived immediately. He was obviously seriously displeased at my cheerful frame of mind, and when he learnt that not only I but all my native followers had been comfortably ensconced in perfect shelter during the whole storm, his indignation was indescribable, his spectacles flashed fire, and conscious-stricken I was compelled to confess the baseness of my conduct. Then his brows relaxed, a Pickwickian smile illumined his countenance, and he proposed that we should drink to brighter days in brandy and cocoanut milk.

Such cocoanuts they were too; bigger than a 13-inch shell; brim full of such nectar, so sweet, so refreshing. We drank, and were at peace.

But Dr. Palæontologus was nevertheless miserably wet, and his gun could not possibly go off, and I was tired too, and none of the rest were to be seen anywhere, though we had been some eight hours on shore, and so we determined to go on board. We soon found the canoe hauled up on the beach, but Captain Long and Captain Short were nowhere to be seen. However in a Nicobarese hut into which we mounted we found the former, and intimated to him our desire to return. "Vare good" he said "You go ship, I come by by." Of course we were likely to get through surf ten feet high and fifty feet wide in that half reed of a thing by ourselves. We remonstrated, explained that it was for service of this nature that he was brought and *paid* (and very handsomely too, 5lbs. tobacco

and a dozen of rum), he replied in the most cheerful manner, "al rite, you please, you go, I come sometime."

Then the Philosopher was wrath, he frowned terribly, seized the unfortunate and bewildered Captain by the scruff of the neck, carried him to the door of the hut, (the floor of which was about eight feet from the ground) and gently dropped him; then glaring terribly at him, cocked both barrels of his gun, and gave the offender to understand that his only choice now lay between a sudden and cruel death and going on board at once.

Captain Long was quite equal to the emergency, he laughed from ear to ear, and ran down in the most perfect good humour to the beach, launched the canoe, took us in, and then with half a dozen quick dexterous strokes of his paddle, wafted us safely through the heavy surf in which any English boat would have been instantly swamped, and laying to, as these fellows can when they chose, had us alongside the *Scotia* in no time.

Then the Doctor's great heart relented, he presented the Captain with two long cigars, had a glass of rum provided for him, and allowed him to depart in search of Captain Short. I may add that the two came on board with the rest of the party perfectly able to paddle and take their canoe through any surf that ever was seen, but drunk to a degree, unable to walk or stand, and hilarious beyond description, laughing, talking, cutting unintelligible semi-English jokes, till our patience was fairly exhausted and we had them driven forward.

The night promised to be stormy, the anchorage was not over good, and the roar of the surf on the leeshore grew louder and louder, so about whist time we ran out (making the Philosopher trump his partners best cards and otherwise misconduct himself) and laid off and on, well out in the open, all night.

As soon as it was fairly light on the 13th, and long before the snowy white, but, as is too certain, deadly malarious clouds had lifted themselves out of the deep-wooded vallies and dells, each one of which they filled to the brim, we started again, steaming up the western coast of the Great Nicobar, as close in shore as, in the absence of any charts worthy of the name, we dared.

This side of the island consists almost entirely of low undulating densely-wooded ground, rising in a succession of swells to the high hills that run down close, and parallel, to the eastern coast. The whole forenoon, the little dense white clouds, for all the world like masses of cotton wool, still filled up every hollow in the interior, and even at noon they had not wholly disappeared, though the sun, as might have been expected at this season, so

near the equator and with a perfectly clear sky, was excessively hot. How the interior is ever to be explored I do not know. It is as much as a man's life is worth, as has several times been proved, to remain on shore anywhere inland for a single night, and it would take good men, well provided with Burmese woodcutters, a week at least to work through the island. I should not be surprised if ultimately some very remarkable forms were here discovered; two of the party, unfortunately not practised observers, positively asserted that in the jungle yesterday they saw a bird about as big as a Grackle, with bright metallic green tail feathers, two feet long, and with a harsh noisy cry like a Mynah's, which, if it can be believed in, points apparently to some kind of Paradise or Lyre bird.

As usual the sea was deserted, not a sea bird to be seen except a pair of *S. melanauchen*, which we failed to secure, and we were glad to round the north-western corner of the Great Nicobar into St. George's Channel, and find ourselves at anchor between Kondul and the main island.

Some of us landed on the latter, the rest on the former. It is needless to describe the place; the same lovely coral beach, bestrewn with myriads of shells, the same Cocoanuts and Pandanus, the same back ground of grand forest trees with dense undergrowth of canes, *Crinum*, *Cycas*, and other tropical forms, but some of the trees were so very lofty that it is worth while to mention what happened to myself, and what I know in many other places happened to almost every one of the party. On the top of a large, rather sparsely foliated tree, perhaps two hundred yards in from the edge of the jungle, I saw a flight of about a dozen Blyth's Imperial Pigeons alight. With much trouble I worked my way to the base of the tree, the trunk of which, at 20 feet from the ground, must have been ten feet in diameter, and which below that was buttressed out to a diameter of fully 30 feet. I looked up and, on a narrow bare side bough near the top, distinctly saw a pair of the Pigeons close together. I had a heavy long-barrelled No. 10 bore muzzle-loader, loaded with four drachms of powder and one and three quarter ounce, green, wire, No. 3 shot cartridges, took a deliberate pot, (the recoil nearly breaking my collar bone), and about half way up saw a dozen leaves cut away directly between the point of my gun and the birds. They did not even move, not a shot can have got up so high as they were. One of them, as I could see with binoculars, was looking down to see what was going on below, but that was all. I had a native with me, a very good shot, I handed the gun

to him and made him go about ten yards back, so that he might not feel the recoil as I had done and made him fire. He took a steady aim (and he is a certain pot shot) but with no better results; the birds again did not move, on the contrary two more joined them and all four peered down into what, sitting as they were in the full light of the sun, must have doubtless appeared darkness. I had a 48-inch single-barrelled octagon-breech eight-bore muzzle-loader, (the cannon as it was commonly called) loaded with six drachms of powder, and a green wire BB $2\frac{1}{4}$ oz. cartridge; I took a steady aim with this, fired, heard the shot distinctly rap against the bough on which the birds sat, and against I believe their feathers. They jumped up and shook their wings a little, but not a shot could have had strength to penetrate their feathers, for even then after a moment's moving about uneasily they did not fly. Those birds I calculate must have been over 80 yards high, and they were not quite at the top of the tree. I gave the thing up as a bad job.

I saw or at least shot very few birds here. The Nicobar Paroquet (*P. erythrogastrus*), the common Grackle (*E. javanensis*), Tytler's Tree-stare (*C. Tytleri*), and the Nicobar Collared Kingfisher (*H. occipitalis*) were all I procured. Then I joined the party on Kondul, the little intervening Strait with its lovely coral gardens, reminding me of parts of Macpherson's Straits.

Kondul, though inhabited, seemed to swarm with birds; I do not know whether it is because one sees them and can get at them easiest on these, but we always notice that we make the best bags on the smallest islands. Here, besides the birds already mentioned, a pair of Sea-eagles hovering over, and the Common Sandpiper trotting about on the beach, we found numbers of Blyth's Cuckoo-doves (*M. rufipennis*), of the Nicobar Orioles (*O. macrourus*) of the Pectoral Sun-bird (*A. pectoralis*), the Bronze-winged Dove (*C. indicus*), and of the little Indian Kingfisher. Here, for the first time, I saw the beautiful Pied Fruit-pigeon (*C. bicolor*), the white everywhere delicately tinged in the fresh bird with pale maize color, feeding greedily on the large fruits of a species of nutmeg (*Myristica*, sp.) conspicuous with their blood-red arillus, fruits that no one could believe that even this large pigeon, could possibly swallow, but two or three of which we took out of the crops of every bird we killed. Here, too, hanging quivering like so many humming birds about the white flowers of some leguminous creeper, we found a lovely Scarlet Honey-sucker, which is clearly new, and which I shall call *Ethopyga nicobarica*.

From time to time announced by its screeching and peculiar note, the Hoary-headed Paroquet (*P. caniceps*) would pass, as a rule singly, occasionally in twos or threes, high over head, barely giving time for a even snap shot. *Pelargopsis leucocephala*, or as I think most probably a nearly allied but distinct species, was abundant, though very wary. The Allied Racket-tailed Drongo (*D. affinis*) was plentiful, as also about the shore were Blue Reef-herons.

Several Koels were seen, and towards evening we heard them calling both on this island and on the Great Nicobar. A large Coucal (a red and black one, probably *C. eurycercus*, that Davison got at Acheen) was also seen, as well as a Loriquet, but no specimens were unfortunately secured. Lastly a specimen of the Long-clawed Yellow Wagtail (*B. flava*), unmistakable through its conspicuous white supercilium, was identified though not shot.

This was truly a grand day, and when we finally got on board after sunset, we had between us some sixty specimens that must *de rigueur* be preserved, and it was broad daylight before our unfortunate taxidermists had even stripped the skins off.

The night was superb; the ship lay absolutely motionless in a sea of glass; the ladies, the doctor, and the Invertebrate played bezique, while we played whist, and between the deals recounted the day's happy experiences.

At last the time came for bed, when of course the Crustacean became more lively than ever; we insisted that he should reserve his eloquence for a more convenient season; send for his mattress (for we always slept on deck) and pretend, at least, to be asleep. He was very insubordinate for a while, but the Philosopher, before whose stern glance the boldest of us quailed, looked at him through his spectacles; it was enough, his claws clattered, his legs bent under him, and in a meek tone of voice he summoned the native fellow subject, whose constant source of anxiety he was. Now Jonathan, for such was that hapless mortal of Madras extraction's name, was a character. I knew him well, for he had once belonged to our great Ichthyologist (irreverently termed by certain scoffers, Old Fishy), whom he used to intimidate in the most merciless manner, getting very drunk, and when in this condition giving his master evasive answers in a loud tone of voice. But he was a good servant, a first-rate collector, whether of fish, insects, or shells; skilled in all necessary manipulation of specimens which had to be preserved in spirits.

Methylated spirits of course, or they would have speedily been absorbed to preserve himself, and not the other meaner specimens.

There had been a good deal of rum going about that day; Captains Long and Short had been merry-making on shore with their indigenous compatriots, and Jonathan had also been on shore collecting, as it was supposed, land shells, spiders, crabs and stick-insects, and when after our dinner he had been summoned to produce his captures, it was with a somewhat trembling hand that he had presented a large bottle containing a rather miscellaneous assortment of things of very doubtful value.

It was now nearly midnight, Jonathan though called declined to appear; it was manifest that till he did so we should have no peace, so at our earnest solicitation *M.*, whose watch it was, sent a couple of lascars to bring him; after a while we heard some scuffling, grunts, and a little (*only* a little) doubtfully good language. Then Jonathan appeared pushed up the companion from behind. He looked round contemptuously at all of us and then shook his head ominously at his master, remarking, that *he* knew how to wrap a crab up in rag and pop him into spirit, *he* did! The matter was assuming a serious aspect, when the Philosopher said impetuously "Jonathan you old rascal get your master's bed at once," and Jonathan, like the rest of us bowing before this autocrat, departed to do his bidding, not however without grumbling ejaculations of "*ole rascal, ole rascal, ole RASCAL, &c.*" each in a louder tone than the preceding, as distance gradually ensured, his personal safety.

Now the Captain always slept the first two watches of the night on deck. He slept in one of those long-armed Indian chairs, his legs and feet on the arms and as nearly as might be on the same level as his head. A jolly companion and a good seaman all round, but withal, almost as stout in body as in heart, and it was not therefore surprising that after a good dinner in a warm climate, such a position should encourage the development of stercorons murmurs, which when first heard impressed the official mind with the conviction that the Governor-General was suddenly coming on board, and that a salute was being fired in his honour.

The Captain was outdoing himself this night, and when Jonathan staggered on to the poop, mattrass in arms, the guns were going *à ne pouvoir plus*; Jonathan paused, the sound seemed to offend his taste; he gave a vicious grin, and popped

the mattress down on the top of the Captain, and the next instant disappeared off the poop, impelled (like a foot ball) by his master's wrathful foot. For the Crustacean, with the eye of genius, caught at a glance the whole situation; there was only a mattress between him and—destruction! His right leg disposed of the offender, his right arm jerked the mattress (though not without some abrasion of the offending organs integument) into its wonted corner, and before the ill-treated naval commander could recover his breath or properly open his eyes, our Invertebrate was calmly slumbering. *Every one* was asleep! "I say! what the devil, &c., we heard murmured from the chair in a hoarse voice. Then the Captain got up and walked, tenderly rubbing his nose, round his late couch, then he looked under it, he could not make it out. "Mr. P." said he to the second officer who was now on watch "What was that?" "What was what Sir?" was the reply in a perfectly unmoved tone of voice. "What was what? something very queer!" "Nothing queer here Sir!" said P. in an aggrieved tone, as if he considered the suggestion of anything queer, during *his* watch a personal insult.

So the Captain went down to finish his night watch, as was his custom when we were anchored, in his berth, and to this day I believe he fancies that he had that night the most remarkable nightmare with which any poor mortal was ever yet afflicted.

At daylight next morning we were all again on Kondul. We met with all the same birds as on the previous day, and devoted a good deal of time to watching, so far as this was possible, those that were new to us. We also obtained two Cuckoos *C. striatus*, Drapiez, as I identify that bird, the Black-naped Azure Flycatcher, Blyth's Hurrial (*O. chlo-roptera*) and several of Horsfields' Swiftlet (*C. linchi*) which latter were very abundant. We saw, but failed to secure, a single specimen, the first that any of us, or even Davison has seen, of the lovely Black-capped Purple Kingfisher (*H. atricapillus*). At noon we weighed anchor and ran through the Straits to Cabra, a steep, very picturesque and partially wooded rock, and thence on to Moutschall where we all landed and spent the rest of the day.

Here too the Hoary-headed Paroquet seemed very common, and although shy we succeeded amongst us in getting several. We did not see a single Fruit or Imperial Pigeon, while *per contra* Blyth's Hurrial, comparatively rare on Kondul, swarmed, so that between 30 and 40 were brought on board. On the beach I

shot a Turnstone (*C. interpres*) and a Blue Reef-heron, while several of these latter, of Horsfields' Swiftlet, the Nicobar Oriole, the Black-naped Azure Flycatcher, and the Nicobar Collared Kingfisher, were brought to book by others. My back had been for some days specially painful, and I could crawl about but little, but sitting on a sandy reach of the shore, both Pallas' and the Large Sand-plover (*A. mongolicus* et *Geoffroyi*) disturbed by others of the party, who also secured specimens, came and offered me good easy shots of which I cheerfully availed myself. We saw a Harrier-eagle, it passed close to me, and was, I consider, undoubtedly *Davisoni*. Why I stared, instead of firing, at it, I cannot pretend to say.

Early on the 15th we came on to Treis and Track, two little densely-wooded, and in places rather precipitous, islands, scarcely I should guess more than a quarter of a mile apart.

On Treis, where a landing was first effected, several enormous fig trees resembling, but not I think identical with our Indian Banyan, were found which teemed to an incredible degree with frugivorous birds. The Pied Fruit-pigeon (*C. bicolor*) and Blyth's Imperial Pigeon (*C. insularis*) were in such extraordinary numbers, and so tame, that after the first general fusillade, in which fifty of the former and a somewhat smaller number of the latter were bagged, every one turned their attention to other species, and some of the party went off to Track, where, by the way, these same pigeons were almost as plentiful.

For the first time we succeeded in securing two specimens, an adult and a young bird, of the White-bellied Sea-eagle (*C. leucogaster*), which though daily and hourly seen throughout these islands, is most difficult to procure. We also shot several Megapods, and ought to have secured many more. A pair of the splendid Nicobar Pigeon, the Pectoral Sunbird, Nicobar Paroquet, Oriole, and Collared Kingfisher, the Bronze-winged Dove, Blyth's Cuckoo-dove, the Black-naped Azure Flycatcher, and sundry Reef-herons. We saw but did not succeed in shooting a Bush-thrush (*G. albogularis*), a Cuckoo and a Koel.

In the afternoon we came on to Meroe. I was absolutely crippled and laid on a couch, and did not attempt to land, but two boats went off (we laid about a mile off land), and from time to time we heard a shot from different parts of the island showing that the parties had separated. About an hour before sunset one of the boats was seen putting off, the wind was dead aft and they were soon alongside. The return party, which con-

sisted of the Geologist, the second officer and one or two others, gave a rather poor account of the island. The shore was beset with sharp coral ridges, the jungle was fearful, absolutely impassable in many places, and there seemed to be few birds. They brought a few Imperial and Pied Fruit-pigeons, several specimens of the new *Æthopyga*, of the Nicobar Paroquets, and a few others of no consequence. They had seen some rats and a *tupaia* like what Davison had shot on the Great Nicobar, but had not succeeded in bagging one.

It had been a very trying day, every one had been working in the breathless heat of a dense tropical jungle, the whole day from early morning till evening, except during the short time it took us to run from Treis to Meroe, and the party were more thoroughly worn out than on any previous occasion.

The sun was now near setting, and the Captain, who did not like our position, and who had strictly ordered that all boats were to be aboard by sunset, fired a gun for the remaining boat. One or two lascars and one European made their appearance on the beach, but after loitering there opposite the boat for some time turned back again and disappeared. The sun had now set, a second gun was fired of which no one took the smallest notice. By the waning light we could still make out with our glasses the boat anchored outside the heavy surf, and the canoe hauled up upon the beach. We heard several shots fired from time to time. Then we fired a third gun, but the rising moon showed boat and canoe "as you was," and that no sort of attempt was being made to acknowledge our summons. The Captain (liking as most Captains do, to have his orders attended to) began to get angry. I began to get uneasy. The return party had seen on the island sundry Malays, Burmans and Nicobarese, not permanent residents, but birds of passage come for coconuts and *anything they could get*.

A boat was now launched, and the second officer sent off to order the immediate return of the other boat. The Captain expressed his intention of favoring the chief officer when he *did* come with a spice of his mind, and was very wrath.

Shots were still heard at long intervals, the sea had got up a little and the surf seemed tremendous. Presently a fire was lit at the point opposite which the boat lay. We watched our messenger boat anxiously, the wind was against her, and the sea rather rough, and she seemed to make very little way; at last we made out that a landing had been effected. Then for a long time all was silence and darkness, for clouds veiled the moon. We waited, waited, waited, at last when every one, even the

Captain, who admitted now that something must be wrong, had become seriously uneasy, out came the moon and we saw our boat with sail up, gliding rapidly towards us. With a fair and steady breeze and a first-rate sailor at the helm, that boat cannot have been very long making the ship, but it seemed to us an age. When it did come, D. was up the companion ladder in a moment, and in another was on the poop; he turned neither to the right or the left; he brushed through us without a word, and walked straight to the Captain, who stood quietly by the binacle, touched his cap and made the usual report "come on board, Sir." The Captain on his part had never moved an inch, he merely said "why is the cutter detained?" Again the touch at the cap. "*Dr. Stoliczka is lost, Sir!*"

It is impossible to explain the sudden start that these words caused; we had been for hours forboding some evil; we knew what these wandering Malays and Burmans were. The island was barely a mile long by half a mile wide. Stoliczka was an experienced jungle man, one who carried a compass at his watch chain. How could he be *lost*? and then who can explain how our Philosopher had endeared himself to every one? There was not one of us I think who did not feel at this moment that we could have better spared any one else. Not one in whose heart the tears did not gather. No one spoke their thoughts, but every one felt that he must have been murdered in some dark nook of that dense jungle by some of those wretched reckless Malay robbers.

Then D. told us that towards sunset the chief officer and Mackay, (the executive engineer at Port Blair who had joined our party,) though already fairly worn out, had started in opposite directions to round the island, a work of inconceivable difficulty, cruel thorny jungle plunging down into the surf, alternating with knife edge reefs of coral and deep pools that had to be swam through, and had succeeded in all but meeting on the opposite side, (one part was absolutely impassable) and had steadily as they went fired their guns every two hundred yards without eliciting any reply, and that they had only succeeded in making their way back to the landing place after D.'s arrival, their shoes and clothes cut to pieces, and that he had left them exhausted on the beach, this being their last attempt, after having previously made several fruitless efforts, in which they themselves were nearly lost, to force their way into and through the jungle.

D. had arranged with them to light a second fire at the point in case Stoliczka turned up, but though we looked

anxiously, we never expected to, and never did, see that second fire.

It was decided at once to send out the strongest expedition we could muster. Every one that could be spared, though most of them were already dead-beat, volunteered; even Dr. Dougall, who never would be bothered landing anywhere with the true instinct of his profession, now that there was real hard work to do, was one of the first in the boats. I could not go, but I hope I was of some use; I drew up a little code of signals, which the Geologist took with him, I saw that they had blue lights, rockets, lanterns, cutlasses, and axes, plenty of food and brandy and soda water, and a definite scheme of search to be worked out systematically by compass from side to side of the island, in such wise as to render it certain that if still on the island, dead or alive, he must be found. It was past ten before the expedition got off, and near eleven, before the first signal rang out signifying "all landed safely," welcome enough in its way, considering the surf, through which no English boat could live a moment, and the necessity of landing two at a time in a frail canoe; then came "bang, bang," "no tidings yet," and by the lanterns and torches we saw that the whole party was painfully crawling along the coral towards the middle of the island where I had arranged that the first traverse should be made.

Then there was a halt, and ten or twelve guns were fired in rapid succession in the hopes of eliciting a reply, and so learning how to steer. There was a pause of some moments, but no other sound broke in upon the dull roar of the surf which, as the night grew darker, seemed ever to wax louder and louder. Then a lurid glare burst out lighting up the little dark group at the edge of the jungle. They had lit blue lights, and were now in for it. Then for a few minutes the lights glared in amongst the dense foliage, further and further in, growing fainter as they receded from the shore, and then they were lost to us altogether. Time passed, every five minutes the report of a gun, faint but yet unmistakeable floated to us on the rising breeze; about midnight the wind lulled, and after half past twelve we heard no more guns. The angry roar of the surf grew fainter, the moon came out brightly; still no signs of anything or any one! that great black ugly lump of jungle hid it all.

I need not say that amongst the few left behind there was no pretence now of going to bed, or indeed of doing anything but watching that shore, with the intensity almost of despair.

Certainly we hoped against hope, but I for one never thought to see our dear Philosopher alive again.

It was half past one; when would this terrible suspense end? suddenly a faint flickering light glimmered out towards the edge of the jungle like a star struggling through a thick cloud. Then it grew a little brighter, then a second light appeared, and we saw men coming towards the water's edge.

Now the signals after each traverse were to be "bang, bang," "no tidings;" "bang,—bang," "found, but not all right," to be further explained by other subsidiary signals; "bang,—bang,—bang" "found, all right."

Directly the party reached the shore; we saw a red flash, just as the sound reached us, a second, then there was a slight pause (a gun had missed fire as we afterwards learnt); that moment's pause, it may seem ridiculous now, all's well that ends well, but at that instant it was terrible; then the third flash, and with the report, clear and sweet over a mile of heaving waves, rang out a real British cheer that did credit to our gallant comrades.

How happy we were may be easily guessed, the ladies disappeared at once to their cabin, and I think they were not the only persons who felt it almost impossible to struggle through this joyful reaction with decent composure.

Although in great pain I managed somehow to crawl down to the top of the ladder, and when at last our lost sheep staggered up it, I know I could have hugged him, but Englishmen are denied the pleasure of anything beyond a strong grip and a "hurray, old fellow," and no one who had not seen it all could have guessed how all had hoped, suffered and rejoiced; and when he *did* make his appearance, he was a sight such as one rarely looks upon; his clothes were in rags; his face and hands and shoeless feet were bleeding; and he looked more like a corpse than a living man, except for the indomitable twinkle in his eye, which showed that he might have *died* (and he would I believe have died if not relieved before morning) but he would have died *game*! As for the rest of the party they all looked wretched, some quite as ragged and shoeless as the Philosopher, all worn and pale. No one who has not tried it knows what it is to work hard from daylight to sunset inside a thorny tropical jungle, and then at night, sore and scratched from head to foot, weary and stiff, to go in for some more hours of struggling through cane jungles till past one at night; it is not merely the violent physical exertion necessary, the thorns, the feet upon the coral ridges, but it is the intense breathless

steamy heat of the inside of the jungle which exhausts the strongest man in an incredibly short time.

Half an hour later, when champagne had gone freely round, a good supper had been done ample justice to, and tobacco was shedding its soothing influence on the scene, our "*revenants*" began to look a little more like living flesh and blood, and then at last we heard all about it.

It appeared that the Philosopher had once made his way though with great difficulty across the island. In returning darkness fell; unable to pick his way, he became more and more involved in difficult jungle. Still he forced his way, getting deeper and deeper into a cane brake. At last tied up by dozens of the long whip-like strings of sharp recurved thorns, and fairly worn out by hours of struggling, he dropped where he stood utterly exhausted and parched with thirst. He heard many guns, which he rightly apprehended were designed to attract his notice, and having stuck to his gun, fired many shots in return, which *we* I think heard, but which the dense jungle and the deep roar of the surf close beside them, barred to the ears of those on shore. After lying for an hour or so, and recovering again a little strength, he succeeded in disentangling himself and in forcing a way about 20 yards nearer to the shore, by that time, for this took him an hour to accomplish, he was not only utterly exhausted, but he found himself literally bound hand and foot by these terrible bands, so that he could neither advance, retreat, nor even lie down, and was compelled to come to a halt half propped up against a tree, half hung by his clothes (or what remained of them) in the cane shoots; and there he remained, an endless time it seemed to him, every other feeling sunk in the terrible growing thirst; at last the guns which had ceased for long were resumed, but he was too exhausted to fire in reply, indeed he had fired so often in vain that he saw no use in it. Presently he became convinced that the guns were approaching and he succeeded in firing. Then they grew nearer and nearer and he fired again, and heard immediately faint shouts; he tried to reply but his tongue was swollen, and with his whole throat dry and hard as a board. Finally, a dim glimmer flickered as it seemed in the far distance, (though as a matter of fact even a couple of blue lights are not visible a hundred yards through jungle like this) voices sounded close, and he knew that it was all right.

Our party, when they landed, had found the chief officer, McKirdy and Mackay, quite done up on the beach; they had had nothing to eat or drink since noon, and from two to past nine

had been working, first *hard* for sport, then frantically to find the Philosopher. They, however, were not the men to stay behind, and though neither of them had more than a pretence for shoes left, they had a stiff peg each and started with the party, who also secured the invaluable co-operation of the Nicobarese who most cheerfully and good temperedly set out to pilot the party through the jungle. Without these men and (they were not forgotten when the mission had been accomplished) it is doubtful if our party could ever have made their way through the thicket. As it was, strong as they were, and guided by the Nicobarese, with two axes and two or three cutlasses going the whole time, the party taking it in turns to work these, they took more than an hour to force a passage of less than half a mile in length, and very nearly an hour to cut their way out again.

As for "the lost and lovely," if the stories current that night were to be believed, never was "*mussuck*" so difficult to charge with fluid as he was. "When we found him" said one "he could'nt have weighed 30lbs., he was like a withered apple, and he expanded under the influence of pegs, as such an apple might under an air pump." A dozen of sodas and a bottle of brandy was the lowest estimate I heard mentioned, and even this was coupled with the fact that, like Oliver, he immediately asked for *more*! But the Philosopher's safety assured the great matter of interest was the glorious prize that had been secured. While forcing their way through the jungle, they had caught glimpses of what they took to be gigantic spiders scuttling past. Then they had other fish to fry, and not even a Dodo would I think have delayed them an instant, but on the way back it was different, and when another of these astounding spiders crossed their path, the Geologist with a rush put his foot on it, and despite its vehement struggles held on till a light was brought. Then it appeared that the supposed spider was a gigantic Crustacean of the most dangerous and pugnacious nature; after many attempts he was secured with creepers, and was being borne along in triumph, when Davison approaching him too nearly, he seized his coat with one claw that he had got loose and literally tore it off his back. However at last his claws were wedged, and though in coming off the canoe was upset, and some of the party had to swim for it, the crab came safely on board.

The delight of our Crustacean, when this near relative of his was presented to him, amply repaid, as Davison remarked, all the pains, its capture and transport had entailed, and we

were speedily informed that this was by far the finest and largest known specimen of the great robber crab, *Bergus latro*.

This great robber possessed a peculiar interest in our eyes; wherever we had landed on the Nicobars, we had found hundreds and thousands of cocoanuts, each with a large neat circular hole cut into the centre of one side, right through husk (often $2\frac{1}{2}$ inches thick) and shell, and with the whole contents scooped clean out.

The Nicobarese declared that this was done by an objectionable party, a sort of devil as we understood, described as a species of scaly dragon, and further that it went up the trees at night, cut down the best nuts and then devoured them on the ground, and that there was some substantial foundation, for this was proved by our finding numbers of quite fresh nuts, holed as above described, that could not have fallen by themselves, and that still bore a portion of the yet green footstalk cut through cleanly enough, but as if with very blunt shears, that had crushed rather than cut.

Here then was the devil! here was the dragon! and a more devilish looking brute it would have been hard to meet with. Directly it was caught, the Nicobarese earnestly entreated that it might be released. Obviously they feared it, even more than they hated it for the destruction it caused amongst their cocoanuts. They at once said that this was what plundered their trees, but averred that it was a dangerous demon to meddle with, and would, if hurt, bring fever and death into their homes.

After the good service they had rendered, the Geologist regretted that the interests of science (for he knew instinctively that he had got a prize) forbade his harkening to their simple prayer, but duty showed the way. Jonathan had the pleasure of consigning that crab to a huge tub of spirits (nothing else would hold him), and his mortal remains will long I hope continue an ornament and attraction to the Indian Museum, where they are to be deposited.

About 3 A.M. (16th) we weighed anchor, and came on to Camorta. Here we saw nothing new, but visited several of the villages and fraternised with the Nicobarese. It was amusing to see Captain London dressed from tip to toe in European costume, a nice white shirt, black neckerchief, spotless white jacket, waistcoat, trousers and stockings, and good English shoes and hat, quite the civilized gentleman, and then to meet him to his discomfiture, alone in his canoe, at evening, fishing. Stark naked and looking the veriest savage imaginable, darting head foremost from this canoe, and

catching the fish with his hands as only these islanders can. According to their ideas any fool can plunge into the water and seize a single passing fish, but what does require skill is to plunge and come up with *two* large fish, the forefinger and thumb of each hand firmly fixed in the eye sockets of a different fish. *This*, the Nicobarese hold to be something like fishing, and in still water you can hardly keep a Nicobarese in the canoe if he chances to spy two good-sized fishes passing below in such relative positions as to render this feat practicable.

Rowing about the harbour, what specially struck us (though we had noticed them in our former hurried visit) were the masses of white marl, of which we had seen nothing amongst the southern group, and the extensive grass slopes and grassy hill sides, equally inconspicuous there, which occupy so large a portion of the surfaces of the central islands.

In the bird line we saw but little, and nothing that we had not noticed on our first visit.

In the evening we ran out of the harbour and anchored off Katchall, getting a beautiful view of the two conspicuous natural rock arches that stand one on either side of the narrow western entrance of the harbour. Just north of this latter is another very similar opening, which leads into false harbour, a huge shallow land locked lagoon, in Camorta Island, just north of the true harbour, and only separated from it by a ridge of densely-wooded land which in some places is barely a quarter of a mile across.

Very early on the 11th all landed at Katchall, a rough rugged rocky island, with very little soil, and hence devoid of the little fields, that are elsewhere scattered about the central (and I may now add the northern) islands, but still sufficiently densely clad with high forests, little encumbered by the dense undergrowth of all the southern islands.

This island is the head-quarters of the greatest villain in the whole group, one Hung-hung-soo, and in my opinion it is by no means creditable to us that he should not have been hung, hung too, long ago, and that an officer (not an Englishman I am happy to say) still in Government service in the Settlement should be able to boast of being on friendly terms with, and of having had, this murderer and ruffian to spend a day with him on board the Government hulk, and of having visited him and slept at his house.

The Nicobarese as a body are a harmless, good-tempered, hospitable race, but just in this central group, a certain small portion of the inhabitants became years ago demoralized by constant

contact with Malay traders, whose crews are pirates or traders as occasion serves. Accordingly some thirty or forty of the Nicobarese and a certain number of Malays formed themselves into a gang to seize and plunder all the vessels they could and murder the crews. Amongst these wretches Hung-hung-soo was one of the foremost.

During the course of ten years they are supposed to have disposed of at least twenty vessels and their crews. Most of these vessels were native crafts, but some were European. On one occasion we know an European woman was brought on shore and so brutally abused by the whole band that she died the next day. On a later occasion an European woman, the wife of another Captain, was brought on shore with two female children. This poor woman, an English woman, was in Hung-hung-soo's possession, as late as the beginning of 1867, when alarmed at the arrival of some English vessel he first tried to poison her and her children, and the poison not quite effecting his purpose, dragged her into the forest and knocked her on the head. There is not the smallest fraction of doubt about this particular case and yet Hung-hung-soo lives, and has, within the last three years, visited and been visited by a European officer on friendly terms.

It is quite true that he wisely keeps out of other Europeans ways, but the thing is a scandal of which I am confident that the present Superintendent, General Stewart, will never tolerate a recurrence in his time. Of course we saw nothing of this wretch, who is now one of the few survivors of the pirate nest. We found a good many birds, but did not care to spend many hours here, as Davison had repeatedly visited the island.

A few of the grand Nicobar Pigeon appear always to keep about this place; we shot one, and saw others, and Davison never visited it without seeing a few. Then we bagged numbers of Blyth's Imperial Pigeon, of Tytler's Tree-stare, of the Nicobar Bulbul, the Pectoral Sun-bird, the Nicobar Oriole, White-eyed Tit and Paroquet, of Blyth's Collared Kingfisher and Cuckoo-dove, of the White-breasted Water-hen, and Black-naped Azure Flycatcher, and saw, but failed to secure, Megapods, Yellow Wagtails, and a Bush-thrush.

About noon we came on to Bompoka and Teressa, the former a very striking island, a bold conical grassy hill broadly truncated (and with, apparently, a shallow circular tree-clad depression at the top,) rising out of a wide belt of magnificent forest, densely fringed everywhere along the shore with screw pines and cocoanuts.

Both in this island and Teressa almost the whole of the rising ground is covered with thick grass which, from the sea, looks bright and green and soft as velvet, but on a nearer approach proves to be tall, coarse stuff, troublesome to wade through, and yielding nothing apparently but a little *Turnix* (very close to, and perhaps identical with, *joudera*) and *Cisticola schani-cola*, both just what Davison had met with in similar localities at Camorta. In the forest the same birds were shot as at Katchall, only Blyth's Imperial Pigeon (*C. insularis*) was here extraordinarily plentiful, and *Osmotreron chloroptera*, and Reef-herons, the Bush-thrush and Megapods, which we did not secure at Katchall, were shot here.

In the evening we steamed close in along the whole eastern coast of Teressa, but did not land there. Davison had spent a day on it previously and gave a poor report of it as a collecting ground, so we pushed on past it, and past Chowra, a very low flat island, with, however, a cluster of high rocks at the south-east corner, from which direction the island looks like a bare square rock. Davison, who had visited it, considered it one of the best cultivated of the group, the whole island except this rocky corner abounding in oranges, limes, and cocoanuts and well inhabited. Here, and here only apparently in the whole group, is any pottery made. It was getting dark by the time we were abreast Chowra, the sea was exceptionally smooth and calm, we were excessively anxious to land at Batty Malve, hitherto reported inaccessible, and apprehensive that a day's delay might deprive us of the rare and fortunate chance afforded by the existing calm, we decided to go straight on to that island.

When I awoke, just after day break, we were steaming slowly round Batty Malve, at a distance of about a mile from the shore. The island was low, with no central ridge or hillock, nowhere rising I suppose more than 20 feet above high water level, but everywhere precipitous or fringed with jagged rocks at the water's edge. Strong currents seemed to be running all round it, so that while outside the sea was like a mill-pond the entire coast-line was wrapped in surf. We stood in nearer and again made the circuit. I should guess the island to be about a mile and half long by three-quarters of a mile broad.

As we slowly circled round we noticed several flocks of heavy-flying black-looking birds, with white tails, and rather long and clumsy necks, as it seemed to us, leaving the island, and flying off high in air northwards, southwards, and south-

eastwards. Boats were now put in requisition, and as the shore was neared, numbers of these same birds were seen pecking about on a little sandy beach inside the fringing rocks; even then no one knew what to make of them. The boats now rowed round the island, but the nearer this latter was approached, the more impossible it seemed to effect a landing; there was nothing but jagged rocks and roaring surf all round. An attempt was made by two of the lascars at different places to swim ashore with ropes, but this failed, and the men barely escaped drowning. It seemed as if the matter must be given up, when McKirdy, like a true British sailor, declared that he had come to land, and land he would, and getting a rope swam to shore, and by strength, pluck, and judgment succeeded in making good his point. Once on shore he was able to pick the very best spot and with the boat anchored astern, and the shore rope made fast to her bows, by paying out and hawling in, it became possible for the rest of the party, choosing their time carefully, to land one by one. It was dangerous work; the Philosopher got a tremendous cropper but luckily fell *in* the boat, or he would certainly have been killed, and every one was drenched, but still the landing was effected, and the island's virgin soil trodden for the first time by Europeans. We were specially fortunate; there are probably not half a dozen days in the year, on which, without a specially devised apparatus, a landing could possibly be effected.

The island appeared to be almost wholly composed of coral, resting unconformably on a base of sandstone. It was low, nearly level, bore a certain amount of high tree jungle, and a few patches of cocoanut, and was in most places covered by an excessively dense undergrowth of some thorny bramble-like shrub, here and there interspersed with a few open plots of grass. The moment the level of the island was gained, the mystery of the black birds was solved, they were Nicobar Pigeons, and this was *par excellence*, the home and stronghold of this magnificent bird. Thousands were flying about from tree to tree, or feeding on the seeds of the undergrowth (with which we found their crops mostly full). Their nests were as thick upon the trees, as ever nests are in a rookery at home. Young ones in every stage of growth, from naked blind things to birds fully fledged, were to be seen in or alongside the nests.* They were perfectly tame at first, and fed about on the ground just like other doves. Though silent birds as individuals, yet from their immense number, their occasional

* Further particulars are given when treating of this species separately. p. 271.

croäk, croäk, blended into a continuous murmur heard distinctly above the grinding surf.

Hundreds might easily have been shot. As it was the whole party—Native and European—were loaded, and despite unavoidable losses at the time of re-embarking some 70 were safely brought on board.

These were not, however, the only birds obtained, Blyth's Imperial Pigeon (*C. insularis*), the Pied Fruit-pigeon (*C. bicolor*), Megapods, the Nicobar Oriole and Paroquet, the Pectoral Sun-bird, the Black-naped Azure Flycatcher, *Budytes flava*, with its conspicuous white eye streak and the White-bellied Sea-eagle, were all seen and shot, but the total number of all the other birds on the island put together could not nearly have equalled that of the Nicobar pigeons, which were variously estimated at from two to ten thousand, the latter being probably nearer the mark than the former. Perfect inaccessibility and the existence on the island just at the breeding season of an unlimited supply of very easily procured food, specially suitable for feeding the young, are probably the main causes which have led this species to adopt this one tiny solitary islet as its special home. At other times, and when found elsewhere, the Nicobar Pigeon, we are told, feeds chiefly on the large fruits of the various wild nutmegs and allied groups, but these would be awkward for feeding the young, whereas the small white albuminous seed, which the undergrowth (and we never met with anything like it elsewhere) here produces in such enormous quantities, and with which we found the crops alike of young and old crammed, seems specially adapted for this purpose. Doubtless the flocks that we saw leaving in the early morning, and steering direct for Car Nicobar, Tillangchong, and the central group, were the parents of the more advanced young ones, (of which we saw so many,) already quite able to shift for themselves, out for the whole day in quest of their favourite food. But strong as is the flight of these Pigeons, it is clear that sitting birds could not traverse long distances in search of food, nor could any locality be found in any of the islands where the wild nutmegs are sufficiently plentiful, within any reasonable compass, to feed so vast a company of Pigeons for several consecutive weeks. These birds being, as it seems, truly gregarious at the breeding season they were compelled to choose some locality yielding, about their breeding time, and within a limited space, an almost inexhaustible supply of food. Neither we nor Davison have yet met with any other such locality elsewhere in the islands, and remarkable

therefore as our discovery is, it seems capable of a very simple explanation.

It is very doubtful whether the Nicobar Pigeon breeds on any other island of the group, but the question remains is this the one breeding haunt of the whole Indian Archipelago? Do the Batty Malve birds wander to Sumatra, Borneo, and other islands? I can find no reliable record of their breeding elsewhere, and improbable as it seems it is still possible. One thing is certain, it is Batty Malve that mainly supplies the whole Nicobar group, for while during the summer and autumn, this beautiful bird is, as we know from the natives, comparatively common in *all* the islands, during the whole period that Davison and we were about them (*viz.*, from the 20th of January to the 20th March) they were rare and scarce to a degree, never more than two or three being met with, and these, almost exclusively, towards the middle of the day.

We anchored early next morning (20th) at the south of Car Nicobar, the most fertile, best cultivated, and most populous island of the group. Here we found cocoanut forest! not mere narrow belts fringing the shore, but unbroken plantations stretching, in some places, a full mile inland. Inside this again we found plaintains, ginger, yams, tobacco, oranges, limes, and herbs which I did not recognize, far more carefully grown than we had elsewhere seen them. The people too seem more intelligent and thriving than elsewhere, and have regular villages inland instead of merely on the sea shore as in most of the other islands. Altogether Car is *facile princeps*, I should say amongst the other members of the group, both as regards soil and population.

In their way the people are very honest, and a Burman trader, who had come to load nuts, told a story of how, on one occasion, he had made an advance for cocoanuts, but before being able to complete his cargo had been driven away by bad weather. How, it was two years before he returned, and how, although the man he had paid for the nuts was dead, others of the village, the moment he landed, spontaneously recalled to him the fact, that he had not had the full number of nuts he had paid for, and duly, as a matter of course, put the balance on board just as if his vessel, instead of having been two years away, had never left offing. I have had to mention the villainy and cruelty of some few of the Nicobarese belonging to the central groups; but these wretches, be it understood, are not to be taken as types of the people. On the contrary they were exceptionally depraved men, incited to and tutored in crime by

Malays who are normally as piratical and bloodthirsty as the Nicobarese are peaceful and hospitable.

The great bulk of the people, even in the central group, altogether disapproved of this robbery and murder, which is utterly foreign to their character; but in consequence of their peculiar social disorganization there was no one who could interfere to stop it.

There are no persons whatsoever possessing any *authority* amongst the Nicobarese. Entire absence of subordination is the one salient feature of their social polity. There are no headmen of villages, no man who can say to any other, "You must do this or that." Husbands have no authority over their wives, parents over their children; everybody, big and little, rich and poor, male and female, stands on an altogether independent footing.

There are no rights in the *soil*. Any man, Nicobarese or even, as far as I could learn, foreigner, may plant a tree *anywhere*, and once planted it belongs, so long as it lives, to him and his people after him, and this property is strictly respected. The state of affairs must be understood. No man has any need to work. They have everything they want at their doors. Cocoa-nut trees bearing ten times as much fruit as they can consume, the surplus of which, when bartered, yields them rum and tobacco, silver spoons and black beaver hats (luxuries they greatly affect), and any other clothes they may fancy. The screw pines (*Pandanus*) yield them a large fruit, miscalled locally the bread-fruit; they have pigs hanging in cages about their houses, and flocks of poultry shut up in pens below (rather a reversal of *our* modes of dealing with these!) and they have fish and shell-fish to any extent. There is absolutely no struggle for existence. A child five or six years of age can provide its own sustenance; no one need be dependent on any one for anything; even the materials for their very neat and comfortable houses are on the ground, or within twenty yards of the ground, where they are built.

No man has, except in regard to cocoanut trees, any heir; every scrap of property he possesses, even to the billets of fire-wood he has collected, is taken to his grave with him; even of his cocoanut trees a certain number are cut down to supply his necessities in a future state.

From all this it has resulted that authority is a thing unknown amongst them. There doubtless are leading men, like Captains (they all call themselves Captains) Johnson, England, London, but these are only so far leaders that, having

been found more expert in barter than their neighbours, these have come to entrust them with their 'mercantile' transactions; but these "Captains" can no more give an order, or enforce or prevent a certain line of conduct on the part of their fellows, than fly. As for the *Mowanahs* or Doctors, they have not the semblance of any sort of authority. They are mere Fetish men, who by divinations tell the others what to do to avert fever, to keep devils from their houses, to obtain or prevent rain; the most famous of them would never dream of interfering with any secular matter.

The idea of paying any tribute, or, in fact, of doing anything except follow his own devices, without let or hindrance, so far as this in no way interferes with each or all of his neighbours doing the same, never enters the mind of a Nicobarese.

They are not at all bad people on the whole; very honest amongst themselves, good-natured, lazy creatures, with considerable aptitude for civilization; desirous of all things to learn English, (some few words of which almost all grown-up men know,) and to wear English clothes. The least civilized will, if they can, wear a black hat, or an old dress coat, and, I fear I must admit it, *nothing* else; but Captain London, for instance, is dressed from top to toe in English costume, and keeps his white shirt, trousers, and jacket as clean as any Englishman. Except at Katchall, and near where our settlement now is, I never heard of their illtreating ship-wrecked people; and now that our settlement exists this will not, I think, be heard of again.

No land is claimed by any one unless he has trees or crops on it. The people (very few they are, all counted) live, except in Car Nicobar, in circular houses raised on poles, just above high-water mark, with a greater or smaller number of cocoanut and often Pandanus trees round about them.

Except in Car Nicobar and the north of Trinkut, the cocoanuts are almost exclusively confined to the beach. Nowhere is there any cultivation to speak of except in Car Nicobar, Teressa, and Bompoka. But in many of the islands you meet far in the jungle, tiny isolated patches of a few square yards, planted with tobacco, plantains, yams, and more rarely oranges and limes, which patches are strictly private property and respected as such.

They don't care one straw about money; will always take a 2 or 4-anna piece in preference to a rupee, the former being used for earring heads, the latter being useless. Rum is the only thing that they want and cannot make for themselves, and

is therefore the only thing that will induce them to take even the trouble of gathering and bringing you their surplus cocoanuts. When drunk the Nicobarese are peculiarly good-humored; in fact you only know that they are drunk by their being so very merry and talkative. In their excessively humid and malarious climate, spirits in moderation do them, I believe, more good than harm.

The people are comfortable, happy, and as far as I can judge—and I made very close enquiries—better and more virtuous than the mass of the lower classes in Europe. No man ever hungers, thirsts, or lacks shelter. Any Nicobarese, no matter what island he belongs to, wanting food, and at a distance from his own home, walks into the first house he sees. He may know nothing of the owner, may very probably not even speak to him, but he knows exactly where the food and drink is kept (all the houses are arranged exactly alike in every detail), he helps himself to all he needs, cooks his dinner, eats, drinks, and departs, often without any sign even of thanks. If he chooses to talk, the people of the house will sit round and chat, if he does not, no one will presume to ask questions. Every fellow-countryman has a right, according to their ideas, to a meal, if he wants it, and they would let a stranger thus eat every scrap of food in the house before they would dream of violating this simple right.

The Nicobarese are the freest, and I suppose, so far as mere physical comfort goes, amongst the happiest people in the world. The absolute equality that exists between the sexes, the careful manner in which every member of the whole community (if I may so call a non-cohesive aggregate of individuals) respects the rights of others, find few parallels elsewhere.

Altogether they seem to me a people of whom, if only wisely managed, a great deal may yet be made; but on whom our interference, unless most guarded and judicious, and it has, I fear, hitherto been scarcely the one or the other, is likely to operate most unfavorably.

To return, on Car Nicobar we shot for the first time a specimen of the Nicobar Mynah (*T. erythropygius*), a beautiful and well-marked species, which we have all been on the lookout for, from the first, but which neither Davison nor ourselves had hitherto succeeded in finding. Even here only a pair were seen, and the second bird was unfortunately lost owing to an excess of zeal on the part of a neophyte. I did not use bad language; but I heard sundry minatory ejaculations that grieved me greatly. Blyth's Collared Kingfisher (*H. occipitalis*) was remarkably abundant; it is common throughout the Nicobars, but here it swarms. The Nicobar Oriole, Paroquet, White-

eyed Tit, Tytler's Tree-stare, the Pectoral Sun-bird, the Black-naped Azure Flycatcher, the Bronze-winged Dove, Turnstones, Whimbrels, the Striated Munia, and other common birds were all procured. We also saw a Purple Heron, a White Egret, a Green Bittern, and a Bush-thrush (*G. albogularis*), and two of the party said they saw our new Honey-sucker (*Æ. nicobarica*).

During the night as we were steaming due north for Port Blair, and when about opposite the Little Andaman, we were overtaken by a sudden squall with heavy rain, in the midst of which, a small mynah came on board. This is exactly similar to two that Davison shot on Camorta, and is, I believe, the young of *T. dauricus*, the occurrence of which here is new and unexpected.

By 11 A.M. (20th) we anchored again in Port Blair. General Stewart kindly took me about the harbour, and I visited Chatham and Viper, and the upper end of the harbour, but Port Blair is now almost as well known as Southampton Water, and it is needless to say anything more about it, except that as on the occasion of our first visit, so also now, not one single Gull or Tern was to be seen about the place.

21st.—We came on slowly during the day in and out through the Archipelago, a pretty trip, but not to be mentioned in the same breath with that through the Labyrinth Islands. The main feature was the entire *absence* of all sea fowl. It would be difficult to conceive places apparently more suitable for these birds; innumerable small islands and detached stacks of rocks; uninhabited, never visited, and planted in a sea teeming with fish and zoophytes; yet not one single stray Gull, Tern, or Noddy was to be seen. A few of *melanauchen* breed, we know, at South Corbyn's Cove during the monsoon, and perhaps at that season, these islands also may be tenanted, but certainly at the present season not a single sea bird is about the place.

Towards evening we landed on the Southern or Little Button, a tiny, rocky, precipitous island, perhaps an acre in extent. Here we found, as indeed we had noticed on every island, Blue and White Reef-herons, the Bow-billed Corby (*C. Levaillantii*), the Red-whiskered Bulbul (*O. emeria*), the Andaman Sun-bird and the White-collared Green Kingfisher (*H. chloris*), while overhead wherever we went the great White-bellied Sea-eagles soared and wheeled in slow, never ceasing gyrations. I really think that there must be a pair of these birds to every one of these islands; I counted eight at one time in the air towards evening.

In this island I discovered a cave tenanted by hundreds of the Pale-rumped Swiftlet (*C. spodiopygia*), of which as well as of their eggs and nests* I secured numerous specimens. The cave ran half through the island, had one entrance facing the sea (in a sheer precipitous face going straight down into deep water), by which a boat could enter for a few yards, and another opening near the summit of the island. The cave, or more properly the passage, for it was a narrow irregular tunnel, was very dark, and very difficult to get about in. It contained many hundreds of nests, mostly in the darkest corners, here scattered singly, there clustered in groups. Most of the nests were empty, a few contained young ones, and altogether some half dozen contained one or two long oval white eggs. With a net I could have secured every bird, as it was, I found shooting them as they suddenly emerged out of the darkness of the cave, and darted like lightning round an adjoining rocky corner, the boat rocking and pitching violently the whole while, about the sharpest work I ever took in hand, and I secured only 12 birds to about 30 shots.

Others of the party, especially the Philosopher, took an unfavorable view of my execution; it was, therefore, gratifying when they joined me later to find that they were even more unsuccessful than I had been. The Philosopher, to the best of my belief, never got his gun off before the bird was well round the corner. Och! He at last ejaculated with a gesture that showed how entirely he considered the occupation beneath him, and that although *to humour us* he had obligingly fired away all his cartridges, he had never himself thought of injuring the *poor birds*. Och! You fellows have wasted enough powder and shot; I will not have the poor birds more frightened"; (to the men) "Pull away"—and so the men did pull, and we were soon *en route* to the old *Scotia*, the Philosopher on the way back lecturing the Geologist and myself for our want of skill and remarking, "You two fellows, you cannot shoot! pah! not a dam! if I could not shoot better I would never shoot another shot, och!" We did once presume to submit that we had at any rate between us killed 20 birds, whereas he, but here he arrested us with a frown of such ineffable contempt that we felt at once that had he only chosen he would have killed the whole 20 at the first shot, and so, humbled and repentant, we were rowed in silence to our ship.

* See further page 160.

When daylight dawned next day (22nd) Barren Island was in sight and distant 3 or 4 miles to the north. As first seen it appeared to be more or less well wooded, in shape a truncated cone with a broad nearly level top. As we drew nearer, pursuing a somewhat circular course, we found, when we had placed the island (by this time only about a mile off), south-east of us, that what we had first seen was only the outer shell of the island which consisted, broadly speaking, of a hollow cone about $1\frac{3}{4}$ miles in diameter externally and originally probably some 1,700 feet high, but now reduced, by the loss of the upper portions, to between 600 and 1,000 feet, the height of the upper edge of the shell varying in different places. This edge was in some places sharp and narrow, in some attained a considerable breadth. At its base the shell may have been from four to six hundred yards in breadth, and it enclosed a nearly circular valley, raised about 50 feet above the level of the sea, averaging, as far as I could guess, about a mile and a quarter in diameter. In the middle of this rose a most perfect and symmetrical cone, with a diameter at base of about half a mile. The cone appeared to be ever so slightly truncated, and from its summit a little twisting whisp of white smoke kept curling away up into the blue sky. The height of the cone above the sea level may be taken as perhaps 950 feet, the average angle of inclination of its sides is about $32^{\circ} 30'$, but it *looks* to be a great deal steeper than these figures would indicate, and had the angle not been carefully measured by some of our own party as well as by previous visitors, I should, I think, have guessed it at at least 45° .

I first of all rowed round the island, keeping as close in as the surf breaking on the shore would permit. Everywhere, except at the one spot where we later landed, the outer face of the exterior cone-shell goes straight down into the water, under which it dips very rapidly, so that while still within gun shot of the blocks of weathered lava and basalt, that fringe in most places the water line, one is in blue water, and no bottom with a fourteen fathom line. Half a mile from the shore there is no bottom with 250 fathoms. In most places the precipitous outer face of the external shell is thickly wooded, but here and there large bare grey patches mark extensive slips of ash and tufa. On the trees, high above us, and well out of shot, numbers of the beautiful Pied Fruit-pigeon (*C. bicolor*) were sunning themselves, or flitting hither and thither in twos and threes. They were very numerous. I dare say I saw a thousand during the the two to three hours that it took us to row round the island. Large parties of the Andaman Red-cheeked Paroquet (*P. affinis*)

flew screeching, twisting, and turning in their rapid flight, from one part of the wooded slopes to another. Here perched upon a rock, there on the bare arm of some high out-leaning tree, sat, beautiful in the Gull-like purity of their delicate grey and white plumage, the large White-bellied Sea-eagles (*C. leucogaster*). Occasionally one passed us soaring high overhead, and one came suddenly down past us from a great height, with a rush like that of a falling meteor, and struck, scarcely 100 yards ahead of us, and swooped away with, a large fish. Turning a little projecting point, from some unnoticed nook, out darted a lovely Kingfisher, it passed within ten yards of the boat, and there was no mistaking *Halcyon atrocapillus*, but there was as much sea on as we could well manage, it was next to impossible to fire, and it would have been quite impossible to retrieve the bird if shot, so that we were compelled let it dart away unmolested. Every here and there all round the island we disturbed the Blue Reef-herons, perched in ones and twos on piles of lava blocks overhanging or surrounded by the surf. In one place we came upon a small party of Pond Herons (*Ardeola Grayii*) seemingly somewhat out of place, amidst the roar of breaking waves, and an atmosphere loaded with foam flakes. Along the whole coast the inevitable Sandpiper (*Tringoides hypoleucos*), never more than one at a time, was to be seen tripping along the rocks at the water's edge, or as we approached nearer than it approved, scudding away after the usual preliminary bows and tail jerks, with rapid strokes of its little wings.

As we approached the landing place on our return we got under the lee of the island and were soon in still clear water.

The landing place is in a tiny bay, on one side of where a vast stream of lava has burst open the outer shell, and has then fallen, from a height of about 50 feet, into the sea.

The little bay is shallow and in the clear water shoals of marvellously colored fish might be seen darting about, above and amongst a perfect jungle of coral, madrepores, sponges, sea anemones, and the like. At the head of this minute bay, just where we landed amidst black blocks of coke-like lava, a *fresh*, hot spring wells out in the midst of the sea water. It is not by any means boiling; droves of little amethystine-colored fish seemed rather to prefer its neighbourhood than otherwise, and as to cooking eggs in it, as some previous visitors were fortunate enough to do, those *we* put in emerged utterly raw after a quarter of an hour's immersion, but still it was hotter than the hand could well bear and the thermometer showed a temperature of nearly 140° F.

We soon scrambled up into the broad river of lava which, issuing on the further side of the cone, apparently at two different vents, has nearly entirely surrounded its base and thence has flowed down to the sea. Once well inside the outer cone the view is very striking; in front rises the bare grey marvellously regular and smooth cone, looking, but for its vastness, more like the work of man than of nature, surmounted by a thin line and tiny cloud of white vapour; around its base, in front, behind, on all sides of one, stretches a sea of mighty blocks of the blackest imaginable clinker, piled and heaped together in the wildest confusion; not a shrub, not a blade of grass invades its terrible blackness; above us tower the inner walls of the original cone, here in perpendicular rock-like steps, there in steep slopes of shifting ashes, purple, brown and grey, for the most part bare and threatening, but in some few places garnished with weird parched-looking grass and stunted straggling trees. It was past noon, the sun had been for hours blazing in its full tropical strength upon the bare black lava sea; not a breath was stirring; a black thunder cloud which had suddenly closed in the whole visible portion of the sky, threw a deep unearthly shade, as of an eclipse, over the whole interior, and as I toiled on amidst the intensely heated and crackling blocks of cinders, which often entirely closed my view, I, for the first time, fully realized some of the inspired Italian's pictures of that region, the dread legend on whose portals is "abandon hope all ye who enter here!"

A few minutes more and I had reached the further bank, where, at the foot of the slope, a comparatively level strip, sparsely clothed with tufts of coarse grass and dotted over with a few miserable acacias, intervenes between the lava and the walls of the amphitheatre. I searched the grass in vain in hopes of finding some little warbler or quail, but in one of the trees I soon heard the cheery note of the Red-whiskered Bulbul (*Otocompsa emeria*), and later came across several little parties of the Andaman Sun-bird (*A. andamanica*). These were the only birds that I saw or heard within this natural "inferno."

The cone itself, when closely approached, is seen to be furrowed in many places by water-courses, and is by no means so perfectly symmetrical and smooth as it appears from a little distance. It is everywhere coated with, and probably (though in one or two places masses of solid lava and basalt peep through the outer covering,) in a great measure composed of, reddish or greyish ash, and light cellular volcanic

debris, the kind of stuff in which one slips down two feet for every three one crawls up, and amongst which every foot-fall sets a rivulet of dust and fragments flowing.

Weary work an ascent like this (especially with the thermometer at nearly 100° at the base of the cone) always must be, but one of the party, Mr. P., a thin wiry individual, whose energy had never allowed superfluous flesh to accumulate on his bones, was determined to be the first at the top, and made the running from the very start regardless of the clouds of ashes and streams of clinkers which he was inflicting on those behind.

This unseemly conduct did not approve itself to our dear Palæontologist, whose outward form is as befits one who has ever a hearty laugh for every misfortune, and after wiping his spectacles repeatedly and mopping his face vigorously until he was in full war paint, (I need not point out that perspiration and impalpable red ash are admirable components for this class of decoration) he was heard, uttering terrible threats in the rear of shooting everybody ahead of him, if they persisted in smothering him. "I do not" he exclaimed in a voice choking with emotion (or dust) "wish to kill any one, but I will never die like a dog in a dust hole, because you fellows," and here a moderate-sized stone hit him on the shin and cannoned off on to another of the party below who straight way sang out "Confound you Stol. why the devil don't you look out, you nearly brained me." This *was* adding insult to injury; it was more than even our Philosopher could bear, and the remark he offered in reply was one, that the recording angel found it necessary to blot out with a tear.

I never reached the top, in fact my back was still too painful to allow me even to attempt the ascent; but most of the others made their way up, and at the summit found a little blocked-up crater, flored with volcanic sand and ashes, some 50 or 60 feet in depth and about the same diameter above. Through the sides of this crater, the cracks in which are still hot, a little vapour slowly steals its way, issuing here and there and gathering into a little white stream, which struggles up skywards. This vapour brings up with it a good deal of sulphur, most of which it leaves as a lovely yellow crystal coating to the cracks from which it escapes.

It boots not now to tell of the luxurious tiffin that rewarded our labours, or how as we sat beneath the two solitary umbrageous trees that stand close to the landing place, the Doctor, divested of his war paint, and all his wonted philosophy recovered, beamed

approvingly at his quondam enemy above a foaming tankard ;

Alas ! that all that's bright must fade

The brightest still the fleetest ;

that bright afternoon passed only too rapidly, and before we seemed half ready to go, the sun and the signal gun from the ship warned us to be off.

We set sail and what little wind there was being dead aft, we made a straight course for the *Scotia*, and as she was lying about two miles off exactly opposite the landing place, we kept the inner cone in sight the whole way.

Oh ! for the brush of a Turner to convey some faint image of the scene. The surface of the sea, now only slowly heaving in long low swells (like some child sobbing in its sleep,) was smooth as glass, the azure brow had not one rippled wrinkle. Around us the intensity of blue was quite startling ; but sunset was already a-blaze in the sky, and a crimson flood was slowly creeping over the waters towards us.

As we looked back, one side of the exterior wall of the island was lighted up by a weird, unearthly, ruddy light, the other melted gray and cold into the horizon. The whole magic bowl was filled with violet shadows, out of which, baseless, apparently, as the fabric of a dream, the upper two-thirds of the cone glowed red and lurid as when it first emerged in flames.

The wind had almost died away ; "eve had descended from heaven above, and the sea was all rest, and the air was all love ;" we glided along noiselessly and imperceptibly nothing moving but a couple of Sea-eagles soaring slowly in the golden flood above, taking their last look of the sun, already lost to us, and one single snowy Tern* hovering, hesitatingly, as it seemed over the crimson flood, like some pure soul hanging sadly over the fiery lake, to which has gone down her earthly, but never to be forgotten love.

Slowly as we neared the ship, sky and sea saddened round us, and when we regained the deck, and looked back upon Barren Island, nothing was to be seen but a grey, misty, ill-defined shape, colourless as "dreams of youth, which night and time have quenched for ever."

Sunrise next day (the 23rd) found us closely scrutinizing (as we circumnavigated it at a distance of about a mile), Narcondam, a huge densely wooded hill, which rises steep and solitary out of the blue depths. We soon took to the boats, and I as usual started to row round the island.

* *S. melanauchen*.

As we neared land, we saw a number of heavy-flying black-looking birds with white tails, flitting from tree to tree. At first we all thought that they must be Nicobar Pigeons, but as we got a nearer view of them, our glasses showed that they were small hornbills of some, to us, unknown species.

Here, as at Barren Island, the water deepened very rapidly, and at about 30 yards distant from land we could get no bottom in any of the many places where we sounded with a 14 fathoms line; indeed in one place there was no bottom at this depth, scarcely 10 yards out from the beach.

In some few places perpendicular precipices take the place of steep slopes, and bold stacks of rocks vex the fretting waves into an angry foam. One vast rock in particular, which the waves have pierced through and through in many directions leaving only huge pillars to support the superincumbent mass, was named unanimously the Cathedral. In and out of the arches of this the bright green water, all laced and fringed with foam, splashed and sparkled, as the long swells swept up to and through it, so grandly that we were induced to draw rather nearer than was perhaps safe, and realized more forcibly than was pleasant, the irresistible power of those soft gentle-looking green swells that seemed to pass us imperceptibly when we were out in the open water. One of these swept us fifty yards at least in a twinkling, and we had only just time to pull clear of the rock before a second, hurried us at railroad speed just past its seaward face.

Somewhere within this huge hollowed rock Horsfield's Swiftlet (*C. linchi*) doubtless breeds, as I saw many of them flitting in and out through the arches, heedless apparently of the incessant showers of spray and foam that were momentarily spouting up from the bases of every pillar or being hurled out through the openings, as though the cavern within were tenanted by a demon legion of fire engines.

As usual we came upon the Blue Reef-heron perched solitary on projecting points of rock, and saw several of the White-bellied Sea-eagles soaring high in air, or perched on the bare bough of some sea o'er-gazing tree, a hundred feet or so up the hill side.

The whole island is one irregular hill densely wooded (except where the torrents of the monsoon have excavated long bare water courses) from beach to summit, but all the trees are more or less stripped of their branches, as if lopped (as we so commonly see trees in Upper India) to feed camels and elephants. When I landed, which I did after circumnavigating the island, at the

only place where the surf seemed practicable, I found that all the largest trees were prostrate; trunks piled above trunks, as though they were mere straws in a barn yard, the whole wrapped in a perfect mist of creepers, through which pierced the less lofty trees that had weathered the cyclone of the previous October. Although all the smaller branches had been torn off these, they were coated with foliage, and many of the fallen trees appeared, so full were they of leaf, flower, and fruit, rather to like their present humble position than otherwise, which was so far fortunate, that certainly neither all the king's horses, nor all the king's men could ever have set *these* Humpty Dumptys (some of which had a girth of over 30 feet) up again.

Such a villainously impassable jungle I never came across. I made my way in for about 100 yards, and saw and shot a couple of Andaman Sun-birds (*A. andamanica*), and this was the only land-bird I saw, except a number of the Hornbills, a good quarter of a mile up the hill and utterly unapproachable.

The beach was very different to what we had generally seen in the islands; there was, of course, an abundance of milk-white coral fragments of all sizes from that of a man's head to those of grains of sand; but this was intermingled with innumerable water-worn fragments of trachytic porphyry, of every shade of color, red, purple, green, brown and gray, speckled and dotted with mica, augite, and other crystals, which, wet with spray, looked very gay and bright against the white coral. Here, as in many other of these islands, the beach was strewn with fragments of wreck, amongst which the door of a cabin, obviously once belonging to some European vessel, was conspicuous.

We had landed in a tiny indentation of the shore, bounded on either hand by precipices. We could not get along the beach, neither could we make our way through the jungle, so we were fain to take boat once more and try our luck elsewhere. Soon we made the bay where others of the party had landed. There was still a great deal of surf here, and the boats were anchored well outside it; our friends had landed on a raft, made up from the companion ladder of some vessel, and the cork cushions of the life-boat had been, as we afterwards learnt, and as might have been expected, soundly soused *en route*. After some delay several of the lascars swam out to us with this precious raft. As it could only take one at a time, and as I did not much like the look of the concern, or of the heavy rolls just ahead, I most *generously* and *unselfishly* yielded the *pas* to my eager companion, and not wishing to

damp his ardour, only expressed in parting a hope that he might not be drowned, adding that I felt less anxious, than I should otherwise have done, owing to the firm conviction I entertained that he was reserved for a more exalted fate.

The cork cushions were about 6 feet apart, and across them was placed the companion ladder, on which the passenger was perched. A lascar swam at each side of each of the cork cushions. The raft progressed most favorably for some little distance, riding most buoyantly on the swells. My friend turned round to wave a half contemptuous, half compassionate farewell, and the next moment the whole concern was caught in a good curl, turned head over heels, two of the lascars were flung off in one direction with their cork cushion, the other two in the opposite direction with their's, the ladder turned topsy turvy, the passenger disappeared. Altogether it was as good as any pantomimic transformation scene I ever saw, and I grew so excited over it that D. has since reproached me with the fact that the last words he heard, as the dark waters closed above him, were shouts of "bravo!" "encore!"

However he soon got on shore, and then by signs (*forgiving* mortal as he was) most kindly offered to send the raft back for me. My extended fingers returned a courteous, but decided negative to his invitation to land. I lit a cheroot and (*aliquot dormiat, &c.*) very soon fell asleep at the bottom of the boat. When I woke wind and sea had lulled, the surf had subsided, and I was able to get the boats in quite close to the beach. The first party that landed had procured two specimens of the little Hornbill, which I had seen so many of and that was all. They had made desperate attempts to scale the hill, but found the jungle impassable. They had found nothing but volcanic rocks, but no recent lava and no certain evidence of the mountain itself ever having been an active volcano.

I should guess the island to be some six miles in circumference, and about 1,200 feet in height at its highest point, which is a rather short, truncated, irregular cone, seated between two high, unequal shoulders, the northern one of which is prolonged for nearly a mile as a gradually sloping spur.

Years ago Colonel Tytler had a number of goats and fowls landed on this island (he did not land himself, indeed we were, I believe, the first Europeans who ever did land here), but we saw nothing of them, and as we all failed to find any, traces even, of fresh water, it is probable that the poor things all died soon after they were put ashore from the want of this necessary. There is much reason to apprehend that vessels are not unfrequently

wrecked here; the numerous fragments I saw on the beach, where I first landed, clearly belonged to some European craft, and it would be well, I think, if a small tank and rest-house were here constructed; the high-wooded crest, as the deeply furrowed water-courses attest, attracts heavy rainfalls, and all that is needful is to provide for the storage of some small fraction of this.

Long before daylight of the 24th we were alongside the Great Coco, a long low island some 6 or 7 miles long and from $1\frac{1}{2}$ to 2 miles in breadth, running nearly north and south. A broad snow-white coral beach surrounds the whole island. Just inside of which a narrow belt of cocoanut trees, broken, it is true, here and there, but on the whole wonderfully continuous, fences in the whole of the island that is above high-water mark.

We anchored in the bay, mostly very shallow, on the eastern side and towards the northern end of the island. A fringing reef of coral extends, almost everywhere, back from the beach to a distance of from 100 yards to nearly half a mile, and we found, after much trouble, only a single narrow passage through which we were able to run our boats right on to the beach.

The whole of the upper portion of the bay, lying up towards Table Island, is excessively shallow, and paved throughout with many colored corals and madrepores, the haunts of innumerable shoals of tiny bright-hued fish. Several turtles were seen scudding away as the boats neared the land into deeper water, and a great shoal of porpoises feeding in a long, straight, regular line like a regiment on parade, were disturbed from their comfortable quarters by our approach.

Landing we found that within the cocoanut fringe the island was fairly, but not densely, wooded. In the central portion of the island one or two rows of parallel ridges or mounds, no where rising, I should guess, to an elevation of more than 50 feet above the sea, run down from north to south. Here and there, patches between, or at the feet of, these ridges are bare of trees, and appear to be swamps or ponds during the rainy season. These spots, when we visited them, were perfectly dry, and covered with a thick growth of coarse grasses. (*Andropogon*, sp.)

In walking through the jungles, crossing from one side of the island to the other, I twice obtained glimpses of wild pigs, and others of the party saw and heard domestic fowls, of which a few have run wild upon the island.

Birds of all kinds were more numerous here than in any other locality which we have visited during our trip. I do not mean

to say that the species were very numerous, but individual birds were more plentiful than we elsewhere met with them. On many islands the difficulty was to meet anything to shoot; here we might have shot any number of birds we chose.

A fine pair of the Andaman Hawk-eagle, (*Sp. andamanensis*) kept circling and wheeling over head (never approaching within shot) throughout the day, now and again perching for a time on some dead tree that crowned one of the higher ridges. The Pale-billed Swallow-shrike (*A. leucorhynchos*), together with the Blue-tailed Bee-eater, sailed about in large parties hawking insects. In amongst the trees the large black King-crow (*Dissemuroides dicruriformis*) was perhaps the most noticeable bird, conspicuous by its large size and harsh voice. The Andaman Crow-pheasant or Coucal (*C. andamanensis*), the Bow-billed Corby (*C. Levallantii*), the Indian Chesnut-headed Bee-eater (*M. Swinhoei*), the Andaman Sun-bird, the White-collared Kingfisher (*H. chloris*), the Green Imperial Pigeon (*C. sylvatica*), the Bronze-winged Dove (*C. indica*), the Andaman Paroquet, seemed all common. On the shore Blue Reef-herons, Pallas' Sand-plover (*Æ. mongolicus*), the Grey-curlew, the Turnstone, the Common Sandpiper, were shot and a few other birds observed. In one patch of long grass I turned out a White-breasted Water-hen, and one of the party shot a common Pond-heron.

A huge lizard (*Hydrosaurus salvator*) was not uncommon. An enormous specimen was brought in by one of the officers who seemed to think he had secured a rather dangerous animal, for he insisted that it stood and looked at him in such way that he did not know what it was going to do next.

Just off the northern end of the island lies a small separate islet known as Table Island, on which the light-house of that name is situated. As we walked up the shore towards Table Island, we noticed on and about the reefs which fringed the latter several pairs of a large plover, similar to what we had seen in Macpherson's Straits, and which although surprised at finding it on the sea-coast, it being essentially a river-bank bird, I had taken for *E. recurvirostris*.

After an immense deal of trouble, for the birds were very wary, I succeeded in shooting a specimen, and found it to be a true *Esacus* no doubt, but a much larger and darker bird than our Indian one, in fact no other than the Australian species *magvirostris*. We never met with this bird anywhere in the Nicobars, nor has it been, so far as I know, observed in Sumatra, Java or Borneo; its habitat being the northern and north-

western parts of Australia, New Guinea, Celebes and the islands between these two, so that its occurrence, both at the southern and northern extremities of the Andaman group, is very remarkable, and not easily explicable.

Taking boat we crossed to Table Island, a great part of which, having been cleared of jungle, is now clothed with short fine grass, which furnishes admirable pasturage to a large herd of Government cattle which are under the charge of the light-house keeper.

On this island, besides the species already mentioned, the Common Swallow was abundant, hawking for flies over the smooth grassy swells, and in the trees below, and the garden of the light-house, huge flocks of a large Rose-band Paroquet, identical as I take it with the Andaman bird (*P. magnirostris*), were screeching. I shot several specimens, but such dirty birds I never saw; they were smeared from head to foot with some kind of gum, and their plumage was generally in such vile order that it was impossible to be quite certain to which species or sub-species of this group they belonged; their size, however, sufficiently established the fact that they did not pertain to the Ceylon form (*P. eupatria*).

Going up to the light-house, the keeper, a very intelligent and (as he once proved himself in a great emergency) gallant fellow, gave us a long account of the cyclone of the previous October, the traces of which had been very evident at Narcondam, and which had only been less palpably destructive at Table Island, because there were fewer trees left to fell. Even here, however, looking out from the top of the light-house, the passage of the hurricane could still be distinctly traced. The island had lain exactly in the centre of the cyclone's path; the wind had been terrifically strong in one direction for some hours; then came a dead calm that lasted for a quarter of an hour; and then the wind blew with even greater violence than before, but from an exactly opposite direction. The consequence was that all the prostrate trunks along one side of a ridge lay in one direction, and all those on the other in an opposite direction; the trees, that sheltered by the hill, escaped during the first portion of the hurricane, having had, during the second, to bear its full brunt.

Mr. Hawkins told us that when the storm was over the beach was piled up with dead and dying fish, some of them of a very large size, all kinds of zoophytes and corals in the wildest profusion, while every hollow of the island was tenanted by hundreds of numbed or wounded sea-birds of all descriptions

(such as he had never seen near the island before or since) so terrified or exhausted that he picked up and took home several of them to the light-house to show to his wife. Mixed with these were a certain number of pigeons, parrots, and other land-birds, but the great majority were Petrels, Terns, Whale-birds, and such like sea-fowl with which his experience as a sailor in southern seas had made him familiar.

Most of these birds ultimately recovered and left the island, but many of them hung about it for weeks, and for many days remained so tame that they would not move from the ground or the rocks, where they happened to alight, to make way for the keeper or his men.

Fancy telling a story like this to a party of rampant ornithologists dead upon sea-birds especially, and who, during their whole trip, had failed to secure a single specimen!

Mr. Hawkins also told us that at certain seasons of the year a great yellowish white and black fruit-pigeon (*Carpophaga bicolor*, of course), is so abundant that he often shoots a dozen in a morning; with these are associated numbers of the Green Imperial and Yellow-winged Green Pigeons. He also described a brown, hen-like bird, which he had occasionally shot, and which, although it may have been merely one of the wild hens from the neighbouring Cocos, still, from what he said of the large feet and red skin about the face, seemed to savour strangely of the Megapod, and this suspicion gains strength from the fact that on the western shore of the island, where the primeval jungle is still intact, I came upon a mound, which in every respect resembled, so far as external appearance went, the mounds that I had so closely examined at Galatea Bay.

A tiny semi-detached peninsular of Table Island is known as Slipper Island, and beyond this is visible, still nearly intact, the wreck of the Jamsetjee Cursetjee Bottlebhoy, firmly jammed on the fringing reef.

In October 1867, Mr. Hawkins (and this I heard from Dr. Rean and others at Port Blair and not from him) was himself the hero of another wreck, during another cyclone. He was then chief officer of the *Shahjehan* which had on board 300 emigrants. For 48 hours the vessel had been at the mercy of wind and waves, wrapped up in a mist of sea drift and thunder clouds, when she suddenly struck on a rock between the Brothers, near the Little Andaman. There she hung broken backed with 15 fathoms fore and aft, and every one expecting her to go to pieces every moment. The shock, when she struck, had brought the main yard down, smashing

the chief officer's right thigh, and killing several of the crew or emigrants. What became of the Captain it is needless now to say; he proved unequal to the emergency. Only Mr. Hawkins insisted upon some efforts being made to save the emigrants. The sea was still running so high that no one could at first be persuaded to lower and venture in the sole seaworthy boat that remained; at last the chief officer said he would go broken thigh and all, and so he did with four lascars and 13 emigrants. He reached the Little Andaman safely, landed the emigrants, and was about returning for another batch, when he saw that the natives had come down and were killing the emigrants he had landed; before he could get near the shore, ten had been killed, three had taken to the water, and these he picked up, one of them a woman who had swam, or at any rate been carried by the current, more than 3-4ths of a mile before she was rescued by the boat.

Then he saw that in getting assistance from Port Blair, fifty miles distant, lay the only hope of saving the emigrants, and for Port Blair he started in a small leaky gig, with only half a crew, for the sea was still so high that the attempt seemed madness, and most of the lascars preferred to take their chance on the wreck.

Fortune *does* sometimes favor the brave; he reached Ross Island, and the Steam Tug *Quang Tung*, the only available vessel, was at once despatched to the wreck, even then, when his thigh (it was a comminuted fracture of 18 hours' standing) had swollen to the size of his body, he could scarcely be restrained from returning with the steamer.

The steamer got down in about six hours, took most of the emigrants off, and so lightened the vessel, that she was got clear of the rock and taken in tow. The patient in the meantime was not to be quieted; he insisted on his cot being placed alongside a window of the hospital, whence he commanded a view of the southern approach of the harbour. At last, late in the afternoon, steamer and ship were sighted, and just as the sun was setting the chief officer had the intense gratification of seeing the *Shahjehan's* broken masts and tangled rigging sweep past his window; then, as Dr. Rean said, he gave a great sigh of relief, and fell asleep.

The *Shahjehan* sank whilst they were still towing her up the harbour, but except the ten emigrants killed by those villainous savages of the Little Andaman, and a few lascars killed or knocked overboard, when she struck, not a single life was lost, and every man, crew or passenger, owed his life to Mr. Hawkins' heroism.

His sufferings, as any one might guess, were long and protracted; his recovery tardy, and when able to leave hospital, he was pronounced unfit for future service afloat. The Government, however, gave him at once the berth of a light-house-keeper, and here, as at sea, he has proved himself a faithful servant. We took him quite by surprise, he had no expectation of a visit for another month, but we found his whole light-house, from roof to floor, in the most perfect state of *brilliant* cleanliness, not a speck of dust to be found anywhere, and brass and glass almost supernaturally bright. I am happy to say that though still limping he is now able to run up and down the seven floors of his iron light-house as well as the best of us.

While we were at Table Island, others of the party had explored nearly the whole of the Great Coco. They got no birds that we had not shot or seen, but they found a pair of *Esacus magnirostris* by themselves on a sandy spit, one of which seemed unwilling to leave the spot; they secured it and just where (it proved to be the female) she had first been standing, they found in a tiny depression in the sand, only a few yards from high water-mark, a huge egg, exactly similar to those of *Esacus recurvirostris*, of which I have taken some scores, but a good deal larger.

I should add that when we visited the Great Coco not a drop of fresh water was to be found anywhere, though a systematic search was made for this all over the island. Other visitors have talked of a tank 200 feet long and 50 feet broad, but none such exists at the present time during the dry season. Nay, more in one of the lowest hollows, where I made the men scoop away the humus and sand for some three feet until they came to hard ground, which was either sandstone or indurated sand, only the faintest possible trace of moisture was observable and not one drop of water was obtained. On Table Island wells have been dug with a similar result, and all the water there used is collected from the roofs during the monsoons and stored in huge iron tanks. It is quite certain that in these islands the natural local supply cannot be depended on. Immediately after the rains, pools and ponds doubtless exist, furnishing, I should apprehend, a terribly insalubrious supply, and in some years, this may last later* than in others, but no one should ever count on being able to get any drinkable water anywhere in this group *except* from the light house-keeper's tanks.

* In April 1849 one of these pools still contained water, and it is to the drinking of this I attribute the fact, that of a party of colonists, consisting of three Europeans, one East Indian, and eight Burmese who at that time tried to effect a settlement on Great Coco, seven died of fever in a very short time, the rest abandoning the enterprise the moment a passing ship enabled them to escape.

At daylight of the 25th we weighed anchor and ran south to the Little Coco, where we anchored again early. This island is a miniature of the other, some two and a half miles long and nearly a mile broad. The same exquisitely white beach, the same belt of cocoanut trees, but more continuous and somewhat broader than in the Great Coco, the same low-wooded mounds, but with a slightly denser undergrowth more mingled with canes, whose thorny whiplike shoots at times sadly impeded progress, and the same dry, treeless hollows densely clothed with coarse grass, which in the monsoon are doubtless swamps. Here, as yesterday, not a trace of fresh water was to be discovered, although we had some six parties out, one of whom walked entirely round the island, while the rest crossed and recrossed it in a score of different places. I myself made four separate traverses working by the compass, (for the jungle was thick,) as nearly as I could judge, equidistant from each other and from the two ends of the island. No place could have been more thoroughly worked, yet in addition to the species noticed yesterday, all of which were again shot to-day, the only birds obtained or seen were a Paradise Flycatcher (*Tchitrea paradisi*), Raffles' Brown Flycatcher (*A. latirostris*), Tytler's Tree-stare (*Calornis Tytleri*), that curious pachycephaline Shrike, Boie's Grey Thick-head (*Hylocharis philomela*—*Tephrodornis grisola*, Blyth,) the Andaman Bush-thrush (*G. albigularis*), the Nicobar White-eyed Tit (*Z. nicobariensis*), the Malayan Koel (*E. malayensis*), and a Whimbrel. One White-bellied Sea-eagle was *seen*, and so I believe, though I forgot to note it at the time, was one yesterday.

The fine coral beach of the western side of the island was strewn with bunches of the most lovely snow-white sea-weed-looking zoophyte? (even the Philosopher who knows everything in this line, *almost*, could not tell me what it was). Tiny leaves, like the leaflets of a maiden hair fern, joined on one beyond the other, in long strings, fifty of which grew apparently from one root, and *white* to a degree that shamed even the exquisite whiteness of the surf-pounded coral. It was perfectly dry, and very light, but without the smallest sign of wrinkling or withering, and seemed mainly composed of lime in a spongy form. Only on this island did we meet with it, and nowhere here, except on the western face that bears the brunt of the monsoon.

I lay down, after gathering a basket full of this beautiful mystery, under the shade of a close cluster of young cocoanut palms; a cool soft breeze was creeping up from the sea and

sighing through the great, gently waving, palm fronds overhead. The sea, blue to a degree unknown to dwellers in temperate climes, stretched away to the horizon a glittering glass-like sheet, only just where the waters kissed the "silver strand," they curled up into tiny sleepy wavelets, too full of summer delight to chafe even at the spiky coral, amongst which they crooned and cooed as softly as brooding doves.

No living thing seemed stirring, not a sail was to be seen, only not a sound disturbed the universal seista; only up in the palms the wind sang in whispers and the ripples murmured a soft applause, when suddenly, I was almost startled by a sharp little crack, crack, crack, as though some one was striking a plate with a knife handle. I did not move, I was too comfortable, but I opened my eyes wishing the intruder at Jericho, and there not above a dozen feet from my face was a lovely green and white Kingfisher (*H. chloris*) perched on a hollow lump of coral intently occupied with a large whelk-like shell, which he held by the lip between his powerful mandibles and battered on the coral with absolutely incredible force. Each time he struck it thrice successively, then put it down, turned it over and over with his bill, scrutinizing it narrowly, to see I suppose if there was a crack anywhere, and finding there was none, again took it up; I suppose he repeated this half a dozen times, but the shell was too strong for him, and he flew off, uttering his characteristic chuckling screech, I do not know how else to describe it, and perched on the end of a palm frond some 20 yards away. Presently off he flew and hung for a moment over the water's edge, and then dropped down softly not making a dart head foremost as the custom is, but *subsiding* softly as one often sees a harrier do. On the beach he kept turning something over and over, jumping up as the ripples rolled in, and dropping again as they retreated till he had gradually worked his prey beyond their reach. Then he busied himself, as it seemed, in fixing what he had got in a convenient position, and then he began hammering at it with his bill. Something however was wrong, for he again began proding at and about it with his bill; presently he set at it again, and after a minute apparently got on to it, and began for the first time using feet as well as beak and eating. Then I jumped up, I had not moved hand or foot till then; he flew off uttering his note of alarm, and I found that he had been at work on a thin-shelled pink bivalve, about the size of a rupee, but more oval, which he had broken in behind the hinge and out of which he had torn part of the Mollusc.

Once on my legs, I felt ashamed of my indolence, whilst *everyone* else was, as I thought, so hard at work. So I toiled up the glaring beach, till I heard a hail, and found three more of the party in a delightful shady nook who had *just* sat down to rest a *minute*. I noticed, however, that they were nearly at the ends of their cheroots, and that they had about twenty tapped cocoanuts lying round them, so I put on a virtuous expression of countenance and hinted that we should never get anything if fellows slept the whole day in the shade.

Talking of cocoanuts, of course, so far as numbers go, there are plenty, but they are poor sickly things to the grand nuts one gets at Car Nicobar and Galatea Bay. There a good nut contains more than even a thirsty man can get through without sundry stoppages, but here you require three to make a good draught. I suppose I drank the contents of a dozen to-day.

Everywhere in the belt hundreds and thousands of nuts lay about, mostly sprouting, and with green fronds from one to three feet high, growing out of them. The natives are very fond of eating the kernels of recently sprouted nuts. On opening the nut the kernels are found to have contracted together into a spherical yellowish-white spongy mass from two to three inches in diameter; light and very cellular, but with a crisp fracture like an apple and a delicate flavour. Anything more unlike the kernel as we usually see it, in texture, shape, color and taste, it would be difficult to imagine, and when first brought to me by some of the lascars I could not believe that it really was what they told me. However I opened plenty later myself, and soon got to like the nut in this form. It is very digestible, and one can make a meal on it, which one cannot do on the unaltered kernel.

During the night we made our way to the neighbourhood of Preparis and there anchored about 8 A.M. of the 26th. The island itself is small, perhaps three miles round, but is surrounded in all directions by huge fringing reefs, some of them stretching away for miles and bare for a long distance at low tide. It is everywhere low and flat, and is covered by thick stunted tree jungle pretty well tenanted by birds. The Andaman Sun-bird and Paroquet were both common. The Swallow was more abundant than I have seen it elsewhere on our trip. We saw, but failed to secure, several Koels and large Rose-band Paroquets. *Carpophaga bicolor* seemed pretty plentiful; several *Calobates sulphurea* were shot, and in a dry grassy hollow (for here too not a drop of fresh water was to be found) we flushed a Chestnut Bittern

(*Ardetta cinnamomea*) and from another a Green one (*Butorides javanica*), so that the swamps had probably only recently dried up. The inevitable White-bellied Sea-eagles, so invariably seen, so seldom shot, soared about high in air. On the shore the Golden-plover (*Charadrius fulvus*), the Grey-curlew, the Whimbrel, the Turnstone, Pallas' Sand-plover (*A. mongolicus*), the Common Sandpiper and Blue and White Reef-herons, were more than customarily numerous.

I soon got tired of the jungle where nothing worth having was to be seen, and which was so thick and thorny below that it kept off every breath of air, at the same time that it greatly imperilled the safety of every square inch of skin (I say nothing of clothes, for they were all in rags by this time), and so thin above that it offered no protection from the blazing sun, and so I betook myself with my faithful comrade D. to the broad, and now nearly bare, reefs.

Here I wandered about feasting my eyes upon the wondrously colored living corals, some a delicate pink, each branchlet tipped with crimson, some olive green tipped with the brightest smalt blue, some mingled purple and orange, or orange and a green so deep as to be all but black, various in shape and size as in tint, and intermingled with softly tinted jellies, and living sea flowers, whose hues rivalled those of earth's brightest gardens. Then towards the edge of the reef I watched the still green depths where far down between coral walls little shoals of fishes flashed out here, there, everywhere, sudden and many tinted as the diamond's rays, or else hung motionless, more like fragments of a shattered rainbow than anything else, till some great crimson fellow, all speckled like the breast of a Tragopan, would dash into the cleft and dissolve the kaleidescope-like group. In the pools great tiger shells, whose furry mantles shruok at the slightest touch, baring the polished spotted shell below, sidled along awkwardly and huge lampreys a yard or more in length, pale yellow, powdered over with lilac in strange dendritic patterns, half in and half out of their burrows, rapidly and regularly, alternately extended and contracted their waving supple snaky forms.

Presently I heard a shout from D., "turtle, turtle," and looking up I saw him dashing about in a deepish pool, every moment plunging down until he was almost out of sight. In a weak moment of enthusiasm I put my gun down on a dry block of coral and ran towards him. Just as I reached the edge of the pool he emerged with a turtle weighing about 40lbs. He was in the highest state of excitement, "come on" he said "there are half

a dozen more at least." Now the pool was fully four feet deep in some places, studded with huge branching corals that would cut one's legs. I had'nt the smallest intention of wetting *myself* up to my neck, as was quite unavoidable in catching a turtle in water as deep as this, but I thought it only right to encourage him, so responding to his call I sang out "hurrah! go ahead old chap, give me the turtle to put down," and seizing the latter by the hind legs, I left D. free to plunge again rejoicing into the pool.

Those turtle must have been very lively. I am sure D.'s agility would have gratified any one; he tumbled head over heels it is true a few times, but what did that signify? beyond a certain point no fellow can acquire any additional wetness, and besides was'nt I sticking to him like a man, standing boldly at the very brink and cheering him on to renewed exertions? What more could a man desire? and when all the six turtle had been caught, (for there really *were* five more), and I had laid each carefully on its back, and I hailed Stol (who emerging at that moment from the jungle in a state of extreme raggedness and perspiration) to come and see the turtle *WE* had caught, was it not ungrateful and unfeeling of that fellow D. to say "we? well I am blowed if I know where those you caught have got to"? Need I say that I took no notice of this ribaldry, but on the Philosopher's arrival started him off with a couple of the turtle to the beach, reproaching him plaintively with having been enjoyed himself in the shade, while *we* had been so hard at work in the sun. He did not *say* "Walker," that not being a Slavonic idiom, *but* he adjusted his spectacles with his arm, (his hands were occupied with turtles), and I regret to say (for it may create an impression unfavorable to him) most emphatically *looked* it.

Thus it is that the world rewards modest merit!

At the very height of the turtle hunt, I heard a rush overhead, and a fine Peregrine struck at a lot of little Sand-plovers, which were trotting about the sandy margin of another neighbouring reef-pool. It was the female, I could have shot her easily, but my gun was far away, so I had to content myself with watching her as joined a little further on by the male, both made repeated strokes at small waders along the beach. Directly they crossed the next point, six mysterious shots were fired in rapid succession, clearly from their movements, *at* the birds, who, however, never "seemed a penny the worse." I say mysterious because not one of the party knew any-

thing about them, every one had seen the falcons (or hawks as they were barbarously denominated) but nobody had fired. "Oh dear no, they passed quite out of shot you know!" Should any one ever feel tempted to compose a "Mysteries of Preparis," this remarkable incident should play a leading part in the, doubtless, thrilling romance.

Everybody was hot, tired, torn, wet and dirty, and though timely refreshments soothed us somewhat, Preparis was, I fear, generally voted a "beastly hole" and left without regret, save only by me. As for me the curtain fell on my pleasant play, when I stepped on board the dear old *Scotia* that night, to leave her again only when I reached that most detestable of all abominable places, Calcutta. Preparis *per se* might have its drawbacks, but to me it was a paradise as compared with India's metropolis where, as has been justly said, "everything smells, *except* the flowers!"

Next day we were well on the homeward track, out of sight of land, and the only noteworthy point was the arrival on boardship towards evening of a single Mosque Swallow (*L. erythropygia*), of which no specimen had been seen throughout the whole cruise, and which I have not, therefore, included in the ornis of the Bay Islands.

III.—*Analysis of the Avifauna.*

Notwithstanding all our exertions, our materials (which I must now explain) for a review of the Avifauna of the islands of the Bay of Bengal are still imperfect.

Our own trip has been described, and our route will be found duly marked on the map. During that trip we preserved a little over 500 specimens.

At the end of the previous November, I had sent my Curator, Mr. Davison, with his staff down to Port Blair. He arrived there quite at the beginning of December, and collected vigorously in that portion of the South Andaman until the 15th of January, when he left with General Stewart (to whose kindness we have all owed so much) for a cruise through the Nicobars. On the 10th of February General Stewart dropped him at Camorta, where he remained, working that island, Nancowry, Trinkut and Katchall, until the 11th of March, when he joined and accompanied us in our expedition. We left him on the 21st

March at Port Blair, where he went on collecting, until, on the 1st of April, he again started with General Stewart for a fifteen days' trip through the Andaman and Coco Groups, and on his return he again worked the Southern Andaman, until his final departure on the 12th of May. His more important trips will also be found indicated on the map. He and his people preserved nearly 1,200 specimens, besides those that they contributed, while cruising with us, to our stock.

During Mr. Davison's stay at Port Blair, Captain Wimberley expressed a desire to collect, and before leaving Davison transferred to him one of our taxidermists. From April to September Captain Wimberley collected, and we have received from him a little over 700 specimens preserved during these months.

Some specimens appear to have been lost, and a few were destroyed, but I had altogether 2,380 skins before me, all carefully sexed and dated, and more than half measured in the flesh, when I prepared the detailed list which will be given hereafter.

Besides these specimens and my own and Davison's notes, we have Von Pelzeln's remarks on the explorations of the Novara; sundry notes of Mr. Blyth's on birds which he from time to time received from the Andamans and Nicobars; Beavan and Tytler's papers, founded on the collections each made; and Mr. Ball's papers, partly founded on these, and partly on his own; and Dr. Dobson's collections and observations.

While, therefore, our information is still far from complete, I think it may be fairly assumed that we now know the great majority of the species, that occur in any considerable numbers, in these islands.

Situated as these latter are, and subject as is the whole region in which they lie, to hurricanes and cyclones, stray individuals of species, (as yet unrecorded,) from Burmah, the Malay Peninsula, Sumatra, Ceylon and Southern India, will necessarily occur from time to time. Moreover, the interior of the Great Nicobar will, I doubt not when explored, yield a certain number of new species; but for all that, we now have, I think, sufficient data for forming a tolerably correct conception of the general character of the Avifauna of these islands.

Altogether 198 species will be found noticed in my list, as observed by ourselves, or admitted by others into the Avifauna

of these islands. Of these, however, the following 13 must, I consider, be expunged. Some are species avowedly introduced, and which have since died out, while of others the occurrence rests, when the matter is looked into, on no sufficient evidence:—

- 41. Polioaëtus ichthyaëtus, *Horsf.*, (p. 149.)
- 65 *bis.* Syrnium seloputo, *Horsf.*, (p. 150.)
- 75 *quint.* Ephialtes lempiji, *Horsf.*, (p. 151.)
- 112. Caprimulgus asiaticus, *Lath.*, (p. 162.)
- 148. Palæornis torquatus, *Bodd.*, (p. 177.)
- 214. Eudynamys honorata, *Lin.*, (p. 192.)
- 214 *ter.* Eudynamys mindanensis, *Lin.*, (p. 194.)
- 224. Arachnothera pusilla, *Blyth*, (p. 196.)
- 284. Dissemurus paradiseus, *Lin.*, (p. 211.)
- 594 *bis.* Budytes citreola, *Pall.*, (p. 239.)
- 663. Corvus impudicus, *Hodgs.*, (p. 245.)
- 686. Acridotheres fuscus, *Wagler*, (p. 247.)
- 704. Estrilda amandava, *Lin.*, (p. 258.)

Full explanations of my reasons for excluding these species will be found on the pages cited.

Besides this, we have eight species which, if they occur at all at these islands, do so apparently as excessively rare stragglers, and are in no way, so far as our present investigations go, entitled to a place in the regular Avifauna.

- 56. Milvus govinda, *Sykes*, (p. 150.)
- 279. Dicrurus balicassius, *Lin.*, (p. 209.)
- 369 *bis.* Turdus pallidus, *Gmel.*, (p. 223.)
- 372 *bis.* Oreocinclla inframarginata, *Blyth*, (p. 223.)
- 690. Pastor roseus, *Lin.*, (p. 252.)
- 795 *bis.* Turtur tigrinus, *Temm.*, (p. 269.)
- 894. Totanus canescens, *Gmel.*, (p. 299.)
- 1004. Pelecanus philippensis, *Gmel.*, (p. 324.)

Then two species, which undoubtedly occur at Port Blair, *viz*:—

- 684. Acridotheres tristis, *Lin.*, (p. 246.)
- 803: Pavo cristatus, *Lin.*, (p. 276.)

have been introduced, and though they have multiplied and thriven on the little island of Ross, they have not as yet extended, as far as we know, one mile even from the spot where they were originally turned loose.

One species, 798 *bis*, *Chalcophaps Augustæ*, *Bonap.* (p. 270.) cannot, I consider, be maintained, but must be reduced to a synonyme of *C. indicus*. *Lin.*

82 *ter*, *Hirundo andamanensis*, *Tytler*, (p. 155.) appears to me to be an excessively doubtful species, and I would exclude it also from our list.

Making, therefore, all these necessary deductions, there remain 173 species, which we may confidently admit as pertaining to the fauna of these islands, and I must say that, excluding rare stragglers driven to them at odd times by stress of weather, I am doubtful whether the total real number exceeds at present 200. I say *at present* advisedly, because I have little doubt that as the work of clearing and cultivation proceeds and wide waving fields of rice and extensive gardens full of fruit trees take the place, as they are gradually taking, of gloomy mangrove-swamps and dense forests, some species, specially grain eaters, now strangers to the islands, will find their way thither from the main land of Asia, and aid to swell the list both of seasonal visitants and permanent residents. As a matter of fact this immigration is by some considered to have already commenced, and certainly from what I could learn from Mr. Homfray, the oldest resident in the Settlement, it would seem that some birds now common about Port Blair were unknown in Colonel Tytler's time; but whether these are really new immigrants, or ancient residents, brought to light by the extensive clearings and largely multiplied by unwonted supplies of food, may, I think, well be doubted.

Of the 173 species which I now admit, six require more exact determination. In every case, but one, we ourselves saw the birds; in some cases many of them, and there can be no reasonable doubts that some species of the genus indicated or of a nearly allied one does occur, but as we failed to procure specimens, and as no one else has as yet obtained any, we cannot be certain of the species. These six are (1) a *Lyncornis*, probably *cerviniceps* (p. 162.); (2) a *Centrococcyx*, of the *rufipennis* type, probably *eurycercus* (p. 196.); (3) a *Pitta*, probably, from what I could see of it, *Brachyurus moluccensis*, but possibly an undescribed species (p. 220.); (4) a *Carpophaga* (p. 266.), apparently an undescribed species, and very possibly not a true *Carpophaga*, but a species belonging to one of the other genera of large fruit-eating pigeons; (5) a *Prion* (p. 315.); (6) a *Thalassidroma* (p. 315.)

The following table shows how the 173 species that I admit are distributed amongst the six great natural orders which Dr. Jerdon, (whose arrangement I follow for the convenience of Indian

readers) admits, together with other particulars to which I shall have to refer further on :—

ORDERS.	Total species admitted.		Deduct species imperfectly ascertained.	Total species definitely determined.	SPECIES PECULIAR TO								RACES PECULIAR TO																		
	All the islands but				Andamans and Cocos.				Andamans.				Andamans and Nicobars.				Western, European, and India generally.				India generally, mostly extending eastwards.				Eastern India only, Burmah, &c.				Southern India.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21											
Raptores	14	...	14	...	3	...	3	1	...	7	...	...	...	...	...	2	4	...	...	1											
Insectores	95	3	92	2	3	3	13	7	1	130	2	2	5	9	8	17	16	2	10												
Gemitores	10	1	9	...	3	...	1	...	4	1	...	...	...	1	...	2	...	...	2												
Rasores	2	...	2	...	...	...	1	...	1	...	...	1	1	1	...	...	...	...	...												
Grallatores	37	...	37	...	...	...	1	...	1	1	...	...	...	1	18	13	1	...	3												
Natatores	15	2	13	...	...	...	...	...	...	...	...	...	...	...	3	4	...	...	6												
Total	173	6	167	2	9	3	17	10	1	143	4	2	6	12	31	40	17	2	23												

In classifying the species *not* peculiar to the islands, as I have attempted to do in the last five columns, it has been impossible without many further sub-divisions to be entirely accurate. Thus, in the last column of all, I have been obliged to enter *Lanius lucionensis* and *Goisakius melanolophus*, though both have occurred in Ceylon, and again *Onychoprion anosthætus* and *Phaeton flavirostris*, though these are rather African than Archipelagian. Again, under "India generally," I have had to include *Cypselus acuticauda*, although properly it should have had a sub-division to itself as occurring, *so far as is yet known*, only in the Himalayas. Still on the whole, although absolute accuracy is impossible without vastly multiplying the sub-divisions, I believe that the figures above given will afford a tolerably correct general idea of the geographical relations of the Avifauna.

Scrutinizing these figures the first thing that strikes one is the extreme paucity of Rasorial birds. No Pea-fowl, no Pheasants, no Jungle-fowl, no Spur-fowl, no Partridges of any of the many natural genera into which these divide, no true Quail, only one Megapod, peculiar to the islands, and one little *Turnix*, which even if not entitled to specific separation (though I suspect it will prove so) is, at any rate, a very distinctly differentiated race.

Yet all the missing sub-groups above enumerated are well represented on the Arakan Hills, of which the whole of the islands with which we have to deal, except Narcondam and Barren Islands, would seem at one time to have formed a continuation !

The next most notable point is the completeness with which we have passed out of the range of the Palæarctic fauna. Setting aside waders and swimmers, (whereof the species common to the islands and Europe are cosmopolites,) out of 121 species, only ten have any claims to be considered European. These are—

- 8. *Falco peregrinus*, *Gmel.*, (p. 140.)
- 54. *Circus æurginosus*, *Lin.*, (p. 150.)
- 82. *Hirundo rustica*, *Lin.*, (p. 154.)
- 351. *Cyanocincla cyana*, *Lin.*, (p. 220.)
- 483. *Pratincola rubicola*, *Lin.*, (p. 233.)
- 539. *Cisticola schœnicola*, *Bonap.*, (p. 235.)
- 592. *Calobates boarula*, *Penn.*, (p. 237.)
- 593 *ter.* *Budytes cinereocapilla*, *Savi.*, (p. 237.)
- 593 *quat.* „ *flava*, *Lin.*, (p. 238.)
- 599. *Corydalla Richardi*, *Vieill.*, (p. 239.)

Even of these it will be observed that many are, by some ornithologists, considered distinct, and entitled to specific separation from the European forms, of which according to the views of these naturalists these Asiatic races are representatives.

Thus the first species on the list is separated as *F. calidus*, Lath; the third as *H. gutturalis*, Scop; the fourth as *C. Pandoo*, Sykes; the fifth as *P. indica*, Blyth; and the 7th as *C. melanope*, Pallas; and though I cannot myself concur in the necessity or expediency of giving specific rank to the races that these appellations are intended to designate, I quite admit that in most or many of the individuals that compose them, (though not in *all* and that is *the* crucial test,) a certain degree of variation from the European type is observable.

The next point is the highly specialized character of the Avifauna. Excluding waders and swimmers we have 117 well-ascertained species, out of which no less than 43 or more than one-third are peculiar to the islands; two or three of the six imperfectly identified species are probably also peculiar to the islands, while twelve more, if not distinct species, (as many of them will certainly be considered by some ornithologists,) are, at any rate, very recognizably distinct races. So that of the Raptores, Insessores, Gemitores and Rasores, known to occur in the islands, nearly one-half are peculiar to these.

So much difference of opinion exists as to the specific value of forms, that I feel it necessary to enumerate the several species

that I have represented by the figures in columns 5 to 16 of the above table.

First of species peculiar to the islands.

Two are common to the Andamans, Cocos, Narcondam, Barren Islands and Preparis, viz :—

- 152 *ter.* *Palæornis affinis*, *Tytler*, (p. 184.)
235 *ter.* *Arachnechthra andamanica*, *Hume*, (p. 198.)

Nine are common to the Andamans and Nicobars—

- 39 *quat.* *Spilornis Davisoni*, *Hume*, (p. 147.)
81 *bis.* *Ninox affinis*, *Tytler*, (p. 152.)
81 *ter.* „ *obscurus*, *Hume*, (p. 153.)
356 *bis.* *Geocichla albogularis*, *Blyth*, (p. 221.)
689 *bis.* *Temenuchus andamanensis*, *Tytler*, (p. 248.)
690 *quat.* *Calornis Tytleri*, *Hume*, (p. 253.)
777 *bis.* *Osmotreron chloroptera*, *Blyth*, (p. 258.)
780 *quat.* *Carpophaga palumboides*, *Hume*, (p. 263.)
791 *bis.* *Macropygia rufipennis*, *Blyth*, (p. 266.)

Three are common to the Andamans and Cocos—

- *147 *bis.* *Palæornis magnirostris*, *Ball*, (p. 176.)
217 *bis.* *Centropus andamanensis*, *Tytler*, (p. 194.)
290 *bis.* *Myiagra Tytleri*, *Beavan*, (p. 217.)

Seventeen are peculiar to the Andamans—

- 34 *bis.* *Spizaetus andamanensis*, *Tytler*, (p. 142.)
39 *ter.* *Spilornis Elgini*, *Tytler*, (p. 144.)
74 *quat.* *Ephialtes Balli*, *Hume*, (p. 151.)
103 *ter.* *Collocalia innominata*, *Hume*, (p. 160.)
110 *bis.* *Caprimulgus andamanicus*, *Hume*, (p. 162.)
157 *bis.* *Picus andamanensis*, *Blyth*, (p. 187.)
169 *bis.* *Thriponax Hodgii*, *Blyth*, (p. 189.)
237 *bis.* *Dicaeum virescens*, *Hume*, (p. 198.)
270 *quat.* *Graucalus Dobsoni*, *Ball*, (p. 206.)
271 *bis.* *Pericrocotus andamanensis*, *Tytler*, (p. 208.)
283 *ter.* *Dissemuroides andamanensis*, *Tytler*, (p. 211.)
457 *quat.* *Brachypodius fuscoflavescens*, *Hume*, (p. 224.)
471 *bis.* *Oriolus andamanensis*, *Tytler*, (p. 226.)
476 *bis.* *Kittacincla albiventris*, *Blyth*, (p. 232.)
520 *bis.* *Locustella subsignata*, *Hume*, (p. 235.)
674 *bis.* *Dendrocitta Bayleyi*, *Tytler*, (p. 245.)
912 *bis.* *Euryzona Canningi*, *Tytler*, (p. 302.)

Ten are restricted to the Nicobars, viz :—

- 39 *sex.* *Spilornis minimus*, *Hume*, (p. 149.)
132 *bis.* *Halcyon occipitalis*, *Blyth*, (p. 171.)

* The Burmese race, however, is very close, and perhaps should be considered identical.

- 151 *bis.* *Palæornis caniceps*, *Blyth*, (p. 178.)
 152 *bis.* *Palæornis erythrogenys*, *Blyth*, (p. 181.)
 225 *bis.* *Æthopyga nicobarica*, *Hume*, (p. 196.)
 447 *bis.* *Hypsipetes nicobariensis*, *Moore*, (p. 223.)
 471 *quat.* *Oriolus macrourus*, *Blyth*, (p. 228.)
 688 *ter.* *Temenuchus erythropygius*, *Blyth*, (p. 247.)
 780 *ter.* *Carpophaga insularis*, *Blyth*, (p. 262.)
 803 *sex.* *Megapodius nicobariensis*, *Blyth*, (p. 276.)
 One species is peculiar to the Cocos—
 283 *bis.* *Dissemuroides dicuriformis*, *Hume*, (p. 211.)
 and one to Narcondam—

146 *quat.* *Rhyticeros narcondami*, *Hume*, (p. 176.)

I am quite aware that several of these will not be universally admitted as good species, and also that it is highly probable that when Sumatra and Tenasserim (which latter I am working now) have been more fully explored, some of the species now believed to be peculiar to the islands will prove to have a more extended range. Still this will not materially affect the point that I am now pressing, *viz.*, the highly specialized character of the ornithology, the more so that there are probably still peculiar species to be discovered in the Great Nicobar, and that many of the local races which I have now to enumerate, will, by many ornithologists, be considered entitled to specific separation: These races are—
 peculiar to the Andamans—

129. *Halcyon smyrnensis*, *Lin.*, (p. 167.)
 475. *Copsychus saularis*, *Lin.*, (p. 230.)
 797. *Turtur humilis*, *Temm.*, (p. 269.)
 913. *Hypotaenidia striata*, *Lin.*, (p. 302.)

peculiar to the Nicobars—

- 127 *ter.* *Pelargopsis leucocephala*, *Lin.*, (p. 166.)
 290. *Myiagra azurea*, *Bodd.*, (p. 217-)

common to both groups—

134. *Alcedo bengalensis*, *Gmel.*, (p. 173.)
 285 *ter.* *Dissemurus affinis*, *Tytler*, (p. 212.)
 631 *ter.* *Zosterops nicobariensis*, *Blyth*, (p. 242.)
 693. *Eulabes javanensis*, *Osbeck*, (p. 254.)
 701. *Munia striata*, *Lin.*, (p. 257.)
 834. *Turnix joudera*, *Hodgs.*, (p. 281.)

What is even more noteworthy than the specialized character of the ornithology of these islands as a whole, is the remarkable extent to which it is localized in the several groups. A glance at the map will show that (setting aside Barren Island and Narcondam, which pertain to an outlying line of disturbance)

the whole of these islands form a chain stretching from Cape Negrais to Acheen Head, with nowhere a break of more than 80 miles, and this only between Cape Negrais and Preparis, and again between Little Andaman and Car Nicobar. Yet the Cocos, only 40 miles north of the Great Andaman, have a species peculiar to themselves, and only five of the forty-three peculiar species, that I at present admit, are, as far as we yet know, common to the Andamans and Cocos. The former present 17 species, strictly confined within their own limits, the Nicobars ten, while of the 43 species only nine are common to both these groups.

Still more remarkable are the details. The Andaman *Myiagra*, which, as a rule, is a very distinct and well-marked form, is replaced in the Nicobars, by one which, though not precisely identical with the Indian form, is far more closely allied to this latter than to the Andaman *Tytleri*. *Halcyon chloris* is common from the Soonderbuns right down to Rutland Island, and again at Acheen in Sumatra, but it is absolutely wanting in every island of the Nicobars, where it is replaced by *H. occipitalis*, a well-marked species entirely restricted to this latter group. Each group has its own distinct—Harrier-eagle, Red-cheeked Paroquet, Oriole, Sun-bird, and Bulbul. *Merops Dandini* has not been met with in the Andamans, nor *M. Swinhoei* in the Nicobars. Two Woodpeckers are peculiar to, and common enough throughout, the Andaman group, but neither of them extend to either the Cocos or the Nicobars. Even where the differences may not be considered specific, and where I record the species as common to both groups, each group will often be found to possess a race of its own. Thus the *Dissemurus* of the Andamans differs in certain particulars from that of the Nicobars, and the same is the case with the *Osmotreron*, the *Munia*, and others, as will be pointed out in detail when dealing with the several species separately.

Turning now to species, which, according to my views, undoubtedly occur elsewhere outside the islands, we find that there are 112 of these; of which 31 are western, for the most part the inevitable plovers, snipes, sandpipers, stints and herons, which, in a case like the present, may be neglected as affording no clue to the affinities of the fauna. Out of the remaining 81, 40 may be classed as Indian, as occurring for the most part either pretty well throughout the Indian region proper in suitable localities, or along the Indian coasts generally, though in the case of the majority also extending eastwards. Two are Southern Indian, 17 belong to what I call the Indo-

Burmese sub-region, in which I include the whole of Pegu, Arakan, Eastern Bengal, Assam, and the sub-tropical belt running westwards along the bases and up the low valleys of the sub-Himalayan ranges, as far or nearly as far as the Kumaon Bhabur. While 22 belong to several at present inextricably entangled faunas pertaining to the Indo-Malayan, Eastern Asiatic, Archipelagian and Australian sub-regions.

The separation of many of these species under these different heads is far from easy, and no two ornithologists probably would do it exactly alike. There are several species that might almost indifferently be referred, looking to their distribution, to either of two of these divisions, and it is unquestionable that if absolute accuracy were insisted on, and it were necessary to place in each division only those species whose ranges were truly identical, four times the number of sub-divisions that I have adopted would scarcely suffice.

Still, as I have already remarked, I believe that on the whole, the groups into which I have thrown these species do approximately represent broad facts of geographical distribution, and sufficiently nearly so to enable us to form some idea of the general geographical relations of the ornith with which we are dealing.

Every ornithologist, however, will probably prefer his own arrangement to mine, and it is therefore desirable to enumerate the species that I have assigned to each sub-division, so that each reader may alter the lists as seems good to him, and by simple addition and subtraction recast the figures for himself.

First we have those species (40 in number) which, although for the most part also extending eastwards, some of them northwards, and a few like *Dromas ardeola*, westwards to the Arabian and African coasts, are yet, according to my view, widely distributed through, and more or less characteristic of, the Indian sub-region—

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| 25. | <i>Accipiter virgatus</i> , <i>Temm.</i> , (p. 141.) |
| 43. | <i>Cuncuma leucogaster</i> , <i>Gmel.</i> , (p. 149.) |
| 74. | <i>Ephialtes pennatus</i> , <i>Hodgs.</i> , (p. 151.) |
| 81. | <i>Ninox hirsutus</i> , <i>Cuv. et Temm.</i> , (p. 151.) |
| 99 bis. | <i>Cypselus acuticauda</i> , <i>Blyth</i> , (p. 156.) |
| 118. | <i>Merops Daudini</i> , <i>Cuv.</i> , (p. 162.) |
| 119. | „ <i>Swinhoei</i> , <i>Hume</i> , (p. 163.) |
| 126. | <i>Eurystomus orientalis</i> , <i>Linn.</i> , (p. 164.) |
| 133. | <i>Ceyx tridactyla</i> , <i>Linn.</i> , (p. 173.) |
| 153. | <i>Loriculus vernalis</i> , <i>Sparm.</i> , (p. 185) |
| 203. | <i>Cuculus micropterus</i> , <i>Gould</i> , (p. 191.) |
| 261. | <i>Lanius cristatus</i> , <i>Linn.</i> , (p. 198.) |
| 270. | <i>Graucalus Macei</i> , <i>Less.</i> , (p. 204.) |

276. *Pericrocotus peregrinus*, *Linn.*, (p. 209.)
 297. *Alseonax latirostris*, *Raffles*, (p. 219.)
 469. *Irena puella*, *Latham*, (p. 226.)
 472. *Oriolus melanocephalus*, *Linn.*, (p. 230.)
 514. *Cyanecula cærulecula*, *Pallas*, (p. 234.)
 556. *Phyllopseuste magnirostris*, *Blyth*, (p. 236.)
 558. „ *lugubris*, *Blyth*, (p. 236.)
 660. *Corvus Levaillantii*, *Lesson*, (p. 243.)
 780. *Carpophaga ænea*, *Linn.*, (p. 260.)
 798. *Chalcophaps indicus*, *Linn.*, (p. 269.)
 842. *Glareola orientalis*, *Leach*, (p. 284.)
 845. *Charadrius fulvus*, *Gmel.*, (p. 287.)
 846. *Cirripidesmus Geoffroyi*, *Wagler*, (p. 288.)
 861. *Dromas ardeola*, *Payk.*, (p. 293.)
 870. *Gallinago stenura*, *Kuhl.*, (p. 294.)
 877. *Numenius lineatus*, *Cuv.*, (p. 296.)
 904. *Gallicrex cinereus*, *Gmel.*, (p. 300.)
 907. *Gallinula phœnicura*, *Penn.*, (p. 300.)
 929. *Bubulcus coromandus*, *Bodd.*, (p. 309.)
 930. *Ardeola Grayi*, *Sykes*, (p. 309.)
 931. *Butorides javanicus*, *Horsf.*, (p. 310.)
 933. *Ardetta cinnamomea*, *Gmel.*, (p. 311.)
 934. *Ardetta sinensis*, *Gmel.*, (p. 311.)
 951. *Nettapus coromandelicus*, *Linn.*, (p. 316.)
 952. *Dendrocygna arcuata*, *Cuv.*, (p. 316.)
 990. *Sterna bengalensis*, *Less.*, (p. 318.)
 994. *Anous senex*, *Leach*, (p. 321.)

Then there are the 17 Indo-Burmese species—

- 127 *bis.* *Pelargopsis Burmanica*, *Sharpe*, (p. 165.)
 130. *Halcyon atricapillus*, *Gm.*, (p. 168.)
 131. *Halcyon coromanda*, *Latham*, (p. 169.)
 132. *Halcyon chloris*, *Bodd.*, (p. 170.)
 134. *bis.* *Alcedo asiatica*, *Swain.*, (p. 174.)
 152. *Palæornis fasciatus*, *Müll.*, (p. 180.)
 200. *Cuculus striatus*, *Drapiez*, (p. 190.)
 214 *bis.* *Eudynamys malayana*, *Cab.*, (p. 192.)
 266. *Hylocharis philomela*, *Boie.*, (p. 201.)
 289. *Tchitrea affinis*, *Hay*, (p. 216.)
 460. *Otocompsa emeria*, *Shaw*, (p. 223.)
 518. *Arundinax ædon*, *Pallas*, (p. 234.)
 555. *Phyllopseuste fuscata*, *Blyth*, (p. 236.)
 590. *Motacilla luzoniensis*, *Scop.*, (p. 237.)
 595. *Limodromus indicus*, *Gm.*, (p. 239.)
 723. *Euspiza aureola*, *Pallas*, (p. 258.)
 928 *bis.* *Demiegretta sacra*, *Gm.*, (p. 304.)

Some of these also occur (e.g., *H. coromanda* and *L. indicus*) in Peninsular India, but the extreme south has a distinct Indo-Burmese tinge. One, *O. emeria*, spreads a little westwards and southwards into the Indian region proper, (in the south and west it is replaced by *fuscicaudata*.) *D. sacra* might more properly, it may be thought, have been placed in the Australian and Archipelagian sub-division, but this I have reserved for species, not occurring (save as mere stragglers) in any other locality within our limits, except in these islands; whereas *sacra* is more or less common along the whole Indo-Burmese coast line, from Moulmein to Saugor Island. *A. ædon* again has a wide range, but within our limits it occurs almost exclusively in and on the borders of the Indo-Burmese sub-region; and generally, I think, I am correct in saying that whatever their extension elsewhere, within our limits, these species are virtually peculiar to, and characteristic of, the Indo-Burmese sub-region.

The two Southern Indian birds are—

83. *Hypurolepis domicola*, *Jerd.*, (p. 155.)

96. *Chætura indica*, *Hume*, (p. 155.)

But of these, the former also certainly extends to Malacca as well as the Andamans.

Lastly, we have the 22 species, which I class as belonging to the Eastern Asiatic, Archipelagian, &c., sub-regions.

- 23 *bis.* *Micronisus soloensis*, *Horsf.*, (p. 141.)
- 103 *bis.* *Collocalia linchi*, *Horsf.*, (p. 157.)
- 103 *quat.* *Collocalia spodiopygia*, *Peale*, (p. 160.)
- 211 *bis.* *Chalcococcyx xanthorhynchus*, *Horsf.*, (p. 191.)
- 235 *bis.* *Arachnechthra pectoralis*, *Horsf.*, (p. 196.)
- 261 *bis.* *Lanius lucionensis*, *Lin.*, (p. 199.)
- 269 *bis.* *Lalage terat*, *Bodd.*, (p. 202.)
- 280 *bis.* *Dicrurus leucophæus*, *Vieill.*, (p. 210.)
- 287 *bis.* *Artamus leucorhynchus*, *Lin.*, (p. 214.)
- 605 *bis.* *Anthus cervinus*, *Pallas*, (p. 239.)
- 689 *quint.* *Temenuchus dauricus*, *Pallas*, (p. 249.)
- 781 *quat.* *Carpophaga bicolor*, *Scop.*, (p. 264.)
- 798 *ter.* *Calœnas nicobarica*, *Linn.*, (p. 271.)
- 845 *ter.* *Eudromias veredus*, *Gould*, (p. 288.)
- 858 *bis.* *Esacus magnirostris*, *Geoff.*, (p. 290.)
- 936 *bis.* *Goisakius melanolophus*, *Raffles*, (p. 312.)
- 953 *bis.* *Mareca gibberifrons*, *Müll.*, (p. 316.)
- 986 *bis.* *Sterna gracilis*, *Gould*, (p. 317.)
- 991. *Sternula melanauchen*, *Temm.*, (p. 319.)
- 992. *Onychoprion anosthætus*, *Scop.*, (p. 320.)
- 996. *Phaeton rubricauda*, *Bodd.*, (p. 322.)
- 997. „ *flavirostris*, *Brandt*, (p. 323.)

Here again the division is far from exact. *D. leucophæus* runs high up into Burmah, *C. xanthorhynchus* has occurred in Tenasserim, *L. lucionensis* and *G. melanolophus* have been obtained in Ceylon, and *O. anothætus* and *P. flavirostris* are perhaps more essentially African than Archipelagian or Australian.

So far then as the species not peculiar to the islands are concerned, the influence of the Indian sub-region has vastly predominated. The whole of the 31 western species are common to this region, so that to it in round numbers may be attributed two-thirds of the whole number, while the Indo-Burmese and Australian and Archipelagian regions have between them only contributed about one-third, the latter furnishing considerably the larger quota.

If now we look to genera the preponderance is still more marked. Out of a total of nearly 120, only five Non-Indian, Indo-Malayan, Archipelagian or Australian genera are represented, *viz* :—

Lyncornis,
Lalage,
Caloenas,
Megapodius,
Eudromias,
Goisakius,

of which the second, third, fourth, and sixth are virtually confined to the Nicobars, though stragglers of the third and fourth have occurred at the Andamans and Cocos, and of the sixth in Ceylon.

Au reste five others are, within our limits, represented only in the Indo-Burmese sub-region, *viz* :—

Rhyticeros,
Hylocharis,
Calornis,
Macropygia,
Euryzona,

but the remainder, more than nine-tenths of the whole, (although some of them, *e.g.*,—

Spizaetus,
Spilornis,
Collocalia,
Eurystomus,
Pelargopsis,
Loriculus,
Artamus,
Centrococcyx, &c.,

may be more fully represented elsewhere,) pertain clearly, though by no means exclusively, to the Indian sub-region, as it now is.

It seems to me impossible to avoid the conclusion that the ornithology of these islands has altogether a very far stronger affinity with that of the Indian region, than with those of either the Indo-Burmese, Indo-Malayan, (which inosculates with the former north and south of Moulmein) or Archipelagian. Yet this involves very great difficulties; for, in the first place, these islands seem to form parts of a chain of mountains, once continuous from Arakan to Acheen; and in the second place if we take Port Blair as a centre, we shall find that its average distance in all directions, north and east, from Tenasserim (where the Indo-Malayan fauna preponderates), and north of this from the Indo-Burmese sub-region, is only about 350 miles, while *per contra* its distance, from the nearest points of the Indian sub-region, all round from Calcutta to Madras, is 900 miles.

That so many of the most characteristic birds of the Arakan hills, especially amongst the Rasores, should be entirely wanting in these islands, we may partly account for by supposing that the chain of mountains never *was* continuous, and that the same agency that raised the Arakan hills only raised portions of their continuation, between these hills and Sumatra, above the sea level, and that therefore these islands never were directly connected either with Acheen or Pegu. This might, of course, be true; but looking to the fringing reefs of the Andamans and Cocos, and to many other indications, I confess that I should be disposed to believe that these islands belonged to an area of subsidence, and that they are even now sinking. But grant that the other is the correct view, that these groups first made their appearance as, and have ever since remained, islands, detached alike from Arakan and Sumatra, even then it is inconceivable how the great bulk of the work of colonization should have gone on from a region 900 miles distant, while so little should have been done from others separated by little more than one-third of that distance.*

The prevalent winds of these seas will in no ways explain or help to explain the difficulty, on the contrary they altogether intensify it, since their influence would be distinctly more favorable to emigration from south-west, east, and north-east

* Indeed I do not feel sure that some colonization has not gone on from the Nicobars to the Indo-Malayan region instead of the converse. *Palæornis* appears to me an eminently Indian genus; and it is not impossible that both *Luciani* and *longicaudatus* are modified forms of *erythrogonys*, or *affinis*, themselves modifications of one of the existing Indian races, or common offshoots with them from some antecedent Indian one.

than from west, and north-west. But colonization in no ordinary sense can explain the facts. Sumatra, only 80 miles distant from the Great Nicobar, and itself the first link of a great chain running down almost unbroken to the Papuan sub-region, Sumatra, as Davison's hurried visit shows (*vide* STRAY FEATHERS, 1873, p. 441, *et seq.*), teems right up to Acheen Head with species quite unknown to the Nicobars, and seems only to have passed on to these latter, one species *Lalage terat*, and to have afforded a passage to *Esacus magnirostris*, *Goisakius melanolophus*, and perhaps one or two others, and a Megapod, which has departed from its type, whatever that was, and assumed a distinct specific form.

Surely it is passing strange, this long line of islands, so close comparatively to Pegu, Tenasserim, and the northern portion of the Malayan Peninsular, abutting, it might almost be said, on Arakan on the north and Sumatra on the south, and yet taking scarcely one-third of its ornithology from all these together, and the remainder from the, comparatively so far distant, Indian sub-region.

How can we consider these islands as other than an outlying strip of the Indian region proper, and the Indo-Burman, Indo-Malayan, and Archipelagian forms, as intruders on the original Avifauna?

Yet that it must have been very long since these islands formed an integral part of the Indian region is proved by the very large proportion of local species and races, forms that could probably only have been differentiated under greatly changed conditions of existence prevailing for a very lengthened period.

Perhaps, however, I am putting the case for the Indian origin of the ornithology too strongly. It is not sufficient merely to determine what proportion of Indian species and genera are comprised in the Avifauna, we must also consider what well marked widely distributed Indian genera are *unrepresented* in this.

Truly some of the lacunæ are most unaccountable. I do not think much of the absence of vultures, because these could scarcely exist, where mammals of any size, whether wild or domesticated, are all *but entirely* wanting, and moreover, the same climatic influences, that have prevented the extension of vultures into the Indo-Malayan region, would have led to their disappearance, if they ever existed there, from these islands, but the entire absence of *Hypotriorchis*, *Tinnunculus*, *Lophospiza*, *Neopus*, *Haliastur*, *Milvus*, *Elanus*, *Pernis*, *Baza*, *Poliornis*, genera more or less common to the Indian, Indo-Burmese, Indo-

Tayan, and Archipelagian sub-regions, is most surprising. It is true that *Lophospiza*, *Neopus* and *Baza*, though the two former also occur in Southern India, and all straggle somewhat beyond the limits of their province, yet pertain essentially, so far as our empire is concerned, to the Indo-Burmese region, and the same may be said of *Hypotrionchis severus*; while *H. subbuteo* belongs only to the extreme northern and western frontiers of the Indian sub-region, but *Tinnunculus*, *Haliastur*, *Milvus*, *Elanus*, *Pernis* and *Poliornis* are at present so essentially characteristic of, although by no means peculiar to, the Indian sub-region, that one can scarcely accept a tract where these are utterly wanting as having ever formed part of this region.

When we turn to the nocturnal Raptores, the blanks are equally perplexing, no *Strix*, *Sceloglax* or *Phodilus*, no *Syrnium*, *Ketupa* or *Athene*, only *Ninox* and *Ephialtes*.

Dendrochelidon, *Harpactes* and *Coracias*, are three other genera which might well have been looked for, but which are entirely unrepresented.

Except in Narcondam, (an island belonging like Barren Island to a different series to all the rest), Hornbills are entirely wanting.

The Woodpeckers are represented by only two species, and the golden backed and green Woodpeckers, so characteristic of the Indian region, are wholly unrepresented.

Most inexplicable of all, Barbets are absolutely missing. Alike in the Indian, Indo-Burmese, and Indo-Malayan regions this family is amongst the most characteristic; leave the islands, it matters little in what direction you steer your course, and wherever within 1,000 miles you touch land, you at once hit upon Barbets; nay, one of the first birds you see at Acheen Head is our old Indian friend *Xantholæma hæmacephala*; but not one single Barbet appears to occur in any one of the islands of the Bay of Bengal.

Sitta, *Leucocerca*, *Cyornis*, *Chloropsis* and *Iora*, all very characteristic of the Indian region, although extending far beyond its limits, are all wanting, and the entire family of the *Timaliæ* does not possess a single representative. No doubt the great body of the species and genera that this family comprises, *Mixornis*, *Timalia*, *Turdinus*, *Pomatorhinus*, *Garrulax*, *Trochalopteron*, pertain even more to the Indo-Burmese sub-region than to that of India, and may have spread into the latter from the former, but *Malacocercus* and *Chatarrhæa* are so essentially and universally Indian, that one cannot understand even an outlying section of that region in which no representative of these genera exists.

Ruticilla, *Prinia*, *Drymoipus*, and *Parus*, are sylvine genera very characteristic of the Indian region (although the first two at least are probably of Palearctic, and the third of Æthiopic origin) which are unrepresented in these islands.

The great family of the *Corvidæ* is here represented only by the universal Bow-billed Corby that extends according to my view (though some ornithologists still cut it up into several species) throughout the Indian, Indo-Burmese, Indo-Malayan, and Archipelagian regions, and by an aberrant *Dendrocitta*, verging on *Crypsirina*.

Acridotheres, so peculiarly an Indian genus, though withal more or less represented in all the regions just mentioned, is wholly unknown to the ornithology of these islands, though *tristis*, introduced by Colonel Tytler, has multiplied (but without extending elsewhere) on the little island of Ross, where a few pairs were turned loose.

The whole family of the *Fringilidæ*, comprising the weaver-birds, amadavats, sparrows, buntings, finches and larks, only put in an appearance per one wretched little resident *Munia*, and an occasional straggling *Euspiza aureola*, absolutely so far as our limits are concerned, a purely Indo-Burmese form.

The extraordinary weakness of the representation of the Raptorial order has already been noticed (*ante*, p. 126.); bustards and coursers are (though this I think was inevitable from the physical conditions of the case) unknown, and the storks and *Tantalidæ* entirely wanting; yet *Falcinellus igneus* is widely diffused not only throughout the Indian, but the other regions above mentioned, and *Tantalus leucocephalus* of India and Burmah finds in Sumatra right up to Acheen Head a typical successor in *T. lacteus*. The *Lamellirostres* are only represented by one Australian *Mareca*, not previously, I believe, observed west of Macassar, and no single gull appears ever to have been seen about the islands.

If then we conclude, as I think we must, that the Avifauna of the islands of the Bay of Bengal is essentially Indian, in the restricted sense in which I use the term, as distinct alike from Indo-Burmese and Indo-Malayan, we must accept the fact, with the qualification, that we find it here in a most imperfect and mutilated form, lacking more or less entirely a large proportion of its most characteristic genera, the missing ones being not merely, or chiefly, those, either unfitted for distant flights, or lovers of an arid climate, but many of them amongst the strongest and most widely distributed, and to which the climate of these islands would appear in every way congenial.

The questions then for solution are: How is it that these islands exhibit broadly viewed an essentially Indian ornis, when according to all *a priori* reasoning it might have been expected to be almost exclusively Indo-Burmese, Indo-Malayan and Archipelagian? And how being Indian it wants so many of those genera, that are especially characteristic of that region as we now know it, and whose absence cannot be attributed to any want of suitability in the physical conditions of existence?

These questions cannot be satisfactorily answered without opening up a vast and complicated subject, embracing enormous areas and stretching over untold aeons, a subject which I have long since reserved for a separate work. Here it must suffice to say that there appear to me valid reasons for believing that the ornis of the Indian region proper, extended at one time much further east and south than it now does, that both the Indo-Burmese and Indo-Malayan Avifaunas, are invaders of the regions they now occupy, driven northwards and westwards by a continually widening ocean, and that the disappearance of an enormous area of dry land, southwards and eastwards of their new homes by its influence on the monsoons, and modification of climatic conditions generally, rendered vast tracts where the Indian ornis once reigned supreme, as unsuited to this, as it was congenial to the fugitives. Lastly, during the long ages that must have elapsed, while the evolution of so many specialized forms occurred, I believe that great changes were brought about in the parent fauna, and that many of those genera and species which we now look upon as characteristic of the Indian region, date their introduction into it to a period posterior to the separation of these islands from the mainland.

IV.—*Detailed list of Species.*

I have now to enumerate all the species admitted by myself and others into the Ornis of these islands.

Names of species which I admit have been printed in antique type, while those whose claims to admission appear to me inadequately established, are printed in ordinary type.

After the name of each species, certain figures are given within brackets. These indicate the number of the specimens that I have obtained. This is I consider of importance, firstly, because it exhibits the breadth as it were, of the basis, on

which any conclusion I may have arrived at, were formed ; and secondly, because in a rough way it does show approximately the comparative numerical strength in the islands of the several species.

As to the former, where a man has 20 or 30 carefully sexed specimens of a given species to study, any one would more willingly accept his verdict as to its distinctness or otherwise than if he had had only a couple to deal with.

As to the latter, it may be safely assumed that where I have large numbers of specimens the bird is common, at any rate in *some* part of the islands, and that where I have very few or none it is exceedingly rare in all accessible portions of them, although it *may* hereafter prove to be common in the unexplored Little Andaman, or hilly interior of the Great Nicobar.

In regard to the habits and distribution of each species I have, as a rule, preferred giving Mr. Davison's remarks to putting forward any of my own ; 1stly, because he was nearly six months amongst the islands to my one ; 2ndly, because talking over with him nightly, what we had seen and observed, I could not possibly now say how much of my knowledge was derived from him, and how much was the result of original observation ; and 3rdly, because I have already in my diary reproduced most of the notes that I recorded on the spot. In some few cases I have excerpted passages from the diary and introduced them, under the species to which they refer, in the following list, and in some few cases where my experience did not accord with Mr. Davison's I have mentioned the fact, but in most cases I have contented myself with his notes as embodying all that I knew, and not unfrequently a good deal that I had had no opportunity of knowing. It was his first collecting trip, and he had many difficulties to overcome.

8.—*Falco peregrinus*, Gm. (O.)

We saw, on Preparis Island, a pair of this species ; one made a swoop at a party of small stints close to where I was standing, but I had not my gun as I was busy with a lively turtle's hind leg in one hand and a great lump of coral in the other, eagerly watching one of my companions floundering after another turtle through a deep pool in the reef. Colonel Tytler mentions having seen a pair on Ross Island, but neither Davison nor any of our party ever met with the bird either on the Andamans or the Nicobars, and if it does occur there, it must, I feel satisfied, be merely as a chance straggler.

23 bis.—*Micronisus soloensis*, Horsf. (O.)

Although we were all of us anxiously on the look-out for this bird, throughout our visit to the Nicobars, we never succeeded in even seeing a specimen. Von Pelzeln (*Reise Novara*, p. 12) quoting Herr Zelebor, says:—"A young female was killed on the 25th February in the forests to the south of Car Nicobar. The little raptor was observed in the thickest forest where it made an unsuccessful dash at an *Oriolus macrourus*, and then perched on a palm. It was not common, we only twice observed it."

The only small hawk we obtained was that next mentioned, but of course it is possible that some of those seen, but not obtained, by Davison, belonged to the present and not to the next species.

25.—*Accipiter virgatus*, Temm. (1.)

A single specimen, a female, which I refer to this species, was obtained. If *gularis* of Schlegel be admitted as distinct, this bird might stand under this latter name, insomuch as its fourth quill is considerably longer than the fifth; whereas in all my twelve specimens of the true *virgatus* from various parts of the Himalayas, from Murree to Darjeeling, the fourth and fifth quills are almost precisely of the same length. Dr. Jerdon gives the dimensions of the wing of the males and females of this species as 6.75 and 8.5 respectively. Schlegel gives the wing at from 5.95 to 7.2. Four adult males in my collection have wings varying from 6.5 to 6.85; in four young males the wings vary from 6.35 to 6.6; in four females, old and young, from 7.5 to 7.9. The Southern Indian bird seems much smaller. A young male from Anjango has the wing only 5.85.

The present specimen, a nearly adult female, measured in the flesh as follows:—

Length, 12.5; expanse, 23.75; wing, 7.5; tail, from vent, 5.82; tarsus, 2.25; bill, from gape, 0.82.

The legs and feet were pale yellowish green; the bill plumbeous blue, tipped blackish; the irides and cere gamboge, yellow.

Mr. Davison remarks:—"This bird appears to be very rare; I only saw it twice during my stay at the Andamans, once soon after my arrival at Port Blair, and again about a month later. On both occasions the bird was sailing in circles over some gardens at Aberdeen; they were very shy, and I was unable to get a shot. The one specimen obtained was shot at Aberdeen on the 24th of April. While at the Nicobars, I, on

several occasions, saw a small-bluish looking hawk with more or less barred lower parts, sitting on a dry stump in the clearing behind the Settlement at Camorta; but it was so shy that I could never get within shot of it." During our whole trip we never even saw a single hawk of any kind.

34 *bis*.—*Spizaetus andamanensis*, *Tytler*. (1.)

Vide STRAY FEATHERS, 1873, p. 52, and also my *Scrap Book*, p. 203. I may note to begin with that both Captain Beavan's specimens, of which he gave the measurements, as male and female, in the *Ibis* for 1867, and which Mr. Ball reproduced *loc. cit.*, must have been males; also that the length and expanse, given by Colonel Tytler at p. 204 of my *Scrap Book*, were taken from dry skins.

The following are the exact dimensions, taken in the flesh, of an adult female:—Length, 23·5; expanse, 47; wing, 14·2; tail, from vent, 10·25; tarsus, 3·6; bill, from gape, 2; closed wings fall short of end of tail by 4·5; weight, 2·75 lbs. The fifth primary is the longest; the first, 4in.; the second, 1·4; the third, 0·4; and the fourth, 0·2 shorter. The external tail feathers 0·75 shorter than the internal ones.

The legs and feet were pale greenish white, slightly tinged with yellow; the claws black; the bill black; the cere brownish; the irides deep yellow.

The lores and the anti-ocular region are somewhat thinly clad, with excessively fine dusky hairlike feathers, underlaid, more or less, by small whitish, or yellowish-white, down-like feathers. The whole of the forehead, top, back of the head, and nape, is mingled white, pale yellowish-brown, and blackish-brown; the basal portion of the feathers being white, the terminal portions yellowish-brown or fawn color, with conspicuous lanceolate, deep brown spots towards the tips; all the feathers of the occiput are somewhat elongated, so as to form a broad, but inconspicuous subcrest; the mantle is mingled dark hair brown, and paler sepia brown; the extreme bases of the feathers when lifted are white. The primaries and their greater coverts are dark-brown; the second to the seventh, inclusive, conspicuously emarginate on the outer web, which emargination is concealed in the second and third by the coverts; just above this emargination is a broad fulvous brown band, and above this again the feathers are paler; the later primaries and secondaries are paler, and are obscurely banded with darker brown; the rump and upper tail coverts are mingled pale brown, and pale fulvous brown; the darker color

being chiefly confined to the tips, and the bases of the feathers when raised being white; the tail is a moderately dark earthy brown, narrowly tipped with pure white; there is a subterminal blackish brown band about an inch broad; and above this again five half-inch bands; the fifth more or less hid by the upper tail coverts; the space between the broad subterminal band and the first half-inch one is 1.25 inch; between the first and second bars 0.75, and smaller and smaller between the succeeding bars. This description applies pretty well to the eight central feathers, though the external of these are somewhat paler; but the two external feathers on each side are very considerably paler, have much narrower subterminal bands, and six instead of five other bands, which, moreover, are less regular than those of the central feathers. The ear-coverts are fulvous brown, streaked with blackish brown; the chin and throat are white, with three conspicuous blackish brown stripes, one central, the others on either side commencing on the base of the lower mandible. The breast, sides, and abdomen, pure white; the feathers with large, broad, more or less ovate, blackish-brown spots on their terminal halves. There is a pale rufescent halo round *some* of these spots on the sides of the breast, the sides and abdomen. The vent feathers and lower tail coverts are white, more or less banded or clouded with pale rufescent brown. The tibial plumes are a dull pale rufescent, here and there obscurely banded browner, and with numerous narrow, and not very regular or perfect transverse white bands. The tarsal plumes are white, the upper portions banded, and the lower portions spotted with pale rufous and brown. The wing lining white, irregularly banded, and spotted with blackish brown; the lower coverts, along the ulna, and the axillaries are more or less suffused with pale rufous. The lower surface of the quills greyish white, the tips and numerous bands on the median portions brown, darkest on the earlier primaries, and becoming grey on the secondaries. The lower surface of the tail greyish white; the broad blackish brown subterminal band, as also the other bands showing through, most conspicuously on the centre feathers, less so on the external ones.

I have been very particular in the dimensions and description of this bird, because it is not yet, I believe, generally accepted in Europe as a distinct species, and yet it seems to me to be eminently so.

Mr. Davison says:—"I only obtained one specimen (a female) of this bird, which I shot at Dunnyleaf Creek, South Andaman,

on the 31st December. It is comparatively rare, and I had not many opportunities of observing its habits; but it appears to prefer forests skirting the cleared land, over which it may be seen taking short, irregular, circular flights, and occasionally sitting on a high stump or tree, standing well out in the clearing, but on the least sign of danger, making at once for the forest. This bird is called Arung-udda by the Andamanese in the vicinity of Port Blair, but I am unable to say if it is only applied to this species, or is used for all birds of the hawk tribe. I never saw it except in the neighbourhood of Port Blair."

We observed a pair at the Great Coco, circling round and round just out of shot over the tops of the trees; we watched them off and on during the greater part of the day, but failed to secure either.

39 *ter.*—*Spilornis Elgini*. *Tytler*. (13.)

We only obtained nine specimens of this species, but four were subsequently sent us. The type specimens are described at page 231, *et seq.*, of MY SCRAP BOOK. The males and females, as our specimens carefully sexed and measured in the flesh show, do not differ greatly in dimensions. Some males are smaller than any female; but some again are as large as the smaller females. The dimensions of this species are as follows:—

Length, 21 to 22; expanse, 45 to 48; wing, 14 to 15; tail, from vent, 9 to 10; tarsus, 3 to 3.4; bill, from gape, 1.6 to 1.75.

Although the sexes do not differ very materially in linear dimensions, they vary very greatly in bulk. The males weighing from 1.75 to 2.25 lbs., and the females from 2.25 to 2.75 lbs.

The legs and feet vary from pale lemon to pretty bright yellow. The bill is pale bluish pink, pale horny, bluish horny or fleshy; the upper mandible, from the tip along the culmen, darker, sometimes horny brown, and sometimes plumbeous; the cere, lores, and orbital region bright or lemon yellow as the case may be. The irides are always bright yellow, or golden yellow.

Lord Walden has recently described a specimen, *Ibis*, 1873, page 299, which was a nearly but not quite adult bird. The type specimens described by Tytler in MY SCRAP BOOK were considerably younger still. The plumage of the perfect adult is as follows:—

The lores and cheeks are almost entirely bare, only sparsely dotted with tiny bristle-like feathers. There is a very narrow

white frontal band. The whole of the upper part of the head, occiput and nape, black; changing to deep brown towards the nape. The basal halves of all the feathers white, which however is not visible in really good specimens till the feathers are lifted. The whole of the feathers of the occipital region and the nape elongated, so as to form a very broad full crest. All the feathers of the crown and upper portion of the occiput narrowly fringed with yellowish white; those of the lower portion of the occiput, nape and sides of the neck similarly fringed with rich rufous brown or pale ferruginous. The chin, cheeks and ear-coverts deep chocolate brown. The throat and *entire breast* of the same color, but somewhat paler, and entirely unspotted, but many of the feathers with a very narrow, terminal, pale rufescent fringe. The entire mantle and wings a rich umber brown, with a beautiful purple gloss, absolutely uniform, except for traces of a narrow, terminal, rufescent fringe to the feathers of the interscapular region.

Two small irregular white spots at the tips of the latter primaries and secondaries, a very few roundish white spots on some of the median and lesser wing coverts. Judging from other specimens, it seems probable that all these spots ultimately disappear. Lower back, rump and upper tail coverts a rich uniform umber brown, only at the extreme tips of the latter traces of white spots occur.

Tail, blackish brown, with a narrow white tip; two inches from the tip a grey brown band 0.85 inches in width; 4.75 inches from the tip a similar but less distinctly marked band 0.3 in width. The bands become more and more strongly marked and paler in color as the feathers recede from the centre. The under-surface of the tail is perfectly black, with a narrow white tipping, and two strongly marked greyish white transverse bars corresponding with the paler brown bars on the upper surface.

The abdomen, vent, sides, flanks, lower tail coverts, axillaries, and wing lining, except the greater lower coverts, a rich chocolate brown everywhere adorned with nearly circular, sharply defined, pure white spots; furthest apart on the abdomen and axillaries, closest on the lesser lower coverts, and tibial plumes, and extended on the lower tail coverts (which are also narrowly tipped with rufescent white) into imperfect bars.

The greater lower wing coverts are a greyer brown, and the spots on them are larger. The first primary has on the lower surface of the inner web three well-marked white or brownish white transverse bars, and the trace of a fourth nearer to the

tip. The next two have four such bars and traces of a fifth, the fourth has five and traces of a sixth, but the basal one of the five has become freckled and irregular. The rest of the primaries have three more or less irregular white bars. In all the primaries there are pale brownish patches on the outer webs, corresponding more or less perfectly with the bars on the inner webs.

In younger birds the spotting extends on to the breast, there is a great deal more spotting on the wing coverts and on the upper tail coverts and rump, while almost every scapular and tertiary has one or two white spots or specks at the tip. In still younger birds the general tone of plumage is a paler, duller, more rusty, and less chocolate brown, especially on the under-surface. The barring on the under-surface of the quills also varies greatly. In one fine female before me there are only two bars on the first, and three on the following primaries, and no traces of any others, but in this bird the spots extend right up to the base of the throat.

The quite young bird, to judge from one killed on the 17th June, does not differ so much from the adult, as is customary in this genus. It is much like the young birds already described, but of a paler and duller brown throughout, and has the whole of the feathers of the head, sides of the neck, and crest, white, tinged fulvous on their terminal halves, and with a moderately broad subterminal brown band, just as we see in the young of other species of this genus, but instead of the lower parts being yellowish white, unspotted and unbarred as in these latter, they are in this species similar to the mature birds, but duller colored; only on the throat and chin a great deal of dull white is intermingled, the tips alone of the feathers being brown. The cheeks and ear-coverts also are more or less streaked and variegated with fulvous.

I may be in error, but I fancy that the young bird I have just described was only about three months old; it *may* of course have been fifteen months old.

Mr. Davison remarks:—"This species is common at the Andamans (specially about Mount Harriet and Port Mouat) in comparison with the other Raptors that occur there. They keep to the forest, or well-wooded gardens, though occasionally they may be seen hunting, singly or in couples, over the paddy flats, when these latter adjoin the forests or secondary jungle. This bird continually utters a shrill shrieking cry, both when flying and seated. They feed chiefly on lizards, but I was informed by the convicts that they frequently carry off young

chickens and ducklings; they probably feed also on crabs, &c., as I have frequently seen them hawking over mangrove swamps in which the trees had been felled although the land had not been reclaimed." Neither Davison nor any of our party noticed this species at the Nicobars.

39 *quat.*—*Spilornis Davisoni*, Hume. (7.)

I originally described this species, STRAY FEATHERS, 1873, p. 306, and Lord Walden has recently, *Ibis*, 1873, p. 298, as I think erroneously, united it with Mr. Swinhoe's Chinese and Siamese species, *Rutherfordi*. If *Rutherfordi* is to be separated from *cheela*, and this appears to me at present unavoidable, *a fortiori Davisoni* must be separated from *Rutherfordi*. Numerous specimens have now been obtained of the Andaman bird, and its dimensions are therefore well known; we have adults also as well as young, so that there is no difficulty in comparing the sizes of the two species.

In *Rutherfordi* the wing varies from 16·25 to 17·75; the tarsus from 3·5 to 4·25. In *Davisoni* the wing varies from 14 to 15·5, and the tarsus 3·12 to 3·8. We have six females besides the one of which Lord Walden gives the dimensions, so that we know positively that the wing of the largest female of this species falls short by 0·75 inches of Mr. Swinhoe's smallest bird, while it falls short by 2·25 inches of his largest bird. In fact it seems probable that the largest female of the present species is very considerably smaller than the smallest male of *Rutherfordi*. Undoubtedly this species, in its general appearance and distribution of color, corresponds closely to *Cheela* and *Rutherfordi*; but it may be distinguished at once, as it seems to me from both these species, not only by the size, but by the regular barring of the tibial plumes which, alike in the *adult Cheela*, and in the smaller Southern Indian race, are always spotted, though in the young of these birds they are more or less barred. Moreover in *Davisoni* the edge of the wing from the carpal joint to the base of the first primary is white or yellowish white in the adult, whereas in *cheela*, &c., it is in the adult mottled brown and white.

The following are the limits of the dimensions of this species:—

Length, 22 to 24; expanse, 47 to 50·75; wing, 14 to 15·5; tail, from vent, 10 to 11; tarsus, 3·12 to 3·8; bill, from gape, 1·6 to 1·75.

The legs and feet are a paler or brighter yellow; the claws black; the bill brownish horny, lighter at the base; or dingy plumbeous darker at the tip; the irides bright golden yellow;

the cere, lores, and orbital skin bright yellow; the bare space, both above and below the eye, is more extended than in *cheela*.

The chin and throat not dark as in this latter; but in the adult bird, a very dark, though not very well defined, moustachial stripe, runs from the base of the lower mandible under the eye to the base of the ear-coverts.

This species is characterized by the extreme coarseness and stoutness of the tarsi, covered over with thick horn-like hexagonal, or pentagonal scales, with in many specimens no very conspicuous frontal scutæ. The papillæ of the soles are almost as hard and prominent in the adult as in an Osprey, and the scutulation of the tarsi is more like that of *Circæetus galli-cus* than of *Spilornis cheela*.

The young seem to go through the same phases of plumage or nearly so as those of *cheela*. The quite young bird has the entire head, neck all round, and entire lower parts, pale fulvous; a few of the feathers of the breast dark shafted; ear-coverts dark shafted, some of the median ones with dusky central stripes; and all the longest ones tipped with brown. Feathers of the occiput and nape, with a subterminal dark brown band, those of the upper back fringed at the tips with white, and with a broad subterminal brown patch; scapulars, interscapulary region, rest of back, and upper tail coverts, and lesser wing coverts, the feathers white or fulvous white at their bases, but the visible portions hair brown, each narrowly margined at the tips with fulvous white; tail, olive brown, tipped with fulvous white, and with one subterminal and one other blackish brown transverse bar, each about an inch broad, and the ground color immediately above and below the second bar mottled paler.

In a more advanced stage the breast is as in the adult, but paler, the tibial plumes are barred, but the entire wing lining, sides, vent, and lower tail coverts are still fulvous white. The upper back and interscapulary region are as in the adult, but the whole of the top of the head, nape, and crest is mottled white and black, with only here and there a little rufous tinge at the margins of the black. The tail in this bird exhibits a subterminal, and two other distinct bars each about 0.75 in. wide, and rather more than an inch apart. Certainly the variation in the banding of the tail, in this genus, requires careful investigation, which can only be carried out by those resident where the bird is breeding.

We only met with this species in the Andamans and at Monts-chall in the Nicobars. It is much less common in the former

than *Elgini*. Its habits were precisely those of its more common congener.

39 *sextus*.—*Spilornis minimus*, *Hume*. (2.)

I have already described this species, *STRAY FEATHERS*, 1873, p. 464, and I have nothing now to add to what I then stated.

41.—*Polioætus ichthyaetus*, *Horsf.* (0.)

The occurrence of this species at the Andamans is excessively doubtful. No specimen has ever been shot there, and no one has ever positively asserted that they even saw it. Colonel Tytler only remarks :—"A fine sea-eagle flew over my house on the 2nd July, evidently a stranger, from the numbers of crows that followed it. I examined him with a glass, but he was too far, and high up to judge accurately." I cannot include this species on evidence of this nature.

43.—*Cuncuma leucogaster*, *Gmel.* (3).

This bird, though not uncommon at the Andamans and Nicobars, is exceedingly difficult to procure; it is very wary, and hardly ever affords the chance of a shot, and even when this is afforded it is only a long snap shot. When seen, the bird is invariably, either sailing far out at sea, or high above the forest, always well out of range, and even when it does settle, or fly low, it is so wary that on the least attempt to approach it, it immediately soars away. It probably feeds chiefly on fish, but I have been informed that it also carries off chickens, &c. It keeps on the sea coast, and prefers, as far as I have observed, to perch on trees or shrubs in preference to rocks. Davison remarks :—

"I found the nest of this bird on Nancowry Island on the 8th March; it was a huge mass of sticks placed between two great branches of a large tree, at an height of about 80 feet from the ground; the tree grew on the edge of a small land-slip about 200 yards from the shore, it must have had eggs as the bird was sitting, but I failed to obtain them. I could not climb the tree myself, and I could get no assistance from the Nicobarese, they would not go near the nest, and when I said I would have it taken without their assistance, they earnestly begged me not to touch it, as doing so would be sure to bring fever into the village, and they would all die. I left Camorta on the 10th before I could make arrangements to have the nest taken, and when I did return I only stayed a few hours in the harbour."

Only three specimens of this bird were obtained, though we probably saw fifty during our trip. An adult male shot on South Andaman, 25th May; another adult male shot on Treis Island, Nicobars, 15th March; and an immature female also shot on Treis Island on the same day.

The following are the dimensions taken in the flesh:—

- (i) Adult male, S. Andaman L 26; Ex. 69; W. 21; T. fr. vent 9.5; Tars. 3.4; Bfr. g. 2.12; wg. 4.5 lbs.
 (ii) Do. do. Treis I. „ 26; „ 72.5; „ 21; „ 9; „ 3.25; „ 2; „ 4.25
 (iii) Immature female do. „ 30.5; „ 73.75; „ 23.7; „ 12.5; „ 3.0; „ 2.25; „

Legs and feet of No. (i) pale, clay white; claws black; bill horny; upper mandible darker; cere, &c., plumbeous; irides umber brown.

54.—*Circus æruginosus*, Lin. (O.)

Davison saw a pair of young birds of this species hawking over the paddy flats at Aberdeen during the first week in May, but failed to get a shot. It is apparently rare even in the neighbourhood of Port Blair, and we none of us ever saw it elsewhere during our peregrinations.

56.—*Milvus govinda*, Sykes (O.)

We none of us ever met with this species in any one of the islands of the Bay of Bengal, nor did Davison, during his five months' residence in the Andamans and Nicobars, ever see or hear of it. I include the species, because Tytler says that two specimens were actually shot on Viper Island before he left, the only ones he ever saw there. These must, however, have come down with some vessel just as Davison recently remarked that a single kite accompanied the P. and O. Company's Vessel *Mirzapoor* the whole way from Madras to Calcutta. Although I include this species, specimens having actually been shot at the Andamans, I scarcely reckon it as belonging to their Avifauna.

65 bis.—*Syrnium seloputo*, Horsf. (O.)

There is really no sufficient evidence for including this species in the fauna of either the Andamans or the Nicobars. As regards the former, all Tytler could say was that he "observed a large owl once fly over Ross Island, but never had an opportunity of observing it again." He had not himself the least idea what it might be. As regards the latter, Blyth says:—"Captain Lewis informed me of a very beautiful owl which he obtained at the Nicobars, but the specimen was lost through the carelessness of a servant. He identified it positively from a Malayan specimen belonging to Dr. Cantor." Captain Lewis, as we all know, is

one of the smartest skippers sailing from the port of Calcutta; but his knowledge of birds is, as he would have been the first to admit, of the most limited character.

This species *may* occur in the islands, but I cannot admit it into the list on such evidence, and there is absolutely none other.

74.—*Ephialtes pennatus*, Hodg. (1.)

A single specimen of this was procured for me at Camorta Nicobars by Mr. Ellis. It does not exactly correspond with any of my numerous Indian specimens; but it is so close, in most respects to *pennatus*, that I must await the receipt of other specimens before thinking of separating it.

74. *quat.*—*Ephialtes Balli*, Hume (1.)

This fine species is fully described, STRAY FEATHERS, 1873, p. 407. No second adult specimen has yet been obtained, but we have received a nestling, which I have no doubt belongs to this species. It was obtained at Port Blair on the 12th August.

The whole upper surface is a dull bay color; the occiput and the upper back show traces of narrow bandings of dusky and a paler rufous than the rest of the back; all the feathers show here and there dim traces of speckling, and spotting with dusky. The quills are dusker on their inner webs, and the primaries have their outer webs broadly barred with rufescent white; the whole of the face and entire lower parts a rather pale rufous buff; many of the feathers of the breast and abdomen whitish at the tips, and there freckled and speckled with darkish brown. In this nestling nearly the terminal half of the tarsus bare; is the tarsus is about 1·04 long, and 0·45 of this is bare. The wing is 5·5 inches, and the total length, I suppose, about 7·75 inches. As in the adult, so in the young bird, the tint of coloring is quite unlike that which I have seen in any stage of *pennatus*.

75 *quint.*—*Ephialtes lempigi*, Horsf. (0.)

Tytler says:—"A specimen of this species was caught alive and brought to me." He either did not preserve this bird, or it had been lost, I could not find it in his museum, and Colonel Tytler himself told me that he knew nothing about this group, so that it is very probable that his supposed *lempigi* was nothing but *Balli*. I do not therefore at present include the former in our list, no other specimen having since been obtained.

81.—*Ninox hirsutus*, Cuv. et Temm. (1.)

I cannot myself discover any sufficient difference between Indian and Nicobar birds to warrant their separation. It is true

that the Nicobar bird appears to be slightly more rufous than the generality of Indian specimens; but there are some Indian birds that will match it to a shade. Again, the Nicobar bird has the third and fourth quills nearly equal, and the fifth considerably shorter, as in Schlegel's *japonicus* (Faun. Jap., p. 28); while most Indian birds have the fourth quill the longest, and the third and fifth equal, but I have other Indian birds agreeing in this respect with *japonicus*; then again some of the Indian birds have the tarsi very much more thinly feathered than the Nicobar birds, but others have these parts very densely feathered. I do not, therefore, looking to the variations in our Indian birds, agree with Mr. Gray in separating *lugubris*, Tick., from *hirsutus*, Temm., and as the former name was bestowed in 1837, and the latter about 1830, it must take precedence. The following are the dimensions of a male which we shot at Car Nicobar:—

Length, 11·4; expanse, 27·25; tail, from vent, 4·5; wing, 8·4; tarsus, 1·15; wings, when closed, reach to within 0·82 of end of tail; bill, from gape, straight to point, 0·97. The irides were yellow; the feet dull, gamboge yellow; bill blackish; ridge of both mandibles pale yellowish horny; cere, dull, sap green.

This must be a rare species in these islands. Davison never met with it at all, and we only met with a single specimen, and considering how we hustled every place about, six and eight guns out at a time daily in different directions, we must, had they been at all common, have seen more of them.

81 *bis*.—*Ninox affinis*, Tytler. (*N. scutellatus*, Raff.) (2.)

The small Hawk Owl of the Andamans and Nicobars is certainly, I should say, *not* identical with *hirsutus*, Temm. If identical with any known species, it is to Raffles' *scutellatus* that it must be assigned. Until, however, we receive Sumatran examples it will be impossible to decide this point. Raffles' description is as follows:—"A hornless species, about 10 inches in length, brown above, lighter, and variegated with white below; the tail with black bands; legs feathered to the toes, yellow irides, and wings shorter than the tail."

Now the length, 10 inches, is really the only thing we have to guide us, and it will be seen from the following dimensions taken from a female shot at Camorta, Nicobars, and a male shot at Dunyleaf Creek, Port Blair, that *affinis* more nearly agrees, so far as size goes with *scutellatus*, than with the Indian, Ceylonese, Japanese, and Bornean *hirsutus*. I may note here that, so far as my present knowledge goes, I am indisposed to separate these

several races. With *affinis* the case is different, it is a mere pigmy compared with *hirsutus*, and weighs a little more than half what this latter does. Its dimensions are as follow :—

	Length.	Expanse.	Wing.	Tail.	Tarsus.	Bill from gape.	Weight.
Male ...	9·5	23·4	6·9	4·75	1·0	0·9	4 ozs.
Female... 11		24	7·4	5·5	1·0	1	5 ozs.

So far as color of soft parts and plumage are concerned, I do not think that it is possible to specify any constant difference between this and the preceding species; in these respects both are excessively variable, but as regards size the difference is most conspicuous, and the largest female *affinis*, (and I have now seen five,) is most conspicuously smaller than the smallest male *hirsutus*.

Davison says :—"On the 6th March, when returning from shooting late in the evening at Camorta, I saw a bird fly off a stump (that stood in some low secondary jungle) and hover in front of a frond of a cocoanut palm, for about four or five seconds, and then return to its original perch, from which it kept taking short circular flights, now sailing quietly along at about the level of the top of its perch, then suddenly darting straight up for eight or ten feet, and again swooping almost to the ground, but always returning to the top of the stump; twice it darted perpendicularly up from its perch to the height of 15 or 20 feet, it was too dark to see what the bird was, and from the way it was behaving I took it to be a *Caprimulgus*; but on shooting it I found it to be a very small *Ninox*; it certainly did not look bigger, if as big as *C. Kelaarti*, and was hawking in a very similar fashion; it was catching small moths, for I found one in its mouth. This was the only one of this species that I had an opportunity of observing; another of the same species was sent me by Mr. Homfray who got it from Dunnyleaf Creek, South Andaman. The Nicobar bird proved on dissection to be a female, and the Andaman one, a male."

81 *ter.*—*Ninox obscurus*, *Hume*. (2.)

Two fine specimens of this handsome species, *vide* STRAY FEATHERS, 1873, p. 11, shot at Port Mouat, South Andaman, both females, measured in the flesh as follows:—Length, 11·5 and 11·75; expanse 28 and 28·25; wing, 8·75; tail, 5·12 and 5·25; tarsus, 1·0 and 1·05; bill, from gape, 0·95 and 1·05; weight 8 ozs., namely, about the same as *hirsutus*.

The irides were yellow; feet yellow; claws black; bill blackish; cere and ridge of upper mandible and tip of lower mandible green.

These specimens are older than that originally described; the whole plumage, above and below including the tarsal plumes, and wing lining, are a rich deep chocolate brown, somewhat more rufescent on the abdomen; the tail exhibits four narrow transverse bars of a paler and more earthy brown, and has the feathers very narrowly tipped with whitish brown, while the under-tail coverts are broadly, but irregularly, barred with somewhat brownish white.

We never met with this species. Davison remarks:—"I secured only two specimens of this bird, both at Port Mouat, South Andamans. I regret to say that I know next to nothing about the habits of this bird. The first specimen I saw flit by me, and settle in a small tree that grew close to the water's edge, this was on the 14th April. The next evening about 9 P.M. I heard an owl hooting close to the bungalow; on going out I saw the second bird which I secured sitting on an old stump that stood out against the sky; it rose as I approached, took a long sailing circular flight of several hundred yards, and returned to its perch and recommenced hooting.

"The hoot is a peculiar one, quite unlike the note attributed to our common Indian Hawk Owl. It is a low, subdued but clear double note, and having shot the bird immediately after hearing it hoot, there can be no doubt of the fact.

"Although I procured only two specimens, the bird is, I am sure, common both at the Andamans and Nicobars. Night after night in both groups I used to hear the same hoot, but though I often tried after them I never again obtained a shot at one."

82.—*Hirundo rustica*, Lin. (12.)

The Andaman birds appear to me to be precisely similar not only to birds from all parts of India and the Himalayas, but also to English specimens.

In this species there is very considerable difference in individuals, in the size of bill and wing, and in the tint of color of the lower surface; but this appears to me to be due to age and sex, and not to be contingent on locality. I do not at all myself believe that this species breeds in the Andamans or Nicobars; all the twelve specimens we preserved are apparently birds of the year. The young birds often migrate further than the adults, which will account of this fact. I have seen no sufficient reason as yet for separating *gutturialis*, Scopoli, as distinct.

Mr. Davison says:—"This bird is common both at the Andamans and Nicobars; during the day it may be found hawking slowly about some shady spot, or sitting, several

together on some dry branch, or house-top; now and again one will start off, take a short irresolute flight and return to its perch; sometimes when one starts off, it is followed by the others in rapid succession, at others all start off simultaneously, and after taking a more or less extended flight, return, each twittering as it alights. I have not found it breeding either at the Andamans or Nicobars, but think it must do so, as I found them as numerous as ever they were as late as May."

We met with it almost everywhere.

82 *ter.*—*Hirundo andamanensis*, *Tytler*. (O.)

Davison says:—"I did not observe this species during my stay at the islands, although I kept an especial look-out for it, shooting every swallow that I thought might be it." I rather doubt this species; the original description will be found quoted, STRAY FEATHERS, 1873, p. 55. At Macpherson's Straits we once fancied that we saw it, but I came to the conclusion that what we saw was a young bird of *rustica*, of which we shot one immediately afterwards.

83.—*Hypurolepis domicola*, *Jerdon*. (8.)

This species appears to be common in the Andamans at any rate from the beginning of June to the end of September, as a number of specimens have been sent me, procured on different dates during these months. They appear to have puzzled the gentleman who collected them considerably, as he has labelled them, *Hirundo rustica*, *Collocalia linchi*, and *Collocalia spidropedia*! the latter being quite a new species.

We none of us saw this species anywhere about the islands, between the beginning of December and the end of April. It is therefore apparently only a monsoon visitant.

As is well-known this species is common in the hilly portions of Southern India, and has been observed in Borneo, Java, and the Malayan Peninsular.

I must say that I consider that this species has been very properly separated generically from the common swallow.

96.—*Chætura indica*, *Hume*. (11.)

I have already (STRAY FEATHERS, 1873, p. 471) explained fully my reasons for separating the Indian Brown-throated Spine-tail from the Javan *gigantea* of van Hasselt. I need here only remark that the Andaman birds are precisely similar to those received from various parts of Southern India, and that, though we observed them nowhere else, they are common about

Port Blair, specially at two ponds, one at Mount Harriet, the other at Port Mouat, where every clear evening they were to be seen hawking, dashing rapidly to and fro, taking half mile turns backwards and forwards as only these Spine-tails can.

We obtained them from December to the end of April. We have subsequently received specimens shot in July, August, and September.

Mr. Swinhoe, P. G. S., 1871, p. 345, remarks :—"It is probably this species that makes the edible nests in the caves of the islands off the south of Hainan, and not *Chaetura caudacuta*, Lath., as I had at first supposed."

Under correction I venture to doubt whether any *Chaetura* makes an edible nest. I suspect it will be found that they make nests like *Cypselus melba*, and other true swifts. The matter deserves careful observation by any one who is lucky enough to discover a breeding place of any of these *Chaeturas*.

99 bis.—*Cypselus acuticauda*, Blyth. (1.)

A single specimen of this species, of which I have a considerable series from the North-West Himalayas, was shot at Port Blair on the 30th July last, and sent me by Captain Wimberley with other birds which he kindly collected for me between May and October.

Mr. Blyth originally described this species, *Ibis*, 1865, p. 45, recording the following remarks in regard to it :—"Specimen marked from Nepal. Length $7\frac{3}{4}$ inches; extent of wings 20 inches; closed wing $6\frac{1}{2}$ inches; size and proportions of *C. apus*; the tail forked to the depth of an inch, and much more sharply acuminate than in *C. apus*. Entire upper parts, with the lower tail coverts, deep black, having a slight metallic gloss; each feather of the lower parts (excepting the lower tail coverts) margined with dull white; throat white, with a black medial streak to each feather; claws more or less whitish. From *C. leuconyx*, nobis, of the North-West Himalaya chiefly, this species differs in the absence of the white band crossing the rump. The true *C. apus* has been received from Afghanistan."

Having examined a great number of these swifts the distinctness of which from *apus* seems to be hardly as yet recognized in Europe. I may remark that the points of discrimination indicated by Mr. Blyth are not altogether, in my opinion, those which should be chiefly relied on. The great characteristic difference between *acuticauda* and *apus* is this: *Apus* has the whole visible portion of the toes black, and has the whole of the foot and base of the toes, and front and exterior of tarsus, thickly

feathered; whereas in *acuticauda* the whole of the foot and base of the toes are bare and whitish, and the tarsus is only scantily feathered: the difference in the feathering of the feet, as also in their coloration, is very marked. In size I do not think that any great difference exists. *Apus* adult is about 7·5 inches long; *acuticauda*, adult male, 7·25; adult female, 7·63; *apus* wing from flexure, 6·75 to 7 inches; *acuticauda*, male, 6·4 to 6·6; female, 6·8. As regards the tail I cannot see that the feathers in *acuticauda* are perceptibly more acuminate than in *apus*.

The lateral tail feathers in the adult female, in both *apus* and *acuticauda*, exceed the central by 1·25; in the adult male and younger birds of both sexes of *acuticauda* the difference is less. In color the adult female *acuticauda* is scarcely in any respect distinguishable from adult *apus* from Europe, save and except that the white on the chin and throat is perhaps purer, and of somewhat greater extent. In the young birds there appears to be a somewhat greater difference; the white edgings of the feathers mainly confined in *apus*, to the best of my belief, to the head, in *acuticauda* extend to those of the back, breast, rump, upper and lower tail coverts, and wings, and towards the front of the head are so extensive that the lores and forehead appear altogether white.

I may note that like *apus*, *acuticauda* has a *barbatus* stage, (*vide* STRAY FEATHERS, 1873, p. 165), in which all the white feathers of the chin and throat are brown shafted.

The occurrence of this species at the Andamans in July is very remarkable.

103 *bis*.—*Collocalia linchi*, Horsf. (28.)

I have already made a good many remarks about this species and its congeners, STRAY FEATHERS, 1873, p. 294. I have not yet received, though I hope to get them hereafter, Javan specimens, and I cannot, therefore, say for certain whether this bird should stand, as I believe, under the above name, or whether the Javan bird is really distinct, and our present should retain my late friend Colonel Tytler's name *affinis*; but I think it is perfectly clear that Thunberg's *fuciphaga* is a totally different bird belonging to the same sub-group as *Collocalia unicolor*, Jerdon, *Collocalia innominata*, nobis, &c.

This species breeds abundantly both in the Andamans and Nicobars.

Normally it breeds in caves, indeed in a manuscript note given me with many others by the late lamented Colonel Tytler,

I find the following :—"I may note that I was upwards of two years in the Andamans, and never either saw or heard of any species of *Collocalia* building inside of houses, sheds, or the like; these species always build inside caves immediately on the sea shore."

But since Colonel Tytler left the Andamans a change has come over the spirit of their dream, and at the Settlement of Port Blair they breed freely inside houses, both on Ross and Chatham Islands; the interior of the saw mills being the most favorite haunt. There is another shed at Viper in which they breed. This is quite in keeping with our experience of this family elsewhere.

There has been some grave error in regard to the nests of this, the commonest of the Andaman, and Nicobar *Collocalias*. I myself fully believe it to be *linchi* (c. f. STRAY FEATHERS, 1873, p. 294, *et seq.*), if not, it must stand as *affinis*, Tytler, but in either case it does *not* make any of the edible nests. There is no mistake about this, I have shot the birds and taken the nests out of the caves, and Davison has done the same out of buildings where they had never been disturbed, and the nests are in all cases similar, somewhat shallow, flat-bottomed half, or two-thirds saucers, composed of brown moss, firmly agglutinated with saliva; only along the line of junction with the place of attachment is there a thickish film of unmixed inspissated saliva, and that is brownish, not white.

The white nests are made by *spodiopygia*, and probably also by *innominata* (c. f. STRAY FEATHERS, *loc. cit.*) The nests of this species, *linchi* (or if distinct *affinis*) vary in size, but they average about $2\frac{1}{2}$ inches across, stand out from $1\frac{1}{2}$ to $1\frac{3}{4}$ inches from the rock, or wall, and are about an inch deep; they vary from an eighth to more than a quarter of an inch in thickness.

How often they breed I cannot say, but many of the nests, which I found in a cave at the Little Jolly Boy, Macpherson's Straits, contained fresh eggs on the 9th of March. The eggs are pure white, and entirely devoid of gloss, long ovals, very obtuse at both ends, and some of them almost cylindrical, while others again have a pyriform tendency. The eggs vary greatly in length, *viz.*, from 0.64 to 0.75, but much less so in breadth, *i.e.*, only 0.42 to 0.46. The average may be taken at 0.7 by 0.45.

I must here note that Captain Beavan is altogether wrong in what he says (*Ibis*, 1867) about this species, and he must have written from hearsay. He remarks that the nest of this species is considerably smaller, and perhaps whiter than that

of "*nidifica*" (? *innominata*, nobis), on which account it is more valued by the Burmese, who collect both kinds for the Chinese and Penang markets. He adds that "this species is generally abundant at Port Blair, especially between Aberdeen and Navy Bay, where every cave is full of their nests." Now in the first place the nests of this species are brown, and mainly composed of moss, and are not, so far as I could learn, ever collected at all. In the second place there are no caves *at all* between Aberdeen and Navy Bay.

Mr. Davison has watched these birds making their nests; they bring a tiny piece of moss, and cling on to the roof; then for four or five minutes you see the little bird's head going backwards and forwards, and then off he flies, and you see that the piece of moss has been stuck on. They do not seem to be able to stick the moss on to white paint. One pair tried for nearly a week to make a nest on a painted ceiling of a house, and covered the carpet below with scraps of moss, but failed to get a single piece to stick, and so at last gave it up as a bad job.

Sometimes four or five will come in together, and all cluster in a lump where the moss is to be stuck, and then a great twittering and skirmishing ensues, till of a sudden, all but one, who is left wagging his head over the moss, disappear with a sudden dash.

Davison says:—"Of the three species of Swiftlets now known to occur in the islands, this is by far the most common, and it appears to be far more common at the Andamans than at the Nicobars. They are very familiar birds, entering houses, and even occasionally trying to form their nests in inhabited rooms. I have known a pair fly into a room and take up their quarters for the night in a corner against the roof, regardless of people passing in and out with lights: generally, however, they roost in company, and one favorite spot is in the Saw Mills at Chatham Island, Port Blair. Here, towards the close of the day, they assemble in vast numbers, flying in and out of the building, all the while keeping up a continual twitter. It is curious with what pertinacity these birds will return to a place they have once chosen for roosting. Mr. Homfray informed me that a large number of these birds had taken up their sleeping quarters against the roof of a shed on Viper Island, Port Blair, occupying about a square yard of the surface; this place they continued to occupy till the shed was destroyed, when, of course, they all disappeared; but after a time another shed was built exactly on the same site, and as soon as the roofing was completed back came all the *Collocalias* and re-occupied the same

spot on the roof of the new shed as they had occupied in the old, and this spot they were still occupying when I was at Port Blair. It is remarkable the small amount of space that a very large number of these birds will occupy; they all cluster together like a huge swarm of bees clinging to the bare boards of the roof in a wonderful manner."

The following are measurements taken in the flesh:—

Length, 3·75 to 4; expanse, 8·5 to 9·12; wing, 3·82 to 4; tail, 1·5 to 1·75; bill, from gape, 0·4; tarsus, 0·25 to 0·3.

103 *ter.*—*Collocalia innominata*, Hume. (1.)

This species is described, STRAY FEATHERS, 1873, p. 294. We only procured one specimen, and I have nothing to add to what I formerly said in regard to it, except that it is a considerably larger bird than either *unicolor*, Jerdon, of the Nilghiris, or the very closely allied, and barely separable race from the Himalayas, of which also I have numerous examples. In no one of the twenty odd specimens that I possess from the Nilghiris and the Himalayas does the wing exceed 4·73, whereas in *innominata* it is 5·5 inches.

Independent of size (an *innominata* must weigh fully double of what the Sikim or Nilghiri birds do), the present species has a much more strongly marked black cap than any specimens of the Indian birds ever exhibit.

103 *quat.*—*Collocalia spodiopygia*, Peale? (20.)

The original description of this species will be found, STRAY FEATHERS, 1873, p. 296. The following are the measurements recorded in the flesh from a large series:—

Length, 4·5 to 4·75; expanse, 10·6 to 11·3; wing, 4·5 to 4·75; tail, from vent, 1·9 to 2; tarsus, 0·25; weight, not quite 0·5 oz.; the wings reach from 1 to 1·4 beyond the tip of the tail.

The legs and feet are brownish pink; the claws brown; bill black; irides deep brown.

The whole of the top of the head and back are a deep sooty brown; the rump is whitish brown; the feathers darker shafted; the wings, tail and upper tail coverts are blackish brown; the lower parts are a pale mouse brown; the feathers of the abdomen slightly dark shafted; the sides of the neck are slightly darker mouse brown, and so are the lores, in the centre of which in the fresh bird, there is a small, triangular, very pale mouse brown spot, scarcely recognizable in dry skins; the wing lining and the tibial plumes are dark brown.

I am not quite sure that this is *spodiopygia*, and if not, it may stand as *inexpectata nobis*, (*vide* STRAY FEATHERS, 1873, p. 296). I ought to have added that there is a certain amount of gloss on the head, wings, and tail, but not nearly so well-marked as on *linchi*, or if the Andaman bird is distinct *affinis*, Tytler.

As yet it has only been found nesting in caves, though the time may come when, like other members of the family, it may resort to buildings.

I found the eggs in a cave on Little Button Island of the Andaman Archipelago on the 21st March, but I do not know whether they have a second brood. The nest, except, just at its junction with the rock (where it is brownish), is composed of the most exquisitely silvery white gelatine; exteriorly the surface is compact and somewhat roughened in laminae; interiorly it is a net-work of the finest and whitest threads, reminding one of the *Euplectella*. The true nest, which is pure white, and in shape rather more than half of a shallow cup, is from 2 to $2\frac{3}{4}$ inches broad, stands out from $1\frac{1}{2}$ to nearly 2 inches from the wall, and varies interiorly in depth from little more than one-half to a full inch. The attachment films and foundation below the true nest, both of which are somewhat brownish, vary excessively according to the site chosen for the nest; in some they are almost wanting, in others the film extends for an inch on either side beyond the nest, and the foundation below the most projecting point of the true nest may be $1\frac{1}{4}$ inches in depth.

The edge of the true nest all round is blunt, like that of an ivory paper-cutter, and the sides gradually increase as they approach the bottom to the thickness of $\frac{3}{8}$ ths of an inch, or occasionally even half an inch. Of course the nests vary in outline as well as in size and depth, but the line of the upper edge is generally more of a horse shoe than of a segment of an oval or circle. I found the nests capriciously dotted about, *par preference* in the darkest corners (nowhere out of reach of the hand, for the cave is low) in places a couple of feet apart, in others a dozen clustered together within a diameter of less than this distance.

As a rule, each nest was separate and distinct, but in a few cases I found two and even three joined together.

The eggs are, as usual, pure white, more or less cylindrical in shape, devoid of gloss, and slightly larger than those of the preceding species.

Davison procured two specimens at Mount Harriet; I shot a dozen at Little Button; I saw it also at Macpherson's Straits,

where it builds in a cave near Escape Bay. It is this species, and not *linchi*, that builds the nests chiefly collected for the Penang market. We never noticed this species anywhere in the Nicobars where *linchi* is so common, and, as a matter of fact, though there are plenty of Burmese about the Nicobars, no white nests are there obtained, in fact none at all are there collected I believe, but there is, I know, one cave inland in Katchall, where *some* kind of *collocalia* builds a pale yellow nest, but where the cave is, no one, except Hung-hung-soo and possibly De Roepstorff, knows.

This species appears to be a permanent resident; we obtained it from December to April, and we have received specimens killed from July to September.

**110 bis.—*Caprimulgus andamanicus*, Hume.
(2.)**

I have already described this species and its eggs in STRAY FEATHERS, 1873, p. 470. I have nothing further to add now to what I then stated.

This is doubtless the species which led to the inclusion of the next species in the Avifauna of the Andamans.

112.—*Caprimulgus asiaticus*, Lath.

All Tytler said was:—"I observed two *Caprimulgi* on one occasion, but could not get them," on which Beavan remarked:—"This species will probably turn out to be *C. asiaticus*." There is at present no reason at all to believe that this latter species occurs in the Andamans.

114 bis.—*Lyncornis cerviniceps*, Gould?

Several of the party, who landed on the Southern Jolly Boy on the 8th of March, saw a huge goatsucker, that we considered was certainly a *Lyncornis*, and probably belonged to this species. I think two of the party were Dr. Stoliczka and Mr. Ball, so that there is no doubt that some such bird does occur in these islands, though probably it will prove to belong to a new species.

118.—*Merops Daudini*, Cuv. (1.)

Nicobar specimens (we obtained none at the Andamans) are identical with those from various parts of India, Burmah, and the Malayan Peninsula.

Davison remarks:—"This species occurs in the Nicobars and not in the Andaman group, where it is replaced by *M. quin-ticolor*. In habits it differs much from both *M. viridis* and

M. quinticolor; it may be seen for an hour at a time taking long sailing flights. I have seen 10 or 12 of these birds hawking over the grassy hills in the interior of the island of Camorta. I was unable to ascertain whether they breed at Nicobars or not. It is known to the Nicobarese by the name of Shale."

I saw it at the Cocos, but failed to procure a specimen.

191.—Merops Swinhoei, *Nobis*. (32.)

We secured a very large series of this bird; I have compared the Andaman specimens with birds from all parts of India, from Anjango in the south to Dehra Doon in the north, and again to Tipperah on the east; all appear to belong to the same species. The birds "differ" *inter se* a good deal in the length of bill, the depth of the chesnut coloring of the head and upper back, the brightness of the yellow of the chin and throat, and the extent of the bright rufous band or triangular patch at the base of the throat, but these differences appear to me, after examining a very large series, to be individual, and to be dependent on age and sex, and not on locality.

Lord Walden remarks in a recent *Ibis* that Mr. Swinhoe first drew attention to the fact that the Javan form, which must bear Vieillot's name of *quinticolor*, is specifically different from the Indian, in that it constantly wants the chesnut triangular throat mark, the yellow throat being sharply separated from the green breast by a well-defined black band. In Indian specimens this black band is surmounted by a more or less broad band, or in some instances triangular shaped spot, of nearly the same deep chesnut as the head. Lord Walden further shows that Brisson's name of *erythrocephalus* cannot stand for the Indian bird, which he considers to be at present a "*sine nomine corpus*." Now the bird must have some name, and if Lord Walden is correct, it had better be christened as above after the distinguished ornithologist already referred to.

Davison remarks:—"This species is very common in the immediate vicinity of Port Blair, but it is also found, though more sparingly, in the Great and Little Cocos, Strait Island, &c., &c. It is a bird that seldom wanders very far from the forest, and although it is occasionally met with in some extensive clearing, yet it chiefly frequents the roads, running through forest, or well-wooded gardens. They breed at the Andamans, and I found them commencing to perforate the banks for their nests just before I left the Andamans in the middle of May." We never met with this species in the Nicobars.

This also appears to be a permanent resident. We obtained it from December to April, and I have had specimens sent me, killed at various times, from June to September.

126.—*Eurystomus orientalis*, *Lin.* (13.)

I have compared the Andaman birds with specimens from the Kumaon Bhabur, and the Terai below Sikhim, and find them all precisely identical.

The following are the dimensions of numerous specimens recorded in the flesh :—

Length, 11·75 to 12·75; expanse, 24·75 to 27; wing, 7·4 to 8·25; tail, from vent, 4·5 to 5·25; tarsus, 0·75 to 0·85; bill, from gape, 1·65 to 1·8; weight from 6 to 8 ozs.

The legs and feet are orange vermilion, or vermilion red; bill, orange vermilion; the upper mandible, black at the extreme tip; orbital skin, dull red; irides, hazel to deep hair brown.

Dr. Jerdon's description of the colors of this species is, it appears to me, scarcely satisfactory. He says :—"Head above with lores, cheeks, and ear-coverts deep fuscous blue; chin and throat also blue; the latter with some longitudinal streaks of shining violet blue." Now in the most perfect adults, with the most brilliant colored bills, all these parts, except of course the longitudinal streaks of violet blue, are dusky blackish brown, devoid of the smallest tinge of blue. Again, he says "quills dark violet, tail uniform dark violet;" but in perfect adults both quills and tail, excepting always the pale band on the former, are velvet black, with only a deep violet tinge on the lower surface of the inner webs, and no trace of any blue on the upper surface, except at the extreme bases of the feathers.

The colors of the soft parts in the adults I have already mentioned in the quite young bird; the bill, which is very markedly smaller than in the adult, is almost black, only the gonys is pale orange; as the bird gets older, the orange of the gonys deepens in color and gradually spreads over the whole of the lower mandible, and then to the gape, the rest of the upper mandible becoming reddish black; then the orange spreads further over the upper mandible, growing brighter and brighter in color till the whole bill becomes an intense orange vermilion, with only the extreme tip of the upper mandible, and the culmen for about a quarter of an inch backwards from the tip black.

Of this species Mr. Davison remarks that "it is comparatively common about Port Mouat, Mount Harriet, and other well-wooded places; it may frequently be seen seated on some

stump in a garden, or other comparatively open place, from which post it takes short flights, occasionally alighting on the ground to capture an insect. I have on several occasions seen it rise into the air and go through a regular series of fantastic evolutions, sometimes keeping up for nearly three minutes. Its note is anything but musical, but fortunately it is rather a silent bird."

None of us observed this anywhere except in the neighbourhood of Port Blair. I do not know whether this is a permanent resident, but suppose it must be so; we obtained it from December to April, and specimens have been sent killed in September.

127 bis.—*Pelargopsis burmanica*, Sharpe. (2.)

Specimens from the Andamans agree absolutely with others from Thyet Myo and Rangoon. The bird really varies very little in color, and I am unable to say that either Mr. Sharpe's figure or description sufficiently accurately represent any specimens that I have seen of the bird. In the figure the cap is too dark, the neck is too rufescent, and the wings, scapulars, and tail, much too green.

The following are the dimensions and description of a fine female which I shot on Bird Island, Macpherson's Straits:—

Length, 14.75; expanse, 22; tail, from vent, 3.5; wing, 5.75; tarsus, 0.8; greatest length of foot, 2.25; bill, from gape, 3.8; bill, at front, 3.2; wings, when closed, reach to within 2.5 of end of tail; weight, 8.5 ozs.

The legs and feet are intense coral red, as are also the orbital ring and the bill, the latter dusky at tips; the irides brown.

The whole of the top of the head, lores, cheeks, ear-coverts, and nape, pale whitey brown; the entire lower parts, wing lining, axillaries, lower tail coverts, sides of base of lower mandible, sides of neck, and back of the neck, ochreous buff, varying doubtless somewhat in intensity in different specimens, but always palest on chin and throat, and deepest on the breast, abdomen, and flanks. The upper back and shorter scapulars pale brown, suffused with a dull greenish blue. Middle and lower back very bright and light greenish blue, as if the feathers were white, and had been tinged with this color. Quills, hair brown, the second to the fifth or sixth primaries greenish blue on the outer webs above the emargination; the rest of the quills this color on the whole of the outer webs, and the tertiaries and the later secondaries, more or less overlaid with this color on the inner webs towards the tips. The tail feathers much the same color on both webs

as the secondaries on the outer webs, but a trifle brighter. The shafts, both of quills and rectrices, conspicuously white on their lower surfaces.

Mr. Davison remarks that "this bird, though not very rare, is excessively difficult to obtain; it is so wary. A favorite post with them is on one of the fishing stakes at the mouths of creeks; from these posts they can see the approach of any danger, on the least signs of which they immediately make for the forest or mangroves; they are found up all the salt water creeks about the Andamans. They have a loud shrieking note, which they generally utter while on the wing."

I saw several pairs about Macpherson's Straits and at Little Button, but we never saw a specimen either at the Nicobars or Cocos.

127 *ter.*—*Pelargopsis leucocephala*, Gmel?
P. intermedia, Sp. Nov.? (4.)

The Nicobarian Stork-billed Kingfisher is certainly not, in my opinion, identical with *Fraseri* of Java and Sumatra, to which it has hitherto been assigned. It seems to me intermediate between that species and *leucocephala* of Borneo, and I have provisionally named it *intermedia*. The following are the dimensions taken in the flesh and an exact description of this very beautiful species:—

Length, 14·5 to 15·5; expanse, 21 to 22; wing, 5·82 to 6·1; tail, from vent, 4 to 4·5; tarsus, 0·6 to 0·75; bill, from gape, 3·6 to 3·9; bill, at front, 2·8 to 3·1; weight, 7 to 8·5 ozs.; wings, when closed, reach to within 2·4 to 2·6 of end of tail.

The legs and feet vary from bright vermilion orange to coral red. The bill is coral red, dusky towards the tip; the irides deep brown; the orbital skin orange vermilion.

The general appearance of the bird is very much that of *leucocephala* as figured by Mr. Sharpe; but the back is a rich smalt, and not the pale aquamarine he figures. The head moreover is not nearly so rufous. The color of the under parts of this species and of *burmanica* (fine adults being selected) is absolutely identical. Whereas *Fraseri* is represented with pale under parts of the same tint as in *gural*. Our bird is moreover characterized by having the whole of the feathers of the forehead and crown as well as of the centre of occiput and nape moderately dark brown, the feathers tipped and margined with pale ochreous buff, so that until the feathers are lifted the brown only shows through as a series of spots. The feathers at the gape and of the ear-coverts are also brownish

towards their bases, giving a slightly dusky appearance to these parts. A line from the nostrils over the eye, the sides of the head and nape, the chin and throat, and sides of the throat below the ear-coverts, a pale ochreous buff, duller and dingier on the head. The lower part of the neck all round, breast, abdomen, sides, wing lining, axillaries, tibial plumes, and lower tail coverts, a rich ochreous buff. The interscapular region and all but the longest scapulars and lesser coverts a rich deep blue, not so deep or dark as indigo, with a greenish tinge which looked at in a certain light is very conspicuous. The quills dark hair brown; the second to the fifth primaries deep blue, on the outer webs, above the emarginations; the rest of the quills the same color on the whole of the outer webs; and the tertiaries and later secondaries on the inner webs also at the tips; the longer scapulars and the greater and median coverts similar; in some lights there is not much difference in color between the smaller scapulars and the quills, but in other lights the former and some of the lesser coverts become decidedly green. The tail feathers, and the longest and lateral upper tail coverts, the same color as the secondaries, but slightly brighter. The whole of the back, the centre of the rump, and the central shorter upper tail coverts a very bright pale smalt blue.

Mr. Davison remarks:—"This species replaces the last in the Nicobars; like it, it is excessively shy and wary, seldom allowing of a closer approach than 60 or 70 yards; it keeps almost exclusively to the sea shore, and usually chooses some exposed, dry branch to perch on."

We never saw this species except in the southern division of the Nicobars; and in these we only observed it at Galatea Bay on Kondul, Pilu Milu, Montshall, and Little Nicobars. The first specimen we shot was perched on the top of a stake out in the sea, some 20 yards from the shore. Even where it occurs it is a rare bird, and I do not think that we *saw* more than a dozen from first to last.

129.—*Halcyon smyrnensis*, *Lin.* (32.)

Lord Walden recently observed, after examining six specimens of this species from the South Andamans, that "they differ from individuals from all other parts of Asia in the intensity of their color; instead of chesnut brown the plumage of the head, shoulder-coverts, flanks, and under-surface is deep chocolate brown, and the blue portion of the plumage is much deeper in shade."

We obtained thirty-two specimens at the Andamans, which I have compared with forty specimens from the following localities:—Calcutta, Dacca, the Arakan Hills, Thvet Myo, Raipoor, Kaladoongee, Mussoorie, the Dhoon, Kalka, Kotegurh, Dehra Ghazee Khan, Sirsa, Lurkana, Sukkur, Jacobabad, and Anjango, and I can confirm Lord Walden's remarks except in regard to the Anjango birds, one or two of which are quite as intensely colored as any of the Andaman birds. Besides the difference of coloring there is a marked difference in the size. The smallest of the 32 Andaman birds of both sexes has the wing 5, the wings average 5.1, and one has a wing over 5.2. The smallest bill is 2.15, the largest 2.55 at front. Of the 40 Indian birds the largest wing is 4.85, the smallest, which are the Anjango birds, 4.4. The largest bill is 2.3, and several have bills under 2 inches in length.

It is quite possible that Naturalists may desire to separate the Andaman birds, I would not do so myself, but if this were desired the birds might stand as *saturation*.

Davison notes that:—"This is one of the commonest birds in the Andamans, at least in the vicinity of Port Blair. It frequents alike the sea coast and the clearings, and I have frequently met with it far into the forest. I have often found it perched on the fishing stakes at high water, but I do not think that it ever plunges into the water after its prey, I have never seen it do so, but at low water numbers may be seen on the mud flats left exposed by the tide, perched on some dead branch sticking up out of the mud, and every now and then descending to the ground to pick up something. I have not noticed this bird at the Nicobars, or at the Great or Little Cocos."

This was our experience also; the bird seemed common about Port Blair, and a few were seen at Macpherson's Straits, but we met with it nowhere else. A permanent resident; we secured it from December to April, and have had specimens sent us killed from May to September.

130.—*Halcyon atricapillus*. Gm. (2.)

I saw this species once or twice only during the whole trip; Davison, during his five months sojourn in the islands, saw it twice, but only in the Nicobars, at Trinkut, and Kondul. None of us ever shot a specimen. Colonel Tytler said that this species was *common* at the Andamans; but this I think was a mistake. Anyhow, whatever it may have been in Colonel Tytler's time, it is now excessively rare at the Nicobars, and probably

even more so at the Andamans. Quite recently Captain Wimberley has shot a pair near Port Blair, but says that they were so excessively shy and wary, that he had to go out day after day for them before he brought them to bag. This last mail has, however, brought up a second pair, shot and kindly sent up to me by Captain Wimberley from the same neighbourhood.

131.—*Halcyon coromanda*, Latham. (3.)

The Andaman bird has a much larger bill than specimens from the Sikim Terai. Amongst the latter the bill of the largest male that I have examined is only 2·2 inches at front, while that of a fine Andaman male is a little over 2·4 inches. The Terai birds are much paler underneath, as nearly as possible the same color as *Pelargopsis burmanica*, and they have no purple tinge on the breast; in the Andaman birds the lower surface is much darker.

Mr. Sharpe says:—"In the young plumage the breast is barred, and the back streak is almost entirely white, while in the older birds this becomes brilliant cobalt, having a slight lilac tinge." This is not at all my experience. I have before me now a beautiful little nestling just able to fly, but the tail still quite rudimentary, with the bill (less than one-half the size of the adults) pale yellow, with a dusky longitudinal band stretching from lores and nostrils parallel to the culmen to within 0·4 of the point, and extending partly on to the lower mandible. This bird has the rump patch brilliant smalt, faintly tinged with lilac at the tips.

The young, I believe, has never yet been described. The chin, throat, and middle of abdomen are white; the sides of the throat, breast, and sides of the neck (almost meeting on the nape), and the rest of the lower parts pale buff, each feather with a very narrow, subterminal, crescentic, dusky band. The whole cap is a light bright chesnut; the rest of the upper parts, except the rump patch, a darker chesnut. There is none of that beautiful lilac purple glow which characterizes the adult, and the bright chesnut of the head, almost completely encircled by the nearly perfect buff collar, of which there are no traces in the adult, give the nestling a peculiar appearance.

I have some very old birds with the rump spot entirely white, but for a faint bluish tinge at the tips of the feathers. I think the color of this spot depends not upon the age of the bird, but upon the age of the feathers, and that after the plumage has been worn sometime, the color fades by exposure to the light. I do not know whether the bird realizes this fact, but he

certainly has a strong objection to the sunlight, and sticks persistently to the densest shade he can find.

A male measured in the flesh :—

Length, 11·25; expanse, 16; wing, 4·4; tail, from vent, 2·82.

We met with this species in the neighbourhood of Port Blair, where it is very far from common, and where it affects the gloom of the mangrove swamps, and never visits the clearings or the open coast. We saw it also at Barren Island, and at the Southern Jolly Boy.

132.—*Halcyon chloris*, Bodd. (39.)

We only brought 28 specimens of this bird back with us from different localities in the Andamans and the Cocos, but we might have obtained any number, and we have had 11 since sent us.

The birds vary a little in size, and a good deal in length of bill, owing chiefly to the enormous extent to which the tips of the bills are abraded in some birds, both old and young. (*Vide* STRAY FEATHERS, 1873, p. 451). I can discover no constant differences in the size of the sexes. The dimensions of 13 specimens of both sexes, recorded in the flesh, varied as follows :—

Length, 9 to 10; expanse, 13·82 to 15·25; wing, 3·9 to 4·25; tail, from vent, 2·75 to 3·12; tarsus, 0·5 to 0·65; bill, from gape, 2·15 to 2·45; bill at front, 1·45 to 1·8.

The legs and feet are plumbeous in front; behind, and the soles, in some bluish, in some pinkish grey; the upper mandible, tip, and edge of lower mandible greenish black; rest of lower mandible pinkish white; irides deep brown.

Mr. Davison says :—"This is nearly as common as *H. smyrnensis*, and has an apparently wider distribution. I have noticed it at the Great and Little Cocos, Little Button, Strait Island, Stewart Sound, Port Cornwallis, &c. It is also found both on the sea coast and inland, but prefers gardens and the edges of forests. It is a very noisy bird, but not nearly so noisy as its Nicobarian congener, *H. occipitalis*. It feeds on centipedes, small lizards, and I have no doubt on crabs and shellfish as well, as it is frequently to be seen on the sea shore. I did not find any nests, but Lieutenant Wardlaw Ramsay informed me that he saw a pair of these birds going in and out of a hole in a tree near Mount Harriet, and that he thought they must have had young there."

They may often be seen on the beach hammering shells on the lumps of coral with wonderful vigour. One I shot on the Little Cocos, I watched for some minutes, trying to knock to

pieces a *Fusus*, containing a red hermit crab; he held the shell by the lip between the tips of his mandibles, and kept banging it down on a round wave-worn lump of coral.

132 bis.—*Halcyon occipitalis*, Blyth. (41.)

This is one of the commonest birds all over the Nicobars. I sent a specimen to Mr. Sharpe, who remarks (*in epist.*):—“This is quite a good species, it differs from both *H. sacer* and *H. Julia* in the bluer shade of the upper parts, the pale orange buff eyebrow, but particularly in the orange buff abdomen, this being white in all our specimens of the other two species. *H. Julia* is a very dark edition of *H. sacer*, and holds the same relation to this that *H. sordidus* does to *H. sanctus*.”

I do not in the least doubt that Mr. Sharpe is quite correct, and that the bird is distinct from *Julia* with which I was disposed to identify it, but I must note, to prevent confusion in the case of other observers, that in some specimens of *occipitalis* and these too, perfect adults, the entire lower parts are *absolutely* untinged with buff, and that even the great eye and nape stripe is in some birds white with only the faintest yellow tinge. These are the exceptions to the rule; but still I have examples of this kind. This has nothing to do with nonage, for I have young specimens, still retaining the crescentic bands upon the breast with eye streaks, and abdomen as bright a buff as in any old bird.

The following are the dimensions recorded in the flesh from our enormous series. I should note that there is no difference in size of the sexes, large and small, males and females, equally occur:—

Length, 10 to 11; expanse, 15·25 to 16·25; wing, 4·1 to 4·5; tail, from vent, 3 to 3·75; tarsus, 0·55 to 0·6; bill, from gape, 2·35 to 2·5; bill, at front, 1·55 to 1·88.

The legs and feet are pinkish horny, fleshy pink, or pinkish brown; the claws black; the upper mandible, the tip, and the edge of lower mandible dark horny; the rest of the lower mandible pinkish, or fleshy. The whole of the forehead, crown, occiput, and ear-coverts dark, dull, bluish green; a few of the feathers of the forehead, immediately over the base of the culmen, narrowly edged with buff. From the nostrils runs a broad streak over the eyes and ear-coverts, and right round the base of the occiput; this streak is typically a bright buff, but it is often paler, and in some specimens is white, only faintly tinged with yellow; behind this buffy nuchal band runs a narrow black demi-collar; the origin of this stripe is hidden by

the overhanging, bluish green ear-coverts. The lores are blackish; the chin, throat, breast, sides of the neck, and a very broad collar behind the narrow black one, pure white, or in some specimens very faintly tinged in places with buff. Abdomen, wing lining, axillaries, lower tail coverts white, typically strongly tinged with bright buff. In some the tinge is much paler, at times it is absolutely wanting. Interscapular region, and all but the tips of the longest scapulars, a rather bright bluish green. Middle of the back and rump a beautiful, almost lazuline, blue. Lesser coverts along the ridge of the wing almost unicolorous with the scapulars. Quills dark hair brown; the second to the fifth primaries, rich blue on the outer webs above the emargination, the rest of the primaries and secondaries the same color on the whole of the outer webs. The tertiaries on their outer webs, and the tips of the longer secondaries, intermediate in color between the scapulars and the secondaries. The greater coverts much the same color as the quills, slightly brighter and greener, and the median coverts slightly greener still; but the colors all blend into one another, and there is no great difference in tint. The longer upper tail coverts and the tail feathers are much the same color as the outer webs of the secondaries, but rather duller. The inner webs of the lateral tail feathers, in some lights, are browner and duller.

The youngest birds we obtained only show a few crescentic brownish black marks on the breast and white collar, but the birds were only commencing to breed when we were collecting, so that all our young birds are a year, or nearly a year old.

Mr. Davison says:—"I found this species (in the Nicobars, of course, to which it is restricted), commencing to breed about the latter end of February, but the only egg I obtained was taken from the oviduct of a female which I shot on the 24th February, just as it was entering its nest; the egg was perfect, and would no doubt have been laid in a few minutes. I found three nests on the Island of Camorta, and all of them were excavated in deserted ants' nests. These ants' nests are generally placed against the trunks of very large trees, but occasionally against those of the cocoanut palms at heights of from 4 to 20 feet from the ground, and vary from 12 to 30 inches in diameter, being composed, as I believe, of some sort of clay; they are extremely hard and difficult to break. I had to dig out the nests with a large clasp knife. It is in the larger ants' nests that this kingfisher's nest holes are excavated. The tunnel, about 2 or 2½ inches in diameter, is in the centre of the ants' nest, and goes in for about 6 inches, where it terminates in a

chamber about 7 inches in diameter; the bottom of the chamber contains a quantity of pulverised earth. I saw the bird fly out of two nests, and shot the female above referred to as she was entering the third."

The egg in question is of the purest white, quite devoid of gloss (which it would probably have had, if laid in the normal fashion instead of being obtained by a cesarean operation); it is a broad oval, somewhat pointed towards the smaller end, and measures 1.16 by 0.98.

He further adds:—"This Kingfisher is exceedingly abundant on all the islands of the Nicobars, where it replaces *H. chloris* of the Andamans, and like it prefers gardens, and is even more partial to forest, being not unfrequently found quite in its depths. It is a very noisy bird. I have seen several alight on a branch or stump of a tree, partially open and droop their wings and spread their tails and commence a discordant screeching concert, which they would keep up for about a minute; then one would start off to another branch followed by the others, and the same sort of thing would be again gone through. I observed this same habit in the Acheen *chloris*, but not in the Andaman birds."

I don't think that any of us ever landed anywhere on the Nicobars without seeing several birds of this species. They feed principally on lizards and shell fish.

133.—*Ceyx tridactyla*, *Lin.* (O.)

We never saw this species during our trip. Davison says:—"On the 20th April I saw a specimen of this bird in the possession of the Color Sergeant attached to the detachment of the 67th Regiment stationed at Ross Island. It had flown into the European barracks the day before, apparently in a very exhausted state, as it allowed itself to be captured by hand. It died in a couple of days, and then passed into the possession of Lieutenant Wardlaw Ramsay."

134.—*Alcedo bengalensis*, *Gmel.* (7.)

The specimens obtained of this species in the Andamans and Nicobars are characterized by somewhat shorter bills than those of continental birds. In no male or female does the bill exceed 1.4. The plumage is also, I think, duller than those of any set of birds that I have seen from elsewhere. It is curious how many of the Kingfishers of these islands are more or less specialized forms.

Of this species, Mr. Davison says:—"Occurs both at the Andamans and Nicobars, but is not common; it is chiefly found inland along the fresh water streams, but I have shot it on the sea coast, and seen it among the mangroves bordering the salt water creeks."

My experience is that at the Andamans it is decidedly more common than *asiatica*.

134 *bis*.—*Alcedo asiatica*, Swainson. (8.)

I have compared the Andaman birds with a specimen obtained in the Terai below Darjeeling, and find that the birds are identical. This beautiful little Kingfisher is about the same size as *bengalensis*, and in most respects is only an intensely brightly colored edition of that bird, but besides the difference of color it may at once be distinguished by the male having the ear-coverts blue, instead of red as in *bengalensis*, and by the female having, it is said, not *only the ear-coverts* red, as in *bengalensis*, but the cheeks also, which in *bengalensis*, are blue in both sexes. What I say of the female I give upon Mr. Sharpe's authority: one specimen which Mr. Davison shot, and himself carefully sexed as a female, differed only from the male in having the lower mandible of the bill red instead of black; the whole of the cheeks and ear-coverts were blue in this bird also. It may perhaps be doubtful whether the adult female has the cheeks red; it may possibly be that it is only the young birds of both sexes that have the red cheeks. We unfortunately ourselves only obtained four specimens, three undoubted males, and one the red-billed blue-cheeked bird, which Mr. Davison considers was certainly a female.

Later Captain Wimberley, who knew nothing about our doubts on this subject, shot and sent us three males and one female, all of which he himself carefully sexed. This female also only differs from the male in having the lower mandible orange red. I think this question of the, at present, received diagnosis of the sexes perhaps requires reinvestigation. The above seems *prima facie* to afford some grounds for doubting whether the adult female really has the cheeks and ear-coverts red, or differs from the male in any way, except in the color of the bill, but one cannot argue safely from *two* specimens.

The following are the dimensions taken in the flesh of the three undoubted adult males:—

Length, 6.25 to 6.5; expanse, 9.25 to 9.75; wing, 2.55 to 2.62; tail, 1.4 to 1.75; tarsus, 0.3 to 0.35; bill, from gape,

1.9 to 2.05; bill, at front, 1.4 to 1.6; wings, when closed, reach to within 0.7 of end of tail; weight, 0.75 ozs.

The legs and feet are bright vermillion; the bill of the male black, orange at gape; in one female the bill is deep red, here and there clouded with dusky.

In the male there is a broad streak from the nostrils to the upper margin of the eye, of rufous buff, immediately below this is a very narrow black line running to the lower margin of the eye. The forehead, crown, occiput, nape, cheeks, ear-coverts, and sides of the neck (with the exception of a small yellowish white patch in the centre of the latter behind the ears) black or nearly so; the feathers tipped with bright blue, brighter and purer on the cheeks and sides of the head, greener and paler on the crown. The feathers of the upper part of the head narrowly tipped, so that the blue appears as narrow transverse bands on a black ground; those of the cheeks and sides of the head, broadly tipped, so that the blue is almost continuous, and only faintly striated with narrow dusky bars. A little behind the eye there is a little black patch of feathers untipped with blue, and behind this again begins the broad stripe or yellowish patch already alluded to. The whole of the centre of the back, rump, and upper tail coverts bright glossy ultramarine blue, a little darker laterally. The wings are hair brown, the coverts and the outer webs of the secondaries and tertiaries, and the tips of the latter, suffused with dull blue, most of the coverts with a tiny shaft stripe at the tip of nearly the same color as the back. Tail hair brown, central tail feathers, and the outer webs of some of the laterals, more or less suffused with violet; chin and throat yellowish white, changing at the base of the throat into the color of the breast, which is an intensely deep ferruginous. The wing lining similar, but paler and more of a chesnut; flanks, abdomen, and lower tail coverts, duller, paler, and more or less tinged with dusky. A few of the feathers of the side of the breast often more or less broadly tipped with deep violet.

The adult female, according to our two specimens, differs only in having a deep red instead of a black bill, while the female, according to previous authors (or it may possibly prove the young), differs in having the whole cheeks and ear-coverts deep ferruginous.

Davison remarks:—"This bird is more abundant than the preceding, but unlike it; keeps exclusively (as far as I have observed) to the salt water creeks, occasionally venturing out to the fishing stakes at the mouths of the creeks. Its

voice is weaker, and not nearly so shrill as that of *A. bengalensis*; it feeds on small fish; after which it plunges, keeping under water for some considerable time."

146 quat.—*Rhyticeros narcondami*, Hume. (2).

This species, which we only met with on the island of Narcondam, was fully described, STRAY FEATHERS, 1873, p. 411. I have nothing now to add in regard to it.

147 bis.—*Palæornis magnirostris*, Ball. (18).

This species is, in my opinion, distinct from the Ceylon bird, which must apparently bear Linnaeus' title of *eupatrius*.

Within our range there are at least three well-marked and immediately distinguishable species which have been confounded under the name *Alexandri*, which latter, according to Lord Walden and Dr. Finsch, really applies to *P. Javanicus*, Osb., from Java and Borneo.

I have, however, already fully discussed this question (*vide ante*, p. 9), and need not here dwell further on this point.

The following are dimensions of fine adult Andaman males :—

Length, 22 to 24; expanse, 24 to 26; wing, 8.25 to 8.62; tail, from vent, 13 to 15; tarsus, 0.7 to 0.82; bill measured from nostril to point, 1.5 to 1.62; height of upper mandible measured at the base of the latter, 0.93 to 0.96.

Contrast these dimensions with those of a fine, apparently adult, Ceylon bird, in which the length of the bill similarly measured is 1.25 and the height 0.8.

Even these dimensions fail to convey an adequate idea of the enormous difference in size of the bills in adult males of the two species.

In the Andaman birds the legs and feet vary from pale to deep orange, the soles are flesh colored, the claws darkish brown. The bill is deep crimson, the lower mandible paler and tinged with orange. The irides are a light yellow, or creamy yellow, the orbital skin pale orange.

I said [p. 11] when discussing the allied races hitherto all confounded under the Linnean name *Alexandri* that good specimens must be compared; now these wretched parrots have a habit of dirtying themselves, and smearing their feathers over with different kinds of gum to such an extent that the specimens become worthless for purposes of comparison; and this is the case with my birds from the Cocos, and though they agree, as far as I can judge, with the Andaman birds, the breast

is so dirty that the yellow patch is quite invisible, and the wings are so smeared with gum, that the wing patch looks duller and darker than it should be in *magnirostris*. So that I am not perfectly certain that the Coco's bird is identical with that from the Andamans and Burmah, however I *think* it is. I should add that the bills of the Andaman birds run somewhat larger than those from Thyet Myo. A fine male from the latter locality has the bill measured as before, 1.4 and 0.85.

I may be wrong in uniting the Burmese and Andamanese birds, but they are precisely similar in color, and only differ a little in the size of the bills.

Davison tells me that "this species is tolerably abundant at the Andamans. It keeps in parties of from five to twenty or more, frequenting the tops of the highest trees, keeping up a continual screeching, even when feeding; their note is very distinct from both the other species occurring at the Andamans, viz., *P. affinis* and *P. fasciatus*, and when once heard can never be mistaken for either of these. Beyond Viper Island, on the way to Dunnyleaf Creek, is a roosting place of these parrots. This is in the mangroves bordering the entrance to one of the smaller creeks; the birds have evidently used this place for years, and have made a large portion of the tops of the mangroves look as if they were kept trimmed with the most scrupulous care. I was informed by some native convicts that this was the common roosting place of all three species of parrots; but I watched the birds, returning home one evening, for nearly an hour, during which time some 50 or 60 parties of 5 or 6 to 30 or 40 must have passed, and certainly the only ones that I saw consisted unmistakably of the present species. I have continually seen *P. affinis* in small parties settling for the night in moderately low bushy trees in different places about Port Blair, and, on the other hand, I have as often seen *P. magnirostris* assemble in parties in some large tree just before dusk, and after making a tremendous noise for some time, fly off in the direction of Dunnyleaf Creek. I did not observe this on any of the Nicobar Islands; but it occurs on both the Cocos and Table Island."

This species is a permanent resident in the islands; we obtained specimens from December to April, and have had specimens sent to us, which were killed from June to September.

148.—*Palæornis torquatus*, Bodd. (0.)

This species was introduced by Colonel Tytler, but it has entirely disappeared. I do not therefore include it in our list. Not only did

Mr. Davison fail to secure or even see it, but so also did Captain Wimberley, who collected there for us from June to September.

151 *bis*.—*Palæornis caniceps*, *Blyth*. (25.)

This fine, large, but rather dingy-looking parouquet occurs, so far as we were able to ascertain, only on the Great Nicobars, Montschall, and Kondul.

The fully adult bird has not yet, I think, been very correctly described or figured. There is only the merest trace of blue at the very base of the central tail feathers, and the terminal two-thirds of these are brownish grey, and not green; there is not the faintest trace of any blue shade on the head of the male such as Gould figures, and the cheeks in that sex are quite the same as in the female. The following are dimensions recorded in the flesh of adults of both sexes:—

Males.—Length, 23 to 26; expanse, 25·5 to 26; wing, 8·25 to 8·75; tail, 14·5 to 16·25; tarsus, 0·75; bill, from nostril to point, 1·15 to 1·19; from gape, 1·1 to 1·15; weight, 8 ozs.

Females.—Length, 19·5 to 23·5; expanse, 24·25 to 26; wing, 8 to 8·25; tail, 10·75 to 13·82; tarsus, 0·72 to 0·75; bill, from nostril to point, 1·13 to 1·17.

In both sexes the legs and feet are plumbeous green, or plumbeous glanced with green; the irides orange red; the lower mandible black; the upper mandible also black in the female, but in the male vermilion, pale yellowish towards the tip.

I have already discussed (*vide ante*, p. 25) Dr. Finsch's assertion ("Die papagaien, p. 84") that "the old females are colored like the males, and like them have a red upper mandible." He relied upon a supposed female obtained by the Novara Expedition. The simple explanation is that the Novara people made a mistake, as we are all liable to do with single specimens. We dissected not one but five and twenty specimens, and we know to a perfect certainty that the upper mandible in the oldest female is always black.

Dr. Cantor sent a specimen of this species from Penang, but there is no reason to suppose that the bird occurs there wild; the Malay and Burmese traders, who run backwards and forwards between the Nicobars and Burmah and the Straits, often take live specimens of these birds and of *P. erythrogastrus* away with them. Indeed, besides the five and twenty or so we shot, we obtained five live caged birds on Kondul.

The male has the forehead and a broad stripe through the lores to the eye, and an enormously broad, mandibular stripe meeting on the throat, black. The whole of the top and back

and sides of the head including cheeks and ear-coverts and lower portion of lores and excluding these black stripes, a pale drab brown, with, in most specimens, the faintest grey tinge at the base of the occiput.

The nape, and that portion of the upper back immediately adjoining it, similarly colored to the occiput; but with more or less of a yellowish tinge on the centre, and a bluish tinge on the margins of the feathers. Specimens vary a good deal in this respect, in some this greyish brown patch extends quite to the interscapular region, while many adult males have not the slightest tinge of grey on the occipital region, or blue on the margins of the nape feathers. The middle back, scapulars, and all the coverts, except the larger ones of the primaries, a yellowish green, most tinged with yellow on the median, and later secondary greater coverts. The primaries and their greater coverts, black or nearly so, the latter tinged at their bases, on their outer webs, with indigo blue. The primaries, except the first, suffused at their margin on the outer webs, and towards the tips with verdigris green; but with an indigo blue tinge, inside the green margin, on the outer webs towards the bases. The secondaries blackish brown on the inner webs; verdigris green, brightening on the later ones, on the outer webs, and a tinge of the same color on the inner webs at the tips near the shafts. The tertiaries are brighter green, on both the webs, on the visible portions, hair brown on the inner webs towards their bases. Lower back, rump, and upper tail coverts, and entire lower parts (except the base of the throat, below the junction of the mandibular stripes, which is unicolorous or nearly so with the head) a very bright grass green. The eight lateral tail feathers, the basal half of the central tail feathers, and the basal two-thirds of the next pair, a rather dull, somewhat yellowish green. The central tail feathers with the terminal one-half greyish brown, the extreme tips tinged with green, and the basal portion of this grey brown part tinged with dull yellow at the margins. There is a faint glaucous blue tinge at the extreme base of these feathers. The next pair on either side have the terminal one-third, the same grey brown, but tinged throughout with a dingy yellowish green shade. The entire lower surface of the tail is dull golden yellow. The lower surface of the quills and of the greater lower coverts, dark or blackish brown, wing lining and axillaries colored much like the rump.

The female closely resembles the male, except that, first, the upper mandible is black; and secondly, that in fine speci-

mens the whole of the crown, occiput, and nape has a well-marked lilac grey tinge. It is quite possible, without seeing the bills, to separate the sexes at once by this difference.

The tail is as in the male, so that the female figured by Mr. Gould, and which shows nothing of the conspicuous grey brown tinge which characterizes the terminal halves of the central tail feathers in both sexes, must have had an imperfect tail. Mr. Gould's figure, I should add, scarcely conveys an adequate idea of the great length of the tail in this species, which in a fine female should have been represented nearly four inches longer than he has shown it. The bird too is not nearly so bulky as his drawing represents.

Davison remarks:—"This species appears to be very much restricted in its distribution, having been obtained only at the Great Nicobars, Kondul Island, and Montschall Island. Unlike most paroquets it does not appear to associate in large flocks, being found usually singly or in pairs, occasionally in small parties of five or six. When not feeding it keeps much to the tops of the higher trees; it has a wild screeching note, (but quite unlike either *magnirostris*, *erythro-genys* or *fasciatus*), which it continually utters both when seated and flying, and I have frequently detected its presence by its note, when I have been quite unable to see it, owing to the dense foliage of the trees. It feeds much on the ripe fruit of the pandanus, so abundant on the inhabited islands of the Nicobar group."

We had very few opportunities of *observing* it; its flight is much like that of *sivalensis* and *magnirostris*, but more rapid; it is a noisy bird, and its call can be heard a long way off. We *saw* numbers, but mostly only for a moment as they dashed past through the trees at heights of from fifty to seventy yards above our heads; their cries just gave one time to get the gun to one's shoulder, and in less than half a minute from their first becoming visible, they were either falling to the shot, or out of sight.

152.—*Palæornis fasciatus*, *Müll* ? *P. Melanorhynchus*, *Wagler*. (12).

I have already discussed (*vide ante*, p. 20.) Dr. Finsch's, supposed distinct, *P. Lathamii*, I need only say here that we have a fair series from the Andamans and a very much larger series from Sikim, Kumaon, and Tipperah, birds carefully sexed, and a good number of them the most lovely specimens possible to meet with, and it is absolutely certain, beyond any possibility of doubt or

question, that in this species the entire bills in the young of both sexes are black, and that they continue so in the females at all ages; while in the male, as the bird ages, the upper mandible gradually changes from black to bright vermillion in the fresh specimen, a color which fades after death to a kind of crimson.

Davison remarks of this species:—"I have never observed this paroquet on any of the islands of the Nicobars, and even on the Andamans, where it does occur, it is less numerous than the other two species. I have only shot it in the immediate vicinity of Port Blair, and although I thought it would be likely to occur on the other islands of the Andaman group and the Cocos, I failed to obtain it from, or even make sure of its occurrence in, any of these.

"In habits, it closely resembles *P. erythrogenys* and *P. affinis*, but does not associate in such large numbers, being usually found in small parties of five or six, which are probably all members of the same family. I have found it most numerous about Mount Harriet in South Andaman."

I suppose very few really perfect plumaged adults of this species have ever been measured in the flesh, and our series of carefully recorded measurements from perfect adults will be useful.

I should note that in this species it is rare to get really perfect long-tailed females, and my experience is that wherever and whenever you come across flocks of this bird the great majority have very poor tails, but the really perfect female is scarcely at all smaller than the males.

Length, 14 to 16; expanse, 19.75 to 21; wing, 6.75 to 7; tail, from vent, 7.5 to 9; the weight is about 6 ozs.

The legs and feet are dull grass green; the soles bluish white; the claws blackish; the irides are yellowish white; the bills I have already described.

I forgot to mention that specimens from the various continental Indian localities above mentioned are absolutely identical with those from the Andamans.

I doubt whether this is a permanent resident. Captain Wimberley, who, after Davison left, collected largely from June to September, does not appear to have met with a single specimen during this period, and later he informed me that they did not come in again until the very end of October.

152 bis.—*Palæornis erythrogenys*, Blyth. (42.)

Of the red-cheeked paroquet we brought home, or had sent us later, altogether 114 carefully sexed specimens from all

parts of the Nicobar and Andaman groups, from Preparis on the north to Great Nicobar on the south, and after a careful examination of these specimens, I do not see, as already explained in my article on *Die papageien*, p. 23, how we can avoid separating the Nicobar from the Andaman bird; both sexes differ persistently in size and in plumage, as fully explained, *loc. cit.* The Nicobar bird must stand as *erythrogenys*, Blyth, and the Andaman bird must stand as *affinis*, Tytler; not that he knew the difference between the two, but because his was the first distinctive name applied to birds from this locality.

The following are dimensions of good adult specimens of our present species, the Nicobar bird :—

Males.—Length, 18 to 20; expanse, 22 to 23·25; wing, 7·4 to 7·7; tail, from vent, 10·25 to 11·75; tarsus, 0·5 to 0·7; bill, from nostril to point, 0·96 to 1·04.

Females.—Length, 15 to 16·5; expanse, 21·75 to 22·25; wing, 7·3 to 7·5; tail, from vent, 8·25 to 9·25.

The legs and feet are a dull earthy or brownish green; in the male the upper mandible is vermilion red, yellow at the tip, the lower mandible is in some specimens horny black, in some yellowish horny, and in some dusky dingy red. All this, be it understood, in perfect adults in the most beautiful plumage. In the adult females both mandibles are blackish. In the half-fledged nestling bird (I give this on Davison's authority who saw about 30 of them) and in the young birds just able to fly (of which all of us saw numbers) both mandibles, apparently in both sexes, are dull red, and certainly in the only fledging which Davison preserved a nestling at most 14 days old, both mandibles are red. The irides in this species vary unaccountably; in some specimens they were bright yellow, in some pale yellow, in some creamy white, and in some pale brown. The orbital skin is greenish brown, or brownish green. Blyth's original description of this species will be found, *STRAY FEATHERS*, 1873, p. 60.

As in the case of *caniceps*, and other members of this genus, Dr. Finsch is quite wrong about the sexes. I have, however, already fully discussed this question (*vide ante*, pp. 23-25) and need say no more about it here.

Davison remarks :—"This species is excessively abundant on all the islands of the Nicobar group. They wander about much more than the preceding species, frequenting alike the forest, gardens, and the mangrove swamps. They are generally found in small flocks, but I have occasionally found them singly, more often in pairs or small parties of four or five, but then it has generally been in gardens when they were feeding.

They feed largely on the papaya (*Carica papaya*) and on the ripe pandanus fruit, and I have seen them eating the ripe outer covering of the betel-nut (*Areca catechu*), which is so very abundant on some of the Nicobar Islands; but this is evidently not a favorite food with them, and they apparently never touch it when they can obtain better food, as on Camorta. They are easily reared in captivity even when taken from the nest very young. One of my men reared successfully two young ones which I took from a nest in Trinkut Island, although one was so young that it had both its eyes closed, and had not a trace of feathers on it beyond a few stumps on its tail and along the wings. The way he managed it was this,—he got a small whelk shell, and inserted the narrow end between the mandibles of the bird, so as to form a small channel into its mouth, and down this he used to pour small quantities of milk; this he continued to do till the bird could take more substantial food, and he then fed it on bread and milk, or boiled rice and milk, and for this it would readily open its mouth; it very soon learned to feed itself. I have often seen this bird in the houses of the Nicobarese fastened to a perch made of cane, by a ring of cocoanut shell. I may here mention that the Nicobarese appear rather fond of keeping birds. I have seen them with *Carpophaga insularis*, *C. bicolor*, *Macropygia rufipennis*, and *Eudynamis malayana*, and on Kondul Island we got five specimens alive of *P. caniceps*; these birds, with the exception of the paroquets, are usually kept in baskets made of cane, or rough cages of wood, and are suspended outside the houses in company with sundry little pigs, also in cages; strange as it may appear, the Nicobarese usually keep their poultry in pens, and the little pigs in cages suspended as above mentioned.

“On the 17th of February, I found on the island of Trinkut, Nicobars, a nest of this species in a hole in a branch of a screw pine (*Pandanus*) about 12 feet from the ground; the nest contained two young birds, one well covered with feathers, the other a tiny little thing with its eyes closed, and without a trace of a feather. There was no lining to the hole, beyond a little powder from the decayed wood. Again, on the 2nd of March, I found a nest on the island of Trinkut, situated about 30 feet from the ground, in a hole of a branch of a large forest tree; this nest contained two very young birds. On the 17th of April at Port Mouat, Andamans, I saw a female *P. affinis* feeding two young ones that were sitting on the edge of a hole in an old dry mangrove stump, about 12 feet high. As I did not require the birds I did not climb up to the nest, and so could

not say whether the hole was lined or not. It is curious that the bills of all the young of these two species that I examined were quite red, both upper and lower mandibles; the adult females always have the bills black. Can it be that the bills turn from red in the young females to black in the adult females? In *P. fasciatus* the young males have the upper mandible black, turning to red as they become adult. The young of *P. erythrogeus* and *P. affinis* that I examined may have been all males, but this I think was not likely. I must have seen, during my stay at the Andamans and Nicobars, at least thirty young birds of these species, of all sizes, in their nests, with convicts, or in the Nicobarese huts, and yet I never saw a young one that could not fly that had a black upper or lower mandible. The only very young one, however, that I skinned and dissected was no doubt a male."

152 ter.—*Palæornis affinis* Tytler. (27.)

This species, as has already been pointed out, inhabits the whole of the Andaman group including Narcondam and Barren Island, the Cocos and Preparis, and they are amongst the most common birds that occur there. How they differ from *erythrogeus* has already been fully explained, *vide ante*, p. 23, *et seq.*). I need only now give dimensions of fully plumaged adults recorded in the flesh:—

Males.—Length, 16·5 to 18·25; expanse, 20·5 to 21·75; wing, 6·7 to 7·2; tail, from vent, 9 to 10·5; tarsus, 0·5 to 0·6; bill, from nostril to point, 0·87 to 0·95.

Females.—Length, 13·5 to 15; expanse, 19 to 21; wing, 6·4 to 6·95; tail, from vent, 6·55 to 8.

The dimensions of this and of the preceding species were taken from about a dozen of the finest birds of each sex. Immature specimens, and those with imperfect wings and tails, being excluded. The soft parts in both species are precisely similarly colored. The oldest females in this, as in the last species, have both mandibles black, and have the red cheek patch smaller and much duller colored than in the males; they also have the whole mandibular stripe green, while the females of *erythrogeus* have three-fourths of this stripe black, and only the terminal one-fourth greenish.

The habits of this and the preceding species are identical; they abound everywhere; land where you will, throughout the group, their screeching note is sure to greet you. On Mount Harriet they swarm to a degree scarcely to be credited, and in Macpherson's Straits, as you thread your way through the

narrow channels that divide the islets there clustered, small flocks pass over head every five minutes, flitting from isle to isle, and screaming *à qui mieux, mieux*, as they fly. They are permanent residents; we secured them from December to April and received specimens killed in every month from May to September.

153.—*Loriculus vernalis* *Sparrm.* (22.)

This pretty little loriket is common enough in the South Andamans about Port Blair and Port Mouat, in the islands in Macpherson's Straits, in Stewart's Sound, in the Little Andamans at the extreme south of the group, and again about Port Cornwallis in the Northern Andaman. The birds are absolutely identical with those from Southern India, except that the general tone of plumage is somewhat brighter. The sexes differ in no respect either in size or plumage.

The following are dimensions of numerous specimens recorded in the flesh:—

Length, 5·6 to 6; expanse, 10·25 to 11; wing, 3·6 to 3·75; tail, from vent, 1·8 to 2·0; tarsus, 0·3 to 0·35; bill, from nostril to point, 0·45 to 0·48.

The legs and feet vary from pale orange to orange; the soles are fleshy or pinkish white; bill and cere are sometimes orange, sometimes orange vermilion, sometimes crimson, and sometimes vermilion. The irides vary from white to excessively pale yellow, but are sometimes pinkish white.

In a recent article, (*vide ante*, p. 1-28), I was compelled to notice less favorably than I should have desired. Dr. Finsch's treatment of the genus *Palaeornis*; having this species before me I thought it only fair to refer to Dr. Finsch's account of it, and I am sorry to say that I find him here at the old objectionable trick of substituting for well-known and established names new fangled ones of his own, merely to please a morbid pseudo-classical taste. Thus *Loriculus* becomes *Coryllis*, Finsch!!

When we come to his diagnosis of this particular species, we find it open to question on a cardinal point. He says that the middle of the crown in adults is suffused with clear blue, which is wanting in the young. Now this is, it strikes me, far from correct. In the perfect adult, and I speak with 32 specimens before me from Anjango, the slopes of the Nilghiris and the Andamans, (besides a cage full of the live birds recently sent me from the latter locality,) there is not the smallest trace of blue on the crown. In younger birds, which may be distinguished by their somewhat duller plumage, especially where the red of the rump is concerned, a blue wash on the forehead

and the central portion of the crown is observable. There is no mistake about this, as we have taken the birds off the nest. Then he describes the rump and upper tail coverts as "Düsterpurpurroth." I cannot tell what the colors may be in dried and faded specimens, but in adults, in good plumage, these parts are the most brilliant crimson. Then again he remarks that this species, and the Ceylon bird *L. indica* of Kuhl, are sufficiently distinguishable by the much shorter and non-elongated bill of the latter. Individual birds of both these species vary a good deal in length of bill, but if Dr. Finsch compares a score of specimens of the two species, he will, I think, find little to choose between the bills of the two as regards length. As a whole, the bills of the Ceylon birds seem to me not merely deeper, but a shade *longer* also.

This species is a permanent resident in the islands.

On the northern shores of the Great Nicobar, Mr. Wood-Mason saw and watched, but failed to secure, a *Loriculus*, which may have belonged to this species or to the Malayan *galgulus*.

Davison remarks:—"This little loriket is tolerably abundant about Port Blair, and is also found on some of the other islands of the Andaman group; but I did not meet with it at the Nicobars. I have always found it in pairs, never singly or in parties; it is a very lively bird flying from tree to tree uttering quickly its sharp shrill note. It is amusing to watch a number of these birds in a cage; they start from the bottom of the cage, climb up the side, then along the top till they get to about the centre of the roof, where they hang head downwards for a second or two, then fly down on to the perch, or the bottom of the cage, and recommence the ascent, this they will continue for an hour at a time. Like all the lorikets they sleep hanging head downwards and usually with their heads tucked under their wings. Numbers are caught by the native convicts, and any number of live birds can generally be obtained in the bazar at Ross Island. The natives catch them by putting one into a small cage, which is fastened to a long thin bamboo, the cage is covered over with small green branches, and from the top of the cage projects a small dry branch, or blackened stick with another piece of stick tied across it at right angles, cross fashion. This twig or stick is then covered with bird-lime, and the bamboo is stuck upright in the ground. The call of the caged bird soon attracts some other, which flying to the spot invariably settles on the exposed lined branch, and is of course caught.

"The birds were breeding before I left the Andamans. On the 19th April while returning to Ross from Port Mouat, a Burman

convict, who was with me, saw a bird of this species fly into a hole in the branch of a forest tree growing by the roadside. He called my attention to this, and I sent him up the tree. On his climbing up he found the bird (which he caught and brought down with him) sitting on three round white eggs. The hole was about 20 feet from the ground, and contained no lining, or attempt at a nest, the eggs being laid on some soft black earthy-looking powder that lay at the bottom of the hole and which had evidently fallen from the top and sides of the hole. The hole which was a natural one, not excavated by the bird, was moderately large, but not quite large enough to admit the convict's hand without a little cutting away at its lower edge."

The eggs above referred to, which are the only ones of this species that I have seen, are very broad and obtuse-ended ovals, in color dirty-white, and entirely glossless. They varied from 0.7 to 0.75 in length, and from 0.58 to 0.6 in breadth.

157 bis.—*Picus andamanensis*, Blyth. (32.)

This species is very closely allied to *pectoralis* of Blyth, of which we have specimens from Thyet Myo. This latter is said to be identical with *P. analis* of Horsfield; but I have not yet been able to compare specimens. From *pectoralis* the Andaman bird is generally distinguished by the much darker brown tinge of the lower surface; by the much more numerous and larger breast spots; by the brighter red tinge of the vent feathers and lower tail coverts; by the somewhat less close white banding of the upper surface; by the white markings on the central tail feathers, being spots, while in *pectoralis* they are almost perfect bars; and lastly, by the heads of the females being brown in the present species, while in *pectoralis* they are black as in *Macei*.

The sexes do not vary appreciably in size; large and small, males and females occur. We measured a number in the flesh with the following results:—

Length, 6.75 to 7.25; expanse, 12 to 12.75; wing, 3.7 to 3.9; tail, from vent, 2.75 to 3; tarsus, 0.6 to 0.7; bill, from gape, 0.82 to nearly 1.0; bill, at front, 0.65 to 0.83; the wings, when closed, reach to within 1.5 of end of tail.

The legs and feet are greenish plumbeous; the bill has the upper mandible blackish, or horny brown, bluish towards the base; the lower mandible plumbeous, darker at tip; the irides brown.

In both sexes the forehead is brown in the male, the rest of the top and back of the head is a grey brown, the feathers tipped with crimson, which in most specimens has in some lights

more or less of an orange tinge; the bases of the feathers always appear to show through a good deal. In the female these parts are brown, varying greatly in shade of color, apparently according to age. In the younger birds it is a wood brown, in the oldest a sooty brown; in both cases darkest towards the tips of the occipital feathers. In other respects the plumage of both sexes is precisely alike. The whole of the interscapular region and back, scapulars and tertiaries, black, broadly barred with white, or sometimes yellowish white. The rest of the quills and their coverts varying from hair brown on the first primary to almost black on the later secondaries, with numerous white spots. The first primary generally with only one or two white spots on the inner web towards the base. The others, primaries and the secondaries, with three or four white spots on both webs, small on the outer, larger on the inner webs. Different specimens vary greatly as regards the size and number of these spots. Upper tail coverts black, with a subterminal white band, and one or two similar, but more or less imperfect bands higher up. The tail feathers vary a great deal in their markings, but it may be said that normally they are blackish brown darkest on the central ones. That the central pair have from three to five white or yellowish white spots on each web, the basal pair hidden by the upper tail coverts. The next two pairs on each side have three or four smaller spots on the outer web, and either no spots on the inner web, or only one, or at most only two very small ones. The next pair on either side with a white subterminal bar, and three pairs of spots on either web. The next pair similar, but with only two pairs of spots; in both these pairs the spots sometimes run right across. The external pair of all are very small, completely hidden by the lower tail coverts. I should note that on the under-surface of the tail the spots towards the tips of the feathers are often more or less tinged with yellowish brown. From the angle of the lower mandible runs a blackish brown streak down either side of the neck. The lores, chin, throat, cheeks, a line over the eye, ear coverts, and sides of the neck white or brownish white, the sides of the neck being the purest white. The ear-coverts streaked brownish, and some of the feathers at the base of the throat with small, more or less triangular, dark brown subterminal spots. The rest of the lower parts dingy white, strongly tinged with brown or yellowish brown, most strongly so on the abdomen, the amount and intensity of this tinging varying much in different specimens. All the feathers of the breast, with

large, conspicuous, more or less broad, hastate, subterminal, blackish brown spots. Sides somewhat similar, but the spots less strongly marked, centre of abdomen more or less obscurely streaked with dusky. Flanks barred black and brownish white, lower tail coverts obscurely barred, dusky and whitish; but marginally tipped and tinged with bright crimson, so that little of this is seen. Wing lining mingled yellowish white and blackish brown.

The young males are apparently like the females, as we have several differing from the females, only in having some very slight crimson tippings to the crown feathers.

Davison remarks :—"This small woodpecker is not very abundant at the Andamans, though found scattered over the different islands of the group. In habits it does not differ from other small woodpeckers; searching for insects from the tops of higher trees to the base of the small shrubs that form the underwood. They are found as often singly as in couples, sometimes I have seen a family of six, keeping all together, and following each other from tree to tree."

This species is a permanent resident, but of the Andaman group only; it has not yet been met with either at the Cocos or the Nicobars. It is impossible to describe the cries of birds, but I may note that the call of this species appeared to me exactly similar in character to, though feebler than that of, *P. brunnifrons* of the Himalayas.

169 bis.—*Thriponax Hodgii*, Blyth. (25.)

This fine species (of which by the way it is extremely difficult to obtain really good specimens) appears to be tolerably common throughout the Andaman group. The dimensions as recorded from the fresh birds were as follows. There is, I may remark, no constant difference in size in the sexes, but the bills of the males do *average* somewhat larger than those of the females :—

Length, 14·5 to 15·75; expanse, 22·25 to 23·25; wing, 7·25 to 7·75; tail, from vent, 5·6 to 6·75; tarsus, 1·12 to 1·25; bill, from gape, 1·8 to 2; bill, at front, 1·54 to 1·84; wings, when closed, reach to within from 3·75 to 4·5 of end of tail; the weight varies from 5·5 to 7·0 ozs.

The legs, feet, and claws are blackish plumbeous; the bill is black; in some specimens, but not in all, whitish and semi-transparent at the tip; irides yellowish white to pale yellow.

The adults of both sexes are entirely black everywhere, including the under-surface of the wings, except the forehead,

crown, occiput, and a broad moustachial stripe in the male, and the occiput only in the female, which are bright crimson. The occipital plumes in both sexes are developed into a full crest. In young birds the chin and throat and sides of the head are dull brown, and the rest of the lower parts blackish brown. In the youngest males we obtained, though the forehead is already red, the moustachial stripe is entirely wanting.

Davison says:—"The Andaman black Woodpecker is, like *P. andamanensis*, distributed throughout the different islands of the Andaman group. It is nowhere found in any numbers; it keeps to the larger trees of the forest, up which it may be seen ascending in a spiral manner, stopping every few feet, uttering its shrill rasping whistle, and hammering away at the tree in a most energetic manner. I did not obtain the eggs of this bird, but shot the young well grown at the latter end of March."

This species also is a permanent resident. It does not, so far as we yet know, occur in any island of the Nicobars, or at the Cocos.

200.—*Cuculus striatus*, *Drapiez*. (2.)

Two specimens of this species were obtained on Kondul (Nicobars), they were male and female, the latter in the hepatic stage. There is no doubt that these birds are the true *striatus*; but though excessively close—too close to separate without the comparison of a very large series of both races—I am by no means sure that our Himalayan bird, *himalayanus*, Vigors. = *saturatus*, Hodg., is really precisely identical.

I cannot exactly follow Mr. Gray when he unites in his handbook *striatus* and *micropterus*; the latter being at once distinguishable by its comparatively huge bill. It may be doubtful whether *affinis* of Hay? is really distinct from *micropterus*; but as to the distinctness of this latter from *striatus*, no doubt, can, it seems to me, exist.

We saw several specimens at Kondul, but nowhere else. Mr. Davison, however, though he did not procure specimens, himself saw and heard birds which he believes to have belonged to this species at the Andamans. He says—

"This bird is migratory. When I first went to the Andamans in December, and up to the time I left it for the Nicobars in the early part of January, not one of these birds was to be heard, for they are much more often heard than seen. At the Nicobars I heard it for the first time on the island of Kondul on the 14th March, and on my return to Port Blair I continually heard its note during the day and occasionally even on a moonlight night."

Our Kondul specimens measured :—The *male*, length, 12·75 ; expanse, 19·5 ; wing, 6·9 ; tail, from vent, 5·75 ; tarsus, 0·7 ; bill, from gape, 1·1 : *female*, length, 11·5 ; wing, 6·8 ; tail, 5·25 ; bill, from gape, 1·08 ; tarsus, 0·7.

In both the feet, iris, and gape were bright yellow ; the upper mandible and the tip of the lower mandible horny green ; and the rest of the lower mandible yellowish horny.

203.—*Cuculus micropterus*, Gould. (O.)

Mr. V. Ball states, (J. A. S., XLI., 1872, p. 280), that he obtained a specimen of this species at the Andamans, and Lord Walden (*Ibis*, 1873, p. 304) somewhat doubtfully identifies four specimens killed by Ramsay at the Andamans, between the 31st December and 29th January with this species, and on these authorities I include the species. Our Nicobar birds, absolutely and positively, do not belong to this species.

211 *bis*.—*Chalcococcyx xanthorhynchus*, Horsf. (2.)

I have received two specimens of this beautiful cuckoo which were killed about the middle of August in the neighbourhood of Port Blair. Lieutenant Wardlaw Ramsay also obtained a young bird, which, although I have never seen it, I have little doubt, from the description I received, must have belonged to this species.

In the immature plumage, this species greatly resembles *C. smaragdinus*, Blyth, (*Hodgsoni*, Horsf. et auctorum), but it may be readily distinguished by its broader bill, and by the base of the lower mandible being much yellower than in that species, and by the wing of 3·7 to 3·8 against 4·1 to 4·2 in *smaragdinus*. Once a single feather of the adult plumage, which is a deep metallic *puce*, shows itself, there is no mistaking the bird.

The following was Mr. Blyth's description (J. A. S., 1842, p. 919) of the adult :—

“Amethystine cuckoo ; length, six inches and a half ; of wing four inches, and tail three inches ; its outermost feather half an inch shorter ; bill to forehead (through the feathers) eleven-sixteenths of an inch, and tarsi half an inch ; color of the upper parts and breast brilliant amethystine-violet, with dull dark margins to the body feathers, slightly glossed with green ; beneath white, barred across with dark green. Outermost caudal feathers having five white bars, the last terminal, and the two basal not extending to the inner web ; the next two feathers on each side are tipped with white, and the penultimate

have rudiments of other white bars; rest of the same splendid color as the back; bill wholly yellow, and much less thick than represented in Dr. Horsfield's plate; and feet apparently dusky: the crown is very slightly crested. Inhabits Java, where stated to be rare and very shy. Dr. Helfer mentions its existence also in the Tenasserim provinces, and it is probable that the Asiatic Society's specimen was thence obtained."

A young bird has the upper mandible, and the tip of the lower mandible brown; gape, and the rest of lower mandible bright yellow. The whole of the upper surface, including wings and central tail feathers, a hair brown glossed with coppery green; the head and upper neck broadly and closely, the scapulars more narrowly and widely apart, banded with pale chesnut. The secondaries, later primaries, and most of the coverts margined with the same color; lateral tail feathers blackish white, tipped with white or rufescent white, and broadly banded with pale chesnut, these bands becoming white on the outer margin of the outer tail feather. The lateral tail feathers have a little of the same metallic green gloss that the upper parts have. The entire lower parts white, barred with blackish brown, which in some few of the bars, on the sides of the breast, have a green metallic lustre. In this specimen two feathers on the head, and two tertiaries, have assumed the beautiful violet purple hue of the adult.

In another specimen the young and adult plumage is so intermingled that almost every alternate feather belongs to the perfect plumage.

214.—*Eudynamys honorata*, Lin. (0.)

Beavan says:—"The koel was twice observed by Colonel Tytler at the Andamans besides being frequently heard calling in the woods." No specimen, however, was ever obtained by Colonel Tytler, nor, as far as I can learn, by any one else; and as the note of the next species (or sub-species?) is precisely similar, I have no doubt that Tytler's bird was *malayana*. For the present I exclude this species from our list.

214 bis.—*Eudynamys malayana*, Cab. (7.)

We found this species throughout the Andaman and Nicobar group from the Great Cocos on the north to Galatea Bay on the south, and there is, therefore, every reason to believe that it is identical with Cabanis' species described from Sumatra. Whether this race is entitled to specific difference I am not yet prepared to say; even if it be so, *malayana* and *honorata* certainly grade

into each other, so that when a large series is compared it would be difficult to know to which race some specimens should be referred.

Malayana is supposed to be distinguished by its longer and stouter bill, its longer wing, and by the coloring of the female, in which most of the markings on the upper surface and the tail, which are commonly white in the Indian bird, are rufescent in the present species.

As regards the size of the bill, the birds from the Andamans and the Nicobars certainly have considerably larger bills than Peninsular and Western Indian examples, and they agree in this respect with Malaccan specimens, and those from Thyet Myo.

As regards wings, it is not so easy to separate them; the wings of the males vary from 7.75 to 8; but I have small-billed Continental Indian birds with wings as large as this.

As regards the coloring of the female, this is typical in our insular birds, and perfectly agrees with Malaccan birds; but then I have a Calcutta bird precisely similarly colored and with a bill intermediate in size between Southern Indian and Nicobar specimens.

I am not, therefore, myself prepared to assert that the two races can be separated. I have an enormous series from all parts of the Indian Empire, and next year I hope shall have time to compare them, and arrive at some definite conclusion. In the meantime I follow Lord Walden (who has paid special attention to this group, and who has examined Andaman specimens) in referring these and the Nicobar birds (which are identical) to *Cabanis' malayana*.

Davison tells us that :—"This koel occurs in the Andamans, extending also to the Cocos, but is nowhere common in these localities. It keeps a good deal to the skirts of the forest, but frequents gardens as well. Its note, as far I know, is identical with that of the Indian bird; it is shy, and eludes observation as much as possible, dexterously making its way to the opposite side of a tree, when watched, and then flying off. I have always seen more males than females, in fact have only obtained a few cursory views of these latter. It also occurs in almost all the islands of the Nicobar group, where it is much more numerous than in the Andamans, but is none the less shy and wary. It would be interesting to know what nest this bird selects to deposit its eggs in. At the Nicobars no crows occur there beyond a few pairs of *C. Levallantii* taken over from the Andamans and turned loose on Camorta Island, and of which at least two pairs have found their way to, and taken up their

abode on, Trinkut Island. The only bird that would be likely to be chosen as foster parent is *Dissemurus affinis*, but these are far outnumbered by the present species. The only island, on which I have not observed this bird, is Batty Malve."

The dimensions (recorded in the flesh) of specimens (males) killed by us at Teressa, Trinkut, and Mount Harriet were:—

Length, 17; expanse, 24 to 25; wing, 7.75 to 8.0; tail, from vent, 8.0 to 8.5; tarsus, 1.25 to 1.3; bill, from gape, 1.5 to 1.6; from nostril to point, 0.83 to 0.86; closed wings, reach to within from 4.25 to 4.5 of end of tail; weight, 4 ozs. to 5 ozs. The legs and feet were plumbeous, soles whitish; irides, carmine to deep crimson. Gape and orbital skin pinkish. Bill light greenish horny, or again dull yellowish white, tinged plumbeous near the base.

214 *ter.*—*Eudynamys mindanensis*, Lin. (0.)

Von Pelzeln, Reise Novara, Vögel, p. 103, gives *Eudynamys australis*, Swainson, (which=*E. cyanocephala*, Latham,) with *mindanensis* as a synonyme. I am doubtful, however, whether he accepts Cabanis' species as distinct, and I do not think that he means that the young bird, killed by the Novara Expedition on Car Nicobar, was different to what we obtained. The only thing is we have called it *malayana*, while he would assign it to *mindanensis*. Our specimens, as already mentioned, agree with those from Malacca and Thyet Myo. I do not therefore at present include *mindanensis* in our list.

217 *bis.*—*Centropus andamanensis*, Tytler. (23.)

The following are the dimensions of this species recorded in the flesh:—

Length, 18 to 19.5; expanse, 20.25 to 22; wing, 6.4 to 6.8; tail, from vent, 10 to 11; tarsus, 1.9 to 2.2; bill, from gape, 1.6 to 1.8; bill, from anterior margin of nostrils to point, 0.9 to 1.03; wings, when closed, reach to within from 7 to 7.5 of end of tail; weight, 7 to 9 ozs.

The legs and feet are black; soles plumbeous; bill black, somewhat paler on the lower mandible; irides vary from crimson to carmine; in one specimen buffy white!

The whole of the head, neck all round, breast and upper back, brown, varying very much in shade in different specimens; when the bird is freshly moulted, this is almost sepia brown, while when the former is about to moult it is a pale whitey brown. The rest of the lower parts similar, but somewhat darker, especially on the tibial plumes, vent and lower tail coverts. The entire wings

and interscapular region a very deep maroon, much deepest in freshly moulted birds. The quills more or less tinged with hair brown towards their tips, the amount of this again varying greatly in different specimens. Lower back and rump always a somewhat darker brown than the neck and upper back, but not fading so much as these do, and therefore sometimes in the bleached plumaged birds, a much darker and quite different brown from that of these parts. Tail in the freshly moulted bird very deep hair brown, almost black, with a distinct purple gloss, very soon fading, the fading commencing at the bases of the central feathers along their margins, and the whole tail gradually sharing in the change, so that in some much bleached birds the whole of the central tail feathers, and the greater portion of the outer webs of the lateral feathers, especially towards their bases, are a dull, pale, almost whitey brown. In some half-bleached birds, the shafts of the feathers of the upper back, nape, and breast are conspicuously paler than their feathers, and in the darker fresh moulted birds, there is sometimes, but not generally, a slight difference in color between the shafts and webs of the brown feathers.

Lord Walden's figure in the *Ibis* is of a half-bleached bird.

Davison says:—"The voice of the Andaman Coucal is very similar to that of *C. rufipennis*, but more subdued. It is not uncommon in some parts of the Andamans, and extends also to the Cocos and Table Island. It is found in the forest, generally on the outskirts; but prefers gardens, and is particularly partial to the tracts of sugarcane through which it makes its way with great adroitness, and from which it is only with great difficulty dislodged. It is very difficult to flush when there happens to be no ready means of escape for it. I once saw one fly into a small isolated clump of bushes about 10 feet square and 15 feet high. At first I thought to dislodge it by throwing stones into the bush; but no amount of stone-throwing would make it show, and it was only by arming a man with a long stick, and making him almost beat the bushes down that it was induced to break cover. In habits it much resembles the other *Centropi* feeding on the ground, on which it both walks and runs well."

This species breeds in the Andamans during the latter part of the hot weather and beginning of the rains. I have no detailed information as to its nidification; but Captain Wimberley, who sent me two eggs which he took in the neighbourhood of Port Blair, informs me that he took them in June, and that the nest was composed of sticks and placed in a tolerably high tree in

secondary jungle. The eggs are of the usual Coucal type; broad ovals very obtuse at both ends; in color a dull, much soiled, white with very little gloss, and measuring 1.32 by 1.12 and 1.33 by 1.1.

217 *quat.*—*Centropus eurycercus*, *Hay.*? (0.)

On Kondul (Nicobars) a *Centropus*, not *andamanensis*, but larger and of the *rufipennis* type, was seen, but unfortunately was not secured, as every one was intent on bagging *P. caniceps*. It seems probable that it belonged to this species, which we procured a little further south at Acheen. The same bird was also seen on the Southern Jolly Boy, Macpherson's Straits.

224.—*Arachnothera pusilla*, Blyth. (0.)

Colonel Tytler says:—"The little spider hunter has been observed, but no specimens hitherto procured." This was written many years ago, and since then, to the best of my belief, no specimen has either been observed or procured. I do not include this in our list.

225 *bis.*—*Æthopyga nicobarica*, *Hume.* (14.)

This species was described, STRAY FEATHERS, 1873, p. 412. I have nothing now to add to what I then stated in regard to it.

235 *bis.*—*Arachnechthra pectoralis*, *Horsf.* (43.)

There is no great, in fact I may say absolutely no constant difference in the size of the two sexes of this species. We secured forty odd specimens, so that we are able to speak confidently on this point; individuals vary considerably in dimensions, but the females are just as often larger than the males as *vice versâ*.

Length, 4 to 4.75; expanse, 6 to 6.75; wing, 2 to 2.2; tail, from vent, 1.4 to 1.6; tarsus, 0.5 to 0.6; bill, from gape, 0.75 to 0.9; bill, at front, 0.65 to 0.83; weight from 0.25 to 0.37 ozs.

The legs, feet, and bill are black; the irides brown.

In the adult male in full breeding plumage, the forehead and the anterior half of the crown, the chin, throat, up to the lower margin of the eyes and upper breast, are blackish brown; the feathers towards the tips (which alone owing to the overlapping of the feathers are visible) with a rich steel blue and purple metallic reflection, the purple being specially conspicuous on a broad stripe down the chin, throat, and middle of the breast. Lores velvet black; back, scapulars, rump, and upper tail coverts;

the feathers hair brown at their bases, but broadly tipped and margined with deep olive green, which in good specimens alone is visible until the feathers are lifted; quills and coverts hair brown, all the feathers but the first two primaries narrowly margined on their exterior webs, with a dark olive green; tail feathers black, the three exterior feathers on either side tipped with somewhat brownish white; the exterior of all very broadly, and the next two more narrowly; lower breast and whole of the lower parts bright yellow, perhaps nearer gamboge yellow than any other shade; axillary tufts still brighter and with an orange tinge; wing lining and the inner margins of the quills towards their bases, white. The wing lining feathers tinged and margined with pale yellow.

Females in full breeding plumage have the crown and forehead olive green like the back, but somewhat duskier. The chin, throat, and upper breast like the lower breast and abdomen, but slightly duller. They have no bright colored axillary tufts. The lores are dark olive green, and generally the whole under-surface of the females are somewhat duller than in the males.

In non-breeding plumage the males appear to be similar to the females, except that some of the feathers of the forehead are very narrowly and faintly margined with steel blue.

We procured no male of this species with a central gular stripe, such as, the males of *asiatica*, *andamanica*, &c., exhibit in non-breeding plumage, and it seems therefore possible, considering the large series we obtained, that they never exhibit this.

In some specimens, both male and female, in worn plumage a great deal of the olive green has disappeared off the back, leaving the dull brown basal portion of the feathers the predominant tint.

Some few of the males in full breeding plumage exhibit on the sides of the breast just at the junction of the steel blue and yellow, two or three maroon tipped feathers.

Davison remarks:—"This little honeysucker is very abundant on the Nicobar Islands, and numbers may always be seen in the tops of the cocoanut palms hopping about among the flowers. I have frequently seen the male perch himself on an exposed branch, slightly open his wings, elevate his axillary tufts, and pour forth a feeble, twittering, but pleasing little song."

Of the nidification of this species, which I believe occurs within our limits only in the Nicobars, the following brief note by Mr. Davison sums up all we yet know:—"Although I found several nests of this species, I never obtained the eggs; on the 19th of January I found a nest at Camorta, I shot both

the birds, but on climbing up to the nest found it empty. Again on the 17th February I found three nests, two empty, one with two very young birds."

The nest is quite that of an *Arachnechthra*, very similar to, but larger and more coarsely made than, that of *A. asiatica*. The nest, a good deal drawn out towards the twig it hangs from, is a pendant elongated egg, nine inches in length, and three in diameter, composed chiefly of dry grass and cocoanut fibre, with a few feathers intermingled in the body of the nest, and the interior thickly lined with these. About an inch below the point of suspension, the portico projects for 1.25 inches, it is about 1.5 thick, and below this is the little oval entrance to the nest about 1.25 by 1.0. Interiorly the cavity is about 3.5 deep below the lower margin of the entrance hole, and nearly 1.75 in diameter. The portico and the upper portion, or neck of the nest, is chiefly coir, while the lower and broader portions are mostly grass and pieces of bamboo sheaths, a dead leaf or so, and a scrap or two of bark. There is no attempt to decorate the nest externally, as is so common in this genus, but perhaps the nest was not quite finished, though Davison says they were all alike.

This species occurs I believe not only in Java, but in many of the islands of the Malayan Archipelago.

235 ter.—*Arachnechthra andamanica*, Hume. (41.)

This species is fully described, STRAY FEATHERS, 1873, p. 404; *et seq.*, and I have nothing to add in regard to it to what I have there recorded.

This also is a permanent resident, at any rate we have it killed in every month from December to September.

237 bis.—*Dicaeum virescens*, Hume. (4.)

This species has already been characterized, STRAY FEATHERS, 1873, p. 482, and I have nothing now to add in regard to it. I am entirely ignorant alike of its habits and distribution, but I am pretty confident that it does not occur in the Nicobars, as otherwise some of us must at any rate have seen it there. At Port Mouat Davison saw it, but failed to procure a specimen, and our birds were procured somewhere in the immediate neighbourhood.

261.—*Lanius cristatus*, Lin. (10.)

This species is apparently very rare in the Andamans during the cold season; for amongst thirty-two shrikes which we pre-

The only two were *cristatus*; both these specimens were obtained by Mount Harriet in the immediate neighbourhood of Port Blair. Strange to say, however, it appears to be common in the hot weather and rains, as no less than eight specimens were sent us killed in June, July, August, and September. All of these, however, were young birds. It is clearly, I think, merely a seasonal visitant. We have had no reason to believe that it occurs at the Nicobars.

261 *bis*.—*Lanius lucionensis*, *Lin.* (33.)

Of this species, which was very abundant in the neighbourhood of Port Blair, we obtained a large series. Although these birds differ very much *inter se*, as I shall explain more particularly hereafter, they can at no age be confounded with *cristatus*. In size and structure the two species agree so closely that I have found it impossible to separate them on any other ground than that of difference in color; but this difference exists at all ages and in both sexes, and though it is much more conspicuous in the oldest birds, it is always sufficiently manifest to prevent the two being confounded. It has been asserted that structural differences exist, and it may be that in *lucionensis* the bill is really a shade longer and has the tooth slightly more strongly developed; but even of this I am not sure, and after comparing about 30 specimens of each I can discover no constant difference, except that of color, between the two species, although individuals of each differ greatly the one from the other.

The Andaman and Nicobar birds appear precisely similar to those which I have from China.

The following are dimensions recorded from fresh specimens of both sexes, which do not differ, that I can discover, appreciably in size:—

Length, 7·5 to 8·25; expanse, 10·5 to 11·6; wing, 3·4 to 3·75; tail, from vent, 3·75 to 4·12; tarsus, 0·9 to 1·0; bill, from gape, 0·85 to 0·95; bill, at front, 0·5 to 0·65; wings, when closed, reach from within 2·3 to 2·6 of end of tail; weight, from 1 to 1·25 ozs.

The legs and feet are dull leaden blue, or dull bluish, or sometimes even greenish horny. The upper mandible is horny brown, edged whitish near the gape; the terminal third of the lower mandible horny brown; the basal two-thirds bluish or fleshy white; the irides are brown.

In the old adult, the lores, a narrow stripe under, and a broad stripe behind the eye including the ear coverts, black or blackish brown. A narrow white line runs along the base of the

forehead over the lores, eyes, and part of the ear-coverts. Again this line the rest of the forehead, crown, and occiput is a with cate French grey, almost white on the forehead and growing slightly browner on the base of the occiput. The upper and middle back a grey earth brown; the rump and upper tail coverts tinged with rufescent; the scapulars and lesser coverts the same color as the back, the longer scapulars slightly more rufescent towards the tips, harmonizing with the color of the rump; the rest of the wings pale hair brown; the primaries excessively narrowly, the secondaries and their greater coverts more broadly margined on their outer webs with yellowish, or brownish white; the edge of the wings from the carpal joint conspicuously white, with a faint yellowish tinge; tail, pale, slightly rufescent, brown; lateral tail feathers palest. All the feathers very narrowly and inconspicuously tipped paler, the tipping most apparent when looked at from below. All the tail feathers but the central ones very narrowly margined paler on the inner web, and the exterior laterals similarly, but somewhat more broadly margined on both webs; the chin and throat pure white, the sides of the neck beyond the black streak grey like the crown, but slightly darker; the wing lining almost pure white; the breast, abdomen, vent, and lower tail coverts white, with a faint buffy tinge.

In what are either younger, or more freshly moulted birds, only the forehead and anterior half of the crown are grey, the rest of the upper parts are a somewhat darker brown, with a rufous tinge; nothing near so rufous as in the palest specimens of *cristatus*, but still very much more rufous than in the old adults just described. The tail is darker, and the margins to the secondaries, tertiaries and their greater coverts are pale rufescent, and so are the breast, abdomen, vent, and lower tail coverts.

In the quite young bird the lores and eye and ear streak are hair brown and smaller than in the adult; the white line round the forehead and over the eyes is inconspicuous and tinged brownish. The whole of the upper surface is a dull earth brown, tinged rufescent towards the rump, and on the upper tail coverts, which are more or less barred with darker brown. The tail is much as in the old adult, but distinctly though obsoletely barred with darker brown. The pale margins to the coverts and quills are narrower and less conspicuous than in the adult. The entire lower surface is yellowish white everywhere except on the chin, and lower tail coverts, and the middle of the throat and abdomen, closely barred with narrow, more or less crescentic dark brown lines.

The young *cristatus*, as is well known in a similar stage, is as brightly rufous as the adult, though the rufous is perhaps generally darker, and the head is the most rufous of the whole upper parts, whereas in the young of this species the only trace of rufous is on the rump and upper tail coverts.

There are two points of difference between these two species, which seem to me (though even my large series do not permit me to assert it positively) to hold good generally, *viz.*, that the earlier primaries in *cristatus* are generally narrower than in the present species, and that when the tails are quite perfect and fully developed the external laterals in *lucionensis* are more than an inch, while in *cristatus* they are only about half an inch shorter than the central ones.

Davison remarks that:—"This shrike is tolerably common in the vicinity of Port Blair, keeping to gardens, and the cleared parts on the settlement. I did not notice it on any of the other islands of the Andamans, or on any of the Nicobars, except Camorta, where I obtained one specimen in the cotton fields. On Table Island, however, I saw one in the Lighthouse-keeper's gardens. In habits it does not differ from *L. erythronotus*; it is a very silent bird, and I do not think I have ever heard its note. I did not succeed in finding any nest, though I obtained several specimens of young birds."

I saw specimens at Galatea Bay, and others saw one or more at Montschall.

This species appears to be a permanent resident in the Andamans; at any rate we have specimens killed in every month from December to October.

266.—*Hylocharis philomela*, Boie. (4.)

This species appears to be rare in the Andamans. Mr. Davison only obtained one in the neighbourhood of Port Blair, and we shot two on the Little Cocos. It is not at all a shrike-like bird in its appearance, and cannot be classed with *Tephrodornis*, in which genus, under the specific name of *grisola*, Blyth placed it. The following are the dimensions recorded in the flesh:—

Length, 6.12 to 6.5; expanse, 10.6 to 11; wing, 3.4 to 3.5; tail, 2.4 to 2.75; tarsus, 0.75; bill, from gape, 0.8 to 0.82; bill, at front, 0.47 to 0.5.

The legs and feet are plumbeous, the bill black; the irides brown.

The whole of the lores, cheeks, ear coverts, forehead, top and back of the head a dull grey brown, darker on the head and back of the neck; back, scapulars, and wing coverts similar,

but with an olivaceous tinge; upper tail coverts dull. Again quills and tail feathers pale hair brown, the outer webs ~~with~~ the quills suffused with a kind of olive grey, or in some specimens olive brown, and a trace of the same on the tail feathers, especially towards their bases; wing lining and lower parts white; the sides and breast suffused with pale earthy brown, and the chin and throat similarly but less strongly tinged; the shafts of the tail feathers on their lower surface, white; the edge of the wing from the carpal joint, white. Some specimen are paler and greyer, others darker and more olivaceous.

We obtained a single specimen, differing markedly from those already described, and which may prove a distinct species, or may be the young of the present one. Its dimensions are very similar to those of the three already given, but the wing is only 3.25.

The legs and feet were pale brown, so also was the bill.

The whole upper surface is a somewhat olivaceous brown without the least trace of grey about it even on the head where all the others are grey, and on the nape it has a huge square white patch, of which there is not the faintest trace in any of the other specimens. The breast and sides are tinged with reddish brown. This must, I fancy, be the young bird, but if it prove distinct may stand as *occipitalis*.

Davison tells us that :—"This bird is found on the different islands of the Andaman group; but appears to be everywhere scarce. I obtained one specimen on Strait Island, which had a white nuchal spot, and I saw several others on the same island; another that I shot near Port Mouat, South Andaman, had no nuchal spot, nor had two others that were shot on the Little Cocos. It apparently prefers the forest, but the specimen I obtained at Port Mouat, I shot in some very low mangrove bushes on the edge of a creek."

269 *bis.*—Lalage terat, Bodd. (8.)

We only obtained this species in the Nicobars, on Camorta Island, but a specimen was, as already mentioned, (STRAY FEATHERS, 1873, p. 459) obtained at Acheen.

The sexes do not appear to vary materially in size, though one of our males is larger than any of the females. The following are the dimensions of eight individuals of both sexes recorded in the flesh :—

Length, 6.75 to 7.25; expanse, 10.75 to 11.25; wing, 3.4 to 3.6; tail, from vent, 2.75 to 3.12; tarsus, 0.65 to 0.82; bill, from gape, 0.8 to 0.82; weight, 0.62 to 0.9 ozs.

The legs and feet black or plumbeous ; soles yellowish horny ; bill black ; irides brown.

The adult male has a broad streak from the nostrils over the eye and ear-coverts, the wing lining and edge of the wing from carpal joint, the axillaries and the entire lower parts including sides of the neck, broad tips to the two external laterals, and a narrow tip to the next pair of tail feathers, the median wing coverts, broad margins to the outer webs of the greater coverts, the secondary quills and the basal portion of the inner webs of all the quills, pure white, only the breast and sides tinged with grey but not barred ; middle and lower back, rump and upper tail coverts grey, some of the rump and upper tail coverts with faint traces of white bars ; a streak from the gape, through the eyes black ; forehead, top, and back of the head, interscapular region, scapulars, lesser wing coverts black, with a green metallic gloss ; rest of the wings and tail not already described black, or blackish brown.

The white of the sides of the neck projects backwards somewhat, so as almost, but not quite, to meet in some specimens on the nape.

In a somewhat younger stage the breast is characterized by faint narrow transverse bars.

In the adult female the white superciliary stripe is less conspicuous, the greater wing coverts are only tipped and not broadly margined with white. The whole of the forehead, top and back of the head and interscapular region are iron grey. The whole breast is regularly and narrowly barred with darker grey, and there are traces of this same barring on the eye streak and sides of the neck.

Quite young birds are apparently like the females ; but have the whole of the forehead, top and back of the head and interscapular region smoke brown, and that portion of the wings and tails which is black in the adults, dull brown. Young males after the first moult appear to resemble the adult females, and later glossy black feathers begin to peep out amongst the iron grey of the head and interscapular region. The change taking place first in the latter.

Davison remarks :—" I found this bird not uncommon about the settlement of Camorta, frequenting, in small parties of five or six, or in pairs, the low scrubby undergrowth and gardens, and feeding close to the ground ; on being disturbed they fly up at once into some tree close at hand ; they are not at all shy and two or three may be shot off the same tree. A specimen procured at Acheen appears identical with the Nicobar examples ; it does not, I think, extend to the Andamans or Cocos."

270.—*Graucalus Macei*, Less. (28.)

The Andaman birds are exactly intermediate in size between *Graucalus Macei* and the supposed *G. Layardi* of Blyth. In the distinctness of this latter I by no means believe. Setting aside difference of size, the distinctive characters are said to consist (Jerd, *Ibis*, 1872, p. 117) in (a) the lower wing coverts being strongly barred. This depends, I think, upon age, at any rate I have an adult Ceylon male before me with as little barring on the under-wing coverts, as in any of the Northern Indian adults. (b). In the abdominal bars being fewer and broader, and not present in the fully adult male. In the young of the Southern Indian birds the barrings are perhaps a little better marked, but they are not broader or fewer, and equally in *Macei* in the fully adult male there are no barrings on the abdomen. (c). In the outer tail feathers being only slightly tipped with white. This character is absolutely fallacious, some Southern Indian birds have the outer tail feathers just as broadly tipped, in proportion to their size, as any Northern Indian bird, and more so than *many*.

There remains the distinction of size. This is very manifest if birds from the opposite end of the scale are compared. For instance, I have taken at random a large series from Tipperah, Dacca, Darjeeling, Kumaon, Gurhwal, and Dehra. In these the wings vary from 7 to 7.15, and the bills at front from 0.95 to 1.03. Then I take another similar series from Ceylon, Anjango, Calicut, and Ootacamund, including, as before, both sexes taken at random, and I find the wings vary from 5.8 to 6.25, and the bills at front from 0.8 to 0.91; but if I take Calcutta birds I find the wings vary from 6.4 to 6.7; and the bills at front from 0.93 to 0.97. When we come to the Andaman birds, of which I have carefully measured a dozen including both sexes, I find the wings vary from 6.35 to 6.87; and the bills at front from 0.96 to 1.05. So that, while as regards wings and size generally, the birds are intermediate between *Macei* and *Layardi*, the bills average slightly longer than in either of these races.

Dr. Jerdon does not point out the difference that exists between the adults of the two sexes in *all* the races of this species. In the young of both sexes, the whole of the lower parts except the vent and lower tail coverts are more or less regularly transversely barred; as the bird grows older the bars disappear in both sexes from the chin, throat and breast, the whole of which parts become pale grey; more or less barring remains for a time

on the abdomen in both sexes, and indeed always remains in the female even in the most perfect plumage. In the male as time goes on the chin, throat and breast, become a darker grey, and the barrings disappear entirely from the abdomen, the upper portions of which, and sometimes the whole of which, become tinged with grey. Moreover, the black lore streak becomes much more strongly marked in the male than it ever is in the female, and the points of the forehead, which always remain grey in the female, (at any rate, I have never yet succeeded in finding a female in which this was not the case) become quite black, presenting the appearance of a narrow black frontal band.

Davison remarks that this species is "tolerably abundant in the vicinity of cultivated lands, in which several may often be seen seated about on the different stumps, occasionally descending to the ground to pick up an insect, sometimes eating it on the ground, at others returning to its perch as soon as it has seized it. As far as my observations extend, it is never found far in the forests, but invariably keeps to their skirts; I have often also observed them in gardens some distance away from any forest. When flying over any considerable space across a large clearing, or from one piece of forest to another, they always fly high, uttering all the while their peculiar cry."

This species is doubtless a permanent resident. We procured it from December to April, and we have subsequently received numerous specimens killed from May to September, the great majority of the latter being quite young birds. One nestling bird deserves special mention, as the plumage is very different to that of the adult. The lores, cheeks, ear-coverts, and a line at the base of the nostrils pale grey, each feather narrowly tipped with fulvous; the forehead top and back of the head and back and sides of the neck, the feathers greyish white, tipped and margined with pale fulvous, and with a dusky subterminal spot; the back and scapulars French grey, but many of the feathers tipped with fulvous, and with a subterminal dusky spot. Rump and upper tail coverts like the head, but the spots fewer, and the fulvous tippings a paler yellow; central tail feathers pure pale French grey, lateral tail feathers black; all broadly tipped with white, and nearly the whole of the outer web of the exterior feather white; primaries black, the first five margined on the entire outer webs and on the tips, and the remaining five on the inner webs also, with white, a little tinged with fulvous towards the tips; secondaries, tertiaries, greater and median coverts, greyish brown, very broadly margined on the outer webs, with creamy white, almost buffy on the coverts, and the whole of

the outer webs more or less suffused with this color; chin, throat and breast greyish white, the feathers tipped and margined with pale slightly fulvous yellow, and with an indistinct dusky subterminal band; abdomen, vent, lower tail coverts, wing lining and axillaries, perfectly pure white without bar or spot.

This species was only observed on the islands of the Andaman group.

270 *quat.*—*Graucalus Dobsoni*, Ball. (15.)

I think it was my friend Mr. Blanford who was recently reproving me for describing birds as new without examining all the ornithological works and museums of the world to make sure that they had not possibly been already described by some one else. The fact is I have hitherto been much too chary of describing birds as new. I had specimens of this very bird and recognized them as distinct from any *Graucalus* of which I could find a description long before my friend Mr. Ball saw or described it; but I could find no description of *G. concretus* and *G. striatus*, and so abstained from publishing and describing it.

Lord Walden has recently told us that this present bird is quite distinct from these two species, and we may safely accept his verdict.

The following are the dimensions of this handsome species:—

Length, 11·5 to 12·25; expanse, 17·5 to 19; wing, 6·1 to 6·42; tail, from vent, 5 to 6; bill, at front, 0·94 to 1·06. The bill, legs, and feet are black; the irides crimson lake, tinged brownish in the young, and very possibly altogether brown in the quite young birds.

We only procured eleven specimens of this species, four being subsequently sent us; so I am not quite certain of all the changes of plumage.

The perfect adult male, as far as I can judge, (though there may be an older stage), has the point of the forehead, the lores, a stripe under the eyes, and the ear-coverts black. The whole of the front top and back of the head, back and sides of the neck, back, scapulars, and lesser wing coverts, rump, and upper tail coverts, a uniform dark iron grey, only slightly paler on the rump; quills, greater and median coverts dark hair brown, paler on the inner webs, every feather with a *very* narrow pale edging, grey on the coverts, pale brown on the tips of the primaries, and only at all conspicuous, on some of the primaries above the emarginations, and some of the later secondaries towards their tips, and even on these excessively narrow. I may mention that

the fourth quill is the longest; the third and fifth equal and about 0.15 shorter; the second about 0.8, and the first about 2.5 shorter. The tail is black, browner towards the base. The exterior tail feather, which is about 0.8 shorter than the central ones, pale brown on the outer webs and at the tip, which again is narrowly tipped white. The next pair on either side about 0.4 shorter than the central tail feathers, and tipped with brownish white, and the next pair again with a trace of the same; the chin, throat, and upper breast pale iron grey; the rest of the breast, the entire wing lining, axillaries, and entire lower parts, white, narrowly, closely and strongly barred, with blackish brown; the white of the lower breast and abdomen being in some specimens slightly tinged with grey.

The adult female is very similar, but the point of the forehead is iron grey, not black, and the lores, eye, and ear stripe are perhaps not quite so intense a black as in the male. The chin, throat, and upper breast are barred like the rest of the lower parts, but still more closely. The pale margins to the primaries and secondaries are perhaps a trifle more conspicuous.

The young birds appear to present a very different appearance. The youngest I procured has the whole chin, throat, and breast strongly tinged with ferruginous, the tertiaries, secondaries, and later primaries are comparatively broadly margined, and tipped with pale rufous, or rufescent white. The tertiaries and later secondaries have also a rufous spot near the point, and exhibit traces of having been barred. Some of the upper tail coverts, some of the scapulars, and a few of the back feathers still remain rufous barred with blackish brown, peeping out amongst the new iron grey feathers. There is a dull rufous supercilium running from the nostrils over the eyes; the lores are dusky, with tiny white spots, and the cheeks also are dusky, the feathers white shafted, and from what I can judge the whole upper surface of the nestling bird must be banded rufous and dark brown. In other specimens further advanced, the ferruginous patch is smaller and confined to the breast, no banded feathers remain on the upper surface, which is like that of the adult, and the conspicuous rufous margins of the quills have become narrower and paler.

Since this was written I have obtained a nestling bird which is much as I expected it to be. The top and back of the head, the back and scapulars, are mostly pale rufescent, banded with dark brown, here and there a few dark iron grey unbanded feathers peeping through. The whole of the secondary greater coverts are broadly tipped and margined with pale rufous; the

chin, throat, and breast is white, closely barred with dark brown, and strongly tinged in places with pale ferruginous; abdomen and vent unbarred, silky, yellowish white; lower tail coverts, wing lining and axillaries pure white, narrowly but conspicuously barred with blackish brown. The rest of the feathers are, as in the young bird, already described.

Mr. Davison says that:—"This species unlike *Macei* is exclusively a forest bird, never to my knowledge venturing out into the open fields; it usually is seen in pairs keeping moderately high up in the trees; its flight is weaker than that of *G. Macei*, and undulating; it is seldom extended, being merely from branch to branch or from one tree to another. It is not uncommon at Mount Harriet and other well-wooded portions of the Settlement."

So far as we yet know it is entirely confined to the Andaman group.

271 *ter.*—*Pericrocotus andamanensis*, *Tytler*.
(34.)

The Andaman Minivet is very close in many respects to *elegans*, McClell, from Thyet Myo and Assam. It is of the true *speciosus* type, from which it differs in size and some other minor particulars. First as to size, really fine specimens of *speciosus* from Raipoor (where it occurs as a winter visitant), from Darjeeling, Kumaon, Mussoorie, &c., have the wings varying only from 4.1 to 4.2. I may remark that in good and really fine adults of these *Pericrocoti* the dimensions are very uniform. Again, in *really fine adults* of the present species, the wings vary only from 3.6 to 3.75; the bills are quite proportionally smaller in the present species than in the males; the red does not go so far up the back in *andamanensis* as in *speciosus*. Again, in the females the yellow of the lower parts is more orange than in *speciosus*, and the yellow of the rump is not only more orange, but is considerably less extended up the back than in *speciosus*. Whether these slight differences coupled with the differences of habitat suffice to constitute a good species will of course always remain a matter of opinion.

Davison remarks:—"This minivet is not uncommon about Mount Harriet, Aberdeen, and other localities in the vicinity of Port Blair; it is found in pairs, or small parties, hunting about the foliage of trees for insects, occasionally seizing one on the wing. It breeds at the Andamans, but I failed to find its nest. It does not, that I am aware of, extend to the Nicobars."

A male measured :—Length, 8·25 ; expanse, 11·3 ; wing, 3·55 ; tail, from vent, 3·25 ; but in other finer males the wings were longer, extending in some few cases to 3·75.

A female measured :—Length, 7·75 ; expanse, 11 ; wing, 3·5 ; tail, from vent, 3·75.

Elegans from Assam and Upper Burmah is very much the same size as *andamanensis*, but is characterized (though possibly not in every single specimen) by having only the inner web of the central tail feathers black, and it differs from *andamanensis* in the red of the back of the male and yellow on that of the female, going quite as far up as in *speciosus*, and in the yellow of the lower surface of the female being paler, purer, and less orange.

In this species and in *speciosus* the red wing patch extends on to the outer web of the third primary, in *andamanensis* it only extends to the fourth, while in *flammeus* it only reaches to the fifth.

This is a permanent resident ; we have specimens obtained in every month from December to September.

276.—*Pericrocotus peregrinus*, Lin. (33.)

The Andaman race of this species is nearer to the Southern Indian than to the Northern form. It is not quite so dark on the upper surface as some of the former, but it is not near so pale as the latter. I have already fully discussed the variations of this species ; STRAY FEATHERS, 1873, p. 177 ; and I have only to add to what I then said that though I have since received numerous specimens from Southern India I have none quite so dark as the one figured in Gould's "Birds of Asia."

Davison tells us that :—"This species, like the last, is not uncommon about Port Blair. I have seen it in gardens, mangrove swamps, forest, and in isolated bushes and trees ; they always keep in small parties of ten or a dozen, keeping close to each other ; at night they roost high up in some large forest tree. I have watched a party of about a dozen of these birds, for several evenings, winding their way to a large tree at Aberdeen, just above Phoenix Bay."

This also is apparently a permanent resident as we have specimens killed from December to September. It does not, so far as we yet know, extend to the Nicobars.

279.—*Dicrurus balicassius*, Lin. (O.)

Mr. Blyth did not discriminate the Himalayan crow-billed drongo, *D. annectans*, Hodg., from this the Malayan one, but

as he speaks of "the common Malayan drongo," it was probably *balicassius*, of which he received a specimen caught at sea by Captain Lewis when nearing the Nicobars. As the specimen does not now appear to be forthcoming one cannot be quite certain of this, but anyhow one crow-billed drongo must be included in the list of occasional stragglers to the Nicobars.

280 bis.—*Dicrurus leucophæus*,* Vieill. (1.)

We never met with this species, but long subsequent to our return Captain Wimberley obtained one specimen which he very kindly sent to me.

This specimen answers perfectly to the descriptions given below, especially to Blyth's, but is slightly smaller than he describes, although agreeing well, both as regards size and colour, with Burmese and Malayan birds from Thyet Myo to Malacca.

The bird was killed on the 5th of November. It was a female and measured, length, to end of middle tail feather, 9·0; exterior tail feathers an inch longer; wing, 5·25; bill, at front, 0·7; from gape, 1·0; width at gape, 0·58; tarsus, 0·7; tail, from vent, 4·75.

I have nothing to add to Blyth's description, except that the lores and entire orbital region are very pale and contrast markedly with the almost black forehead and the dark blue grey crown.

This species occurs, apparently, only as a straggler in the Andamans.

* *Dicrurus leucophæus*, Vieillot. Dict. Class. d' Hist. Nat. V., 621. "Tout le plumage d' un gris plombé avec l' extrémité des remiges d' un brun noirâtre; barbes extérieures des rectrices noires, queue longue et fourchue; bec et pieds plombés. Taille neuf pouces."

This is certainly Blyth's *cineraceus*, J. A. S., XV., 1846. 299.

"Its length to tip of middle tail feathers is about ten inches, the outermost exceeding them by about an inch, and the tail fork much divaricated; wing, five inches and three quarters; bill as in *D. longicaudatus* and *D. cærulescens*, but less carinate above, especially towards its base: general plumage deep ash grey, passing to blackish just over the beak, also on the exterior web of the outermost tail feathers, and on the wing primaries; ear-coverts and around the eye, with the vent and lower tail coverts, albescent grey: bill and feet black."

This species is also *ceylonensis*, Steph.; but whether it really occurs in Ceylon is doubtful.

This is also probably *E. cineraceus*, Horsf. Lin., Trans. XIII., pt. 1, p. 145:—"E. cineraceus, saturatus concolor, remigibus supra ad apicem rectricibusque lateralibus margine exteriore, nigris. Longitudo 11 poll."

Le Vaillant's "Le Drongri"; Ois. D'af., pl. 170; which he pretends came from Ceylon, very fairly represents, so far as color goes, this Andaman bird and some of the Thyet Myo specimens, but the tail is figured as more deeply forked than any of our specimens or than any I have from the Straits, &c. I have never seen a Ceylon bird nearly so pale as his figure.

283 *bis.*—*Dissemuroides dicruriformis*, *Hume*.
(19.)

For description and dimensions of this species, *vide* STRAY FEATHERS, 1873, p. 408. I only saw and shot it on the Great Coco and Table Island, which latter is a mere islet of the former. I noticed nothing peculiar in its "manners and customs," and but for its somewhat larger size and narrower tail might have been mistaken, until in the hand, for our common Indian King-crow. Mr. Davison, who visited the Cocos about a month later than I did, gives me the following note :—

"The species was tolerably abundant on the Great Coco frequenting principally the jungle immediately within the belt of cocoanut palms that surround the coast. In habits it does not appear to differ from the other *Buchangas*, and its note is similar. Neither this nor *andamanensis* were observed on the Nicobar Islands."

283 *ter.*—*Dissemuroides andamanensis*, *Tytler*. (56), *vide* STRAY FEATHERS, 1873, pp. 66 and 310.

To the dimensions already given, STRAY FEATHERS, 1873, p. 409, I add the following:—Expanse, 14.75 to 16.5; tail, 6.12 to 6.75. The bill, legs, and feet are black; the irides are hair brown, sometimes very deep, and almost blackish.

I only met with this species at Port Blair and in Macpherson's Straits. Mr. Davison, who was much longer in the islands than I was, remarks :—"This species is very common at the Andamans in the vicinity of Port Blair, but does not extend to the Nicobars, and I did not see it at any other of the islands of the Andaman group that I visited. It has much the same habits as the other drongo shrikes, catching insects on the wing. Its note is sharp, and with somewhat of a metallic sound, and it has a habit like the others of slightly jerking its tail up after each note. Lieutenant Wardlaw Ramsay informed me that he had on several occasions seen this bird ascending the trunks of trees like a woodpecker, and pressing its tail against the bark to aid its ascent. I myself was not fortunate enough to witness this anomalous habit."

In both these species the females are rather smaller than the males. This also is a permanent resident.

284.—*Dissemurus paradiseus*, *Lin.* (0.)

Von Pelzeln gives this bird from the Nicobars, but as he gives *malabaricus*, *rangoonensis*, &c., as synonymes, he probably

considers the different races into which *Dissemurus* locally subdivides itself unworthy of specific separation. In this view I am by no means certain that he is very far wrong, otherwise if he does sub-divide the races then most certainly neither the Andaman nor the Nicobar races are identical, either with the race commonly known as *paradiseus*, which I believe should stand as *malabaroides*, Hodgson, nor on the other hand with what is now generally considered the true *paradiseus*, viz., *rangoonensis*, Gould. Accepting for the present that the various races do merit specific separation, I only include one of these species, viz., *affinis*, Tytler (*vide infra*) in this list.

285 *ter.*—*Dissemurus affinis*, Tytler. (30.)

I retain for the present Colonel Tytler's distinctive appellation for the species which abounds in many localities in both the Andamans and Nicobars. This group, however, is one which requires most careful reconsideration, with the help of a really vast series from all parts of Southern and South-Eastern Asia and Malayana.

As far as I can make out *malabaroides*, Hodg. (*paradiseus apud*, Jerdon) is a very distinct and well-marked species, and is characterized by its larger bill and much larger frontal crest, some of the feathers of which, in good specimens, are fully two and a half inches long. The wing is about 6.75. I have only seen this species as yet from the Himalayas, Assam, Lower Bengal, Chota Nagpore and Sumbulpore; birds from Thyet Myo are precisely similar, but have a somewhat less developed crest.

Then there is *malabaricus* of Latham, with a smaller beak, wing about 6.0, and longest crest feathers barely exceeding an inch in length, and with the neck hackles conspicuously less developed than in the preceding species, in which they almost approach in dimensions those of *Chibia hottentotta*. This species I have only as yet obtained from the Malabar Coast, the Wynnaad, and the Neilgherries.

Then there is *platurus*, Vieill. (*malayensis*, Blyth,) which I have from Malacca, which appears to have only a rudimentary crest, to be smaller, wing 5.5 to 5.75, and to have a clumsier and less compressed bill than *malabaricus*.

Lastly, we have what appears to be considered now-a-days the true *paradiseus*, Lin. (*rangoonensis*, Gould) which, according to Jardine and Selby's figure, has no crest at all, but which really has a crest, as I can show from fifty Rangoon specimens, just as large and long as *malabaricus*.

This group is one which varies so very greatly not only as regards size of crest, but also as to size of bill according to age, and the former according to season also, that an enormous series from each locality is necessary before any definite conclusion in regard to the specific value of the different races can be arrived at.

Now *affinis* of the Andamans closely resembles *malabaricus*, except, first, in being somewhat larger (wing averaging 6·25) and having a somewhat larger bill; and second, in having a much smaller crest; in regard to the latter it is intermediate between *platurus* and *malabaricus*. On the other hand, the Nicobar bird, while differing in no other particular that I can discover, though *perhaps* the tails average somewhat shorter, have a slightly longer crest than the Andaman birds, and are nearly intermediate in this respect between *affinis* and *malabaricus*. This difference between the Andaman and Nicobar birds in the length of crest appears from the numerous specimens we obtained to be absolutely constant; but it is not, in my opinion, sufficient to warrant the specific separation of the two.

I met with this species, but always singly or in pairs, from Galatea Bay, the southernmost point of the Nicobars up to the Great Coco, the most northerly point of the Andaman group. Of this species Mr. Davison says:—

“Tolerably plentiful about the Andamans, but somewhat scarcer on the Nicobars. I one evening watched several of these birds in company with several *Eurystomus orientalis*, *Dissemuroides andamanensis*, *Chatura indica*, *Hirundo rustica*, and a large number of *Collocalia linchi*, hawking a very large flight of ants (that appeared after a heavy shower of rain), and although the swifts and swallows were “*swifter*” in their flight, I think the most graceful by far were the *Dissemuri*. I have seen and shot these birds more frequently in gardens bordering the forest, than I have even seen their congener in similar situations in Southern India.”

Beavan's original description of the Andaman birds has already been given, (STRAY FEATHERS, 1873, p. 67); but this must have been taken from an immature bird, as all fully adult individuals have a small frontal crest, the longest feathers in which are from 0·5 to 0·8 in length; old males having them of course longest, while the young birds, in which the lengthened external tail feathers have not yet been developed, and some even in which they are developed, have scarcely any perceptible elongation of the frontal feathers. In the finest Nicobar birds the longest crest feathers are nearly an inch in length.

The following are the dimensions of fine adults. The birds from the Andamans and Nicobars not differing constantly in regard to these, some of the largest and some of the smallest adults being from both localities :—

Length, 20·25 to 24·4, of which the exterior tail feathers project in the former, 7·25, and in the latter, 10·9, beyond the penultimate pair; expanse, 19 to 19·75; wing, 5·9 to 6·5; tail, from vent to end of penultimate tail feathers, 5·75 to 6·5; to end of exterior tail feathers, 13·8 to 16·9; tarsus, 1 to 1·05; bill, from gape, 1·3 to 1·55. The legs, feet, and bill are black; the irides vary from reddish brown to deep hair brown.

This species is probably a permanent resident of *both* groups; it certainly is so of the Andamans, whence we have specimens killed in every month from December to September, both months included.

287 *bis.*—*Artamus leucorhynchus*, *Lin.* (31.)

I follow Lord Walden in the nomenclature of this species. I have not been able to compare specimens of the Andaman bird with others from different parts of the Archipelago from Acheen to New Guinea. With Australian specimens (? *A. leucopygialis*) I have compared them, and it appears to me that in the Andaman birds the head and back, but especially the former, are far more slatey, while in the Australian they are more sooty; and again, that the bill in the former is slightly more compressed and narrower, especially towards the base, than in the latter. The wings too in the Australian birds all exceeded 5·5, being fully a quarter of an inch longer than the longest wing in my large series of Andaman specimens. However I had only three Australian specimens before me, and in the case of such nearly allied forms a large series of both is absolutely essential to any safe conclusion.

We did not meet with this species anywhere in the Nicobar group, and the bird certainly breeds in the Andamans, so that it is not *impossible* that the Andaman bird may prove to differ from all the other Archipelagian races, though possibly not sufficiently so to warrant specific separation.

The following are the dimensions of the Andaman birds recorded in the flesh :—

Length, 6·6 to 7·5; expanse, 14·25 to 14·82; wing, 5 to 5·25; tail, from vent, 2·4 to 2·6; tarsus, 0·6 to 0·7; bill, at front, 0·69 to 0·75.

The legs and feet are, in some dusky plumbeous, in some dull black. The bill is pale blue; I might say almost pale smalt blue;

tipped blackish. The irides are as a rule deep brown; but in one specimen that we examined they were deep slaty blue.

After examining carefully twenty specimens, I can discover no difference whatsoever, either in size or color between the two sexes.

The points of the forehead, projecting out to the nostrils, the lores, a narrow line at the base of the lower mandible, and the extreme point of the chin, black. The rest of the forehead, crown, occiput and nape, sides of the neck, the rest of the chin, cheeks, ear-coverts, throat and upper margin of breast, a moderately dark slaty grey. The back, scapulars, and rump similar, but suffused with a vinaceous brown tinge. The entire wings and tail dull black, the quills paler on their inner web; all the feathers suffused with a slaty bloom, strongest on the coverts and secondaries; all the tail feathers very narrowly tipped with pure white; an excessively narrow bluish white edging to the tips of some of the secondaries, and a still more narrow brownish white edging to the tips of the other quills. The upper tail coverts, the major portion of the breast, the axillaries, wing lining, abdomen, flanks, vent, and lower tail coverts pure white. In the fresh bird there are a few slaty grey feathers at the sides of the white portion of the breast, and elsewhere this is often invaded by a few grey feathers. In other words the grey and the white are not divided by a straight well-defined line. The edge of the wing from the carpal joint is black; the lower surface of the quills is albescent grey, becoming almost grey at the bases.

This description is taken from particularly fine, freshly moulted, adults; in birds with more or less worn plumage, the pale tippings to the tail and quills entirely disappear, and the slaty bloom almost entirely disappears from the primaries and tail feathers. In other birds, again, the whole chin and throat is duskier, and here and there a specimen may be met with in which the grey of the throat does not appear to descend at all on to the breast, and is pretty distinctly defined from the white.

Davison remarks:—"This wood swallow is not uncommon about the more open parts of Port Blair. It may be seen perched on a stump in some open field from which it sallies after insects, sometimes making only a short flight, at others a very extended one, before returning either to the same or another perch. Its flight is performed by alternations of numerous quick strokes and sailings with extended motionless wings; it is very graceful, but slow and steady, which makes it an exceedingly easy bird to shoot while on the wing. It frequently descends to the ground

to pick up an insect, and I have at times seen several seated together on the roads; it is not at all ashy bird, and often flies so close, as almost to touch you as it passes; it is not found in the Nicobars that I am aware of, but occurs on the Little Coco, and probably on the Great Coco and adjacent isles.

"On the 2nd of May I saw a bird of this species fly into a hollow at the top of a rotten mangrove stump about 20 feet high. The next day I went but did not like to climb the stump as it appeared unsafe, so I determined to cut it down, and after giving about six strokes that made the stump shake from end to end, the bird flew out; I made sure that, as the bird sat so close, the nest must contain eggs, so I ceased cutting, and managed to find a very light native lad who volunteered to climb; on his reaching the top, he found, to my great disappointment, that the nest, although apparently finished, was empty. The nest was built entirely of grass, somewhat coarse on the exterior, finer on the inside, it was a shallow saucer-shaped structure, and was placed in a hollow at the top of the stump."

The young in this species has the chin and throat white, or nearly so, the quills and rectrices conspicuously white tipped; the coverts and all the feathers of the occiput and back, including the scapulars, obscurely tipped with dingy yellowish white; the feathers of the middle of the back especially with traces of a somewhat darker subterminal band; the bill is not so pure a blue as in the adult. Such is the plumage of a bird killed early in July, and it is probably about two months old.

We have specimens of this killed from December to quite the end of July, so that it is very probably a permanent resident.

289.—*Tchitrea affinis*, *Hay*. (3.)

Specimens from the Andamans and Nicobars are absolutely identical with others from Darjeeling, though the wings average about one-tenth of an inch shorter. As far as I have been able to ascertain *affinis* does not go further west in the Himalayas than Kumaon. Blyth somewhere remarks that he has seen no species from the Himalayas but *affinis*, but I have *paradisi* from Kumaon and every part of the lower hills westward from Kumaon, and I have never seen true *affinis* from anywhere westward of Kumaon.

Davison remarks:—"This bird is exceedingly rare at both the Andamans and Nicobars, more so probably in the former than the latter. At the Andamans I did not succeed in obtaining any specimen, or of even seeing it alive, but I saw the tail of an adult male in the possession of Captain Bridge;

who shot it on Mount Harriet, South Andaman, and from this I identified it as the present species; at the Nicobars one adult male in the white plumage, and two chesnut-plumaged females were obtained. I saw one other in the chesnut garb, with lengthened tail feathers on Teresa, Nicobars."

290.—*Myiagra azurea*, Bodd. (21.)

The *Myiagras* of the Andamans and Nicobars are very puzzling, the more so that they belong to two different types. The *Myiagras* of the Nicobars, which we obtained on almost every single island of that group, belong, so far as coloration goes (except that the colors are somewhat brighter), to the Indian form in which the abdomen, vent, and lower tail coverts are white or faintly bluish white, only a single specimen of our large series, approaching in the blue tinge of the lower parts to the least typical of the Andaman males; but they certainly average much smaller than Continental Indian specimens. In a large series from Ahmednuggur, Seonee, Raipoor, Calcutta, Commilla, Dacca and Kumaon, &c., I find that the wings vary from 2.65 to 3; but in only four out of twenty birds are they below 2.8. When we take similar number of Nicobar birds we find that the wings vary from 2.6 to 2.75; but in all but three they are below 2.7. The bill too is similarly smaller. I do not consider this difference in any way sufficient to separate the birds, but still it is constant, and therefore deserves to be noticed.

Davison remarks.—"This bird is tolerably abundant on all the islands of the Nicobars, but it does not occur in the Andamans, where it is replaced by the next species. In habits, &c., it does not differ from the Indian bird. It breeds at the Nicobars, but I did not succeed in obtaining either nest or eggs."

The following are the dimensions of this race:—

Length, 5.75 to 6.25; expanse, 8.12 to 8.5; wing, 2.5 to 2.75; tail, 2.82 to 3.1.

The legs and feet are dull plumbeous blue; the bill is small blue, tipped and edged black, and the irides are brown.

290 bis.—*Myiagra Tytleri*, Beavan. (42.)

In the Andaman bird the dimensions are those of the Indian. In twelve adult males the wing varies from 2.7 to 3; and only one specimen has the wing less than 2.82. The length is 6.75 to 7; expanse, 8.75 to 9.12; and the tail from 3 to 3.4.

The legs, feet, bill, and irides are as in the Nicobar and Indian bird; but besides, being as a whole, as brightly colored as the Nicobar and more brightly colored than Indian birds; the typical

adult male *Tytleri* has not a particle of white about the abdomen, vent, and lower tail coverts; the whole of which is the same color as, but much paler than, the breast. No similarly colored specimen has ever, I should say, been procured on the continent of India. I have seen hundreds, and I have never seen one in any way approaching this type of coloration.

But the difficulty is that this typical coloration is not invariable. I have seen no specimen from the Andamans which exhibited nearly as much white as do continental Indian birds; but many which were much more albescent about the vent than typical *Tytleri* should be, and we have one specimen from the Nicobars, where the Indian type of coloration prevails from Teressa, which, as regards coloration, is not to be separated from one of the least typical *Tytleri*. This distinction, such as it is, is perhaps even more apparent in the females than the males. The dingy lilac grey abdomen of the adult female *Tytleri* contrasting strongly with the pure white one of the female *azurea* from continental India. On the other hand, the females of the Nicobar bird seen in this respect somewhat intermediate between those of *Tytleri* and *azurea*. Whether, under these circumstances, *Tytleri* merits specific separation is, it seems to me, very questionable. I ought to have added that the females of *Tytleri*, when adult, and in the breeding season, have the heads apparently a brighter blue than the corresponding sex in *azurea*.

The young birds in both these species, I mean the nestlings, have the entire upper parts pale brown, with a few bluish feathers on the front of the head, and the lower parts dingy greyish white, browner on the throat and breast.

Davison says:—"This species is not nearly so numerous at the Andamans as the preceding species is at the Nicobars. It keeps to the sides of the forest paths, occasionally entering well-wooded gardens. On the 23rd I obtained a nest of this species, built exactly like that of *M. azurea*, and containing precisely similarly colored eggs. This species is apparently confined to the Andamans, Great and Little Cocos, and adjacent isles, where it is a permanent resident."

A nest of this species was found at Aberdeen, South Andaman, on the 23rd April 1873; it was fastened to the branch of a small tree that overhung the path. In shape it is an inverted cone; three inches in depth exteriorly, and two and a half inches in diameter; the egg cavity, which is nearly hemispherical, is two inches in diameter and 1.1 in depth. The nest is very compactly woven of soft vegetable fibre, with which also it is firmly bound against the slender stem to which it is attached.

Towards the exterior of the nest a good deal of green moss, a number of satiny-white cocoons, and a little bright ferruginous fern root has been incorporated in the nest, and the whole carefully coated, though not thickly so, with gossamer threads, and spider's webs, and the cavity of the nest is neatly lined with black hair-like moss roots.

The eggs were three in number, very similar to those of *M. azurea*; but perhaps more strongly marked; in shape they are regular, broad ovals; the shell is smooth and fine, and has a faint gloss; the ground color varies from pinky to creamy white, and towards the large end there is a broad, irregular zone of red, or brownish red specks or spots; in some eggs very minute and closely set, in another larger, and less numerous, surrounded, more or less with a pinkish halo; here and there a few tiny spots or clouds of lilac may be detected amongst the other markings of the zone; outside the zone tiny specks, few and far between, diversify the rest of the surface of the egg.

In length the eggs measured 0.67 and 0.68, and in breadth 0.52 and 0.53.

297.—*Alseonax latirostris*, *Raffles*. (6.)

We found this species on both the Great and Little Cocos at the extreme north of the Andaman group, and again on the Jolly Boys, at Macpherson's Straits on the south. Captain Wimberley obtained it in the immediate vicinity of Port Blair. Lord Walden, who has recently examined specimens from the Andamans, says that they are not to be distinguished from Malaccan, Malabar, Lake Baikal, Japanese and Chinese specimens. I can add that they are not to be distinguished from specimens from Ceylon, Mangalore, the immediate neighbourhood of Madras, Ahmednuggur, and various localities in the lower Himalayan ranges from Darjeeling to Murree.

I have figured this bird Lahore to Yarkand, Plate V, but the plate represents the upper surface, as too green and too little of an earth brown; moreover I should add that the broad rufous white edgings to the secondaries, greater and median coverts, are almost entirely wanting in some birds, being only represented by the narrowest possible pale edging. I have been unable to ascertain certainly as yet whether this is due to season or age.

The colors of the soft parts too vary somewhat. In some specimens the legs, feet, and upper mandible are brown; in some black, or nearly so; in all the gape, the inside of the mouth, and lower mandible are yellow, paler and purer in some,

more orange in others, and the tip of the lower mandible is always brownish.

One point remains to be settled in regard to this species; is it, or is it not *Alseonax terricolor* of Hodgson? I cannot decide this satisfactorily from Hodgson's drawings; but perhaps Mr. Sharpe will examine Mr. Hodgson's original specimen now in the British Museum, and let us know.

Davison tells us that:—"This little flycatcher is very rare about the Andamans; during my stay I only twice saw it on South Andaman and only shot one specimen on the Great Coco. The two specimens I saw at the Andamans were both in an open piece of ground between the mangrove swamp and the forest; they were very shy, and kept flying from tree to tree; the specimen I obtained on the Great Cocos I found sitting on a low branch just within the belt of cocoanuts. I do not know if it is a permanent resident. I did not observe it at the Nicobars."

345 *bis.*—*Brachyurus moluccensis*, *Müll.* (O.)

At Galatea Bay, at the extreme south of the Great Nicobar, I saw a *Pitta* with a great deal of blue about it, which I *believe* to have belonged to this species, which is so common in suitable localities throughout British Burmah. Several others of the party also saw *Pittas*, but owing to the thickness of the jungle, the heavy rain, and other contretemps, no one succeeded in obtaining a specimen. We cannot, therefore, be sure of the species, it may prove to be a new one altogether, but *one* species of ground thrush must certainly be included in our list.

351.—*Cyanocincla cyana*, *Lin.* (O.)

This may or may not be more correctly designated as *P. pandoo*, Sykes. I cannot obtain materials for deciding whether the Indian birds are specifically distinct from the European. The bird that occurs in the Andamans is the same as the Indian. Blyth notices the receipt of a specimen from the Andamans, and Von Pelzeln tells us that a young male of this species was killed on the 24th February at Car Nicobar, probably, as he remarks, merely a bird of passage, the island not apparently being one suitable to the habits of this species. We never obtained a specimen or indeed met with the bird, but one was killed on Ross Island whilst Davison was there, which was identical with Indian specimens, and with no trace of rufous about the vent or abdomen.

356. *bis*.—*Geocichla albobularis*, *Blyth*. (6.)

This very handsome ground thrush, which we observed throughout both groups of islands, from Galatea Bay on the south to the Cocos on the north, is hardly, I think, identical with *innotata*, Blyth, which was thus described:—"Resembles *G. citrina*, but has the ferruginous color of the head and under parts, and the ash color of its upper parts more intense; no white upon the wings, and the lower tail coverts only (not the vent) are white. From the Malayan Peninsula."

And on another occasion he added, "wing of supposed male 4·5."

Now in the first place the Andaman bird has not the ferruginous color of the head anything like so intense as in *citrina*. On the contrary, the whole cap in fine specimens is suffused with brown; in the second place, the vent *as well* as the lower tail coverts are white just as in *citrina*; in the third place, the wing of none of our specimens, males or females, the latter being rather the smaller, exceeds 4·2. Mr. Ball, it is true, gives 4·5 as the dimensions of an Andaman bird; I can only say that the wings of six Andaman specimens, all fine adults in full plumage, are as follows:—

Males, 4, 4·1 to 4·2; *females*, 3·9 3·95 to 4·15. Lastly, the Andaman and Nicobar birds are distinguished by two brown eye stripes, smaller and feebler than those of *cyanotis*, but similarly placed, and which could not have escaped Blyth in describing *innotata*. Lastly, I have a specimen of what I believe to be *innotata* from Burmah, which is a considerably larger bird, with a wing 4·62.

The following are the dimensions recorded in the flesh of the present species:—

Length, 8 to 8·5; expanse, 12 to 13; wing, as above; tail, from vent, 2·8 to 3·25; tarsus, 1·1 to 1·2; bill, at front, 0·74 to 0·8.

The legs, feet, and claws are very pale fleshy; the latter streaked on the sides with pale horny; the bill has the upper mandible black or horny brown paling to pinkish fleshy from nostrils to gape; lower mandible pale horny at tip darkening to deep horny brown, to angle of gonys, from thence pale bluish horny; gape pinkish fleshy; irides deep hair brown or nut brown. The lores and a little patch under the anterior angle of the eyes, chin, and the upper part of the throat pure white in some birds; in others some or all of these parts faintly suffused with orange ferruginous. The rest of the throat, the

breast, abdomen, and sides, the ear-coverts and sides of the neck, and a more or less distinct broad collar round the back of the neck, bright orange ferruginous; the whole cap, *viz.*, forehead, crown, and occiput, a brownish orange ferruginous; from the centre of the lower margin of the eye, and from its posterior angle, descend two, narrow, brown stripes, each about half an inch long, these are only clearly visible in the fresh bird, and in really good specimens, and are more strongly marked in the females than in the males; the flanks are a slatey blue grey; the vent and lower tail coverts pure white. In the male, the entire mantle, scapulars, and outer webs of all the quills, but the first two primaries, the rump and upper tail coverts, a blue slatey grey. The first two primaries and the inner webs of all the quills, rather pale hair brown. In the female the interscapular region, the upper back, the lesser coverts, the outer webs of the secondaries, and to a certain extent the outer webs of the rest of the wing feathers are dark greenish olive. The rest as in the male. The tail in both sexes is blackish brown; the external laterals only much paler and narrowly tipped albescent; the central tail feathers and the outer webs of the other laterals suffused with slatey grey, all the feathers obsoletely barred. In birds with worn or abraded feathers, the slatey tinge disappears a good deal from the tail, and the obsolete barring becomes rather more distinct. In all specimens the outer webs of the primaries are paler than those of the rest of the wing feathers. All but the first two or three quills have a large white patch on the inner webs at their bases. The wing lining about the carpal joint and along the ulna is white or yellowish white; the feathers sometimes tipped pale brown. The rest of the lower wing coverts are pale brown, sometimes tipped white.

The intensity in the color of the lower parts varies greatly, in different adults, but not with reference to sex, rather apparently according to the period that has elapsed since the last moult.

This bird is one of the most exasperating possible to the collector; it is constantly met with along the shore, just where the jungle begins, and the snowy coral beach ends. It is never seen until it moves, and it only moves to dart at once into the jungle, where, in a two yards flight, it becomes invisible. One never gets anything but the snappiest of snap shots at it; and, as according to my experience, it constantly allows you to get within ten yards of it before it moves, one has generally only a choice, between not firing or blowing the bird to pieces.

Davison, however, remarks that it "occurs both at the Andamans and Nicobars, but in neither place is very common. It keeps, as far as I have observed, exclusively to the forest, feeding on the ground, turning up the leaves with its bill, exactly after the fashion of a Black-bird. When disturbed, it generally hops along the ground for a short distance, and then rises silently flying some distance, and then settling either in a tree or on the ground; occasionally I have heard it utter when alarmed a sharp note, very like that uttered by *Oreocincla nilghiriensis* under similar circumstances."

369. *bis.*—*Turdus pallidus*, *Gm.* (O.)

Blyth states that he received a specimen of *rufulus*, Drapez, which is the same species, from the Andamans, and I therefore include it in this list, but I cannot hear of any one else having observed or obtained it.

372 *bis.*—*Oreocincla inframarginata*, *Blyth.* (O.)

For original description, *vide* STRAY FEATHERS, 1873, p. 70. The specimen sent by Captain Hodge, then commanding the *Sesostris* at Port Blair, in March 1860, to the Asiatic Society's Museum, still remains unique. Apparently this species can merely be a chance straggler to the islands.

447 *bis.*—*Hypsipetes nicobariensis*, *Moore.* (13.)

This is a very local race, and scarcely, as far as our observations went, occurs, except in the Central Islands of the Nicobar group, Teressa, Bompoka, Tillangchong, Camorta, Nancowry, Trinkut, and Katchall. We did not observe it on the Great Nicobar, Track or Treis, Meroe, Batty Malve or Car Nicobar, but Davison tells me he saw it on Pulu Milu. On Tillangchong, when I first made its acquaintance, it seemed more common than anywhere else.

The following are the dimensions of twelve specimens, males and females, measured in the flesh; the sexes do not differ perceptibly in size:—

Length, 8·5 to 9·25; expanse, 11·82 to 12·75; wing, 3·75 to 4·25; tail, from vent, 3·5 to 4·25; tarsus, 0·7 to 0·8; bill, from gape, 1·0 to 1·2; bill, at front, 0·75 to 0·8; wings, when closed, reach to within from 2·25 to 2·5 of end of tail.

The legs and feet are dark horny, greenish brown, or greenish plumbeous; the bill deep horny brown; lower mandible and edge of upper mandible dull yellow; irides brown.

The sexes are alike, but individuals vary a good deal in tint; the entire cap is dark brown; the lores paler brown; the cheeks and ear-coverts a greyish brown; the whole of the back, scapulars, rump, and upper tail coverts a dull uniform brownish olive green, much browner in some birds, much greener in others; the wings and tail hair brown. All the feathers suffused on their outer webs with a somewhat duller shade of the same color as the back; the first two primaries with only a trace of this; the third to the sixth primaries slightly emarginate on the outer webs and paler there; the chin, throat, and breast greyish white, in some faintly striated with pale brown, in some with pale yellow; the rest of the lower parts, including the wing lining, white, tinged with primrose yellow, much paler and duller in some, brighter in others; the lower surface of the shafts of the tail feathers white, except at the extreme tips. On the lower surface of the closed wings the visible portion of the inner webs of the quills, within a line drawn from the base of the first primary to the tip of the last secondary, albescent; flanks tinged a little with olivaceous. In some specimens there is an indistinct dull brownish band across the breast and traces of this, not quite meeting in the centre, are visible in all specimens.

Davison says:—"Occurs only at the Nicobars where it is comparatively common; it keeps to the forest generally, but is also found in gardens, in the secondary jungle, and not unfrequently in places where there are only a few scattered bushes; it usually is seen singly, in pairs, or in small parties of five or six; but I have on several occasions seen them in flocks of nearly a hundred. They have a chattering note very similar to the other *Hypsipetes*, and when they are in flocks they make nearly as much noise as a flock of mynas settling for the night. They breed at the Nicobars; I shot very young birds in February; but did not succeed in finding any nests."

457 *quat.*—*Brachypodius fuscoflavescens*,
Hume. (14.)

This species was fully described, STRAY FEATHERS, 1873, p. 297. We ourselves secured eight specimens, male and female, all perfectly adult, and all exactly similar except in so far that the females are always somewhat darker than the males; subsequently six more have been sent to us.

Lord Walden remarks that this species has for its adult dress the immature plumage of *B. melanocephalus*. I cannot concur in this view; the latter species is one with which I am very well

acquainted, it being excessively common about Tipperah, and I have never seen a specimen of it mature or immature that could be confounded with this species.

Davison, who was the first to secure specimens of it, says:—"As far as my observations extend it is confined to the Andamans, and even there is comparatively rare. It keeps to the forest generally along the edges of the paths, either in pairs or singly. It is very silent, I have never heard its note."

This species would appear to be a permanent resident, as we have specimens killed from December to August.

460.—*Otocompsa emeria*, Shaw. (40.)

I have already noticed this species, STRAY FEATHERS, 1873, p. 309, and have nothing to add to what I there stated.

Davison says:—"This red-whiskered bulbul is exceedingly common at the Andamans, but I did not observe it at the Nicobars, except a small party in Camorta, which were probably those sent there from the Andamans by Mr. Homfray; they were in the cotton field, and had apparently made themselves quite at home. On the 16th of January eight or ten of these were turned loose at the village of Orong on Car Nicobar, and when I saw them several hours afterwards they seemed to have taken quite kindly to the place, and were looking for insects among the brushwood bordering the jungle. In habits they are similar to the other members of the same genus, frequenting by preference gardens and open country generally, living both on fruit and insects. I found a nest of this species in a low mangrove bush growing quite at the edge of the water; it (the nest) was cup-shaped, and composed of roots, dried leaves, and small pieces of bark, lined with finer roots and cocoanut fibres; it contained three eggs with a pinkish white ground, thickly mottled and blotched with purplish red, the spots coalescing at the thicker end to form a zone; the eggs were unfortunately broken, and that to such an extent as to be not worth keeping."

This bird is a permanent resident. A young bird killed on the 22nd May has no crest at all, and the top of the head is a brown scarcely darker than the back. The under tail coverts are a pale salmon red. There is no red eye streak, and the place where it should be is bare. In young birds killed on the 8th June the crest is partially developed and of a dark hair brown; but there is no trace still of the red eye streak, and the lower tail coverts are still of the same dingy orange, or salmon red. In birds killed towards the end of July, the crest is fully developed, most of the feathers of the forehead, and anterior half of the crown, have become black; a few tiny red feathers have begun to

appear on one or both cheeks, and one or two bright red feathers have appeared amongst the pale dingy orange red tail coverts. In the next month a further advance is made, and by the end of October or the beginning of November the birds are nearly in full plumage.

469.—*Irena puella* Latham. (45.)

Specimens from the Andamans are precisely identical with others from Anjango, slopes of the Nilghiris, and Sikhim. We never observed this species in the Nicobars.

Davison says:—"The fairy blue-bird is far from uncommon on Mount Harriet and other places in the immediate neighbourhood of Port Blair, but is somewhat less so on the other islands of the Andaman group that I visited; I did not observe it at the Nicobars, on either of the Cocos, or on Table Island. Where it does occur, it keeps generally in small parties frequenting the tops of the higher trees, uttering from time to time its sharp clear call; occasionally it may be seen among the undergrowth of the jungle. The females seem to preponderate over the males in a remarkable degree, and for every male you see, you meet with at least four or five females. They breed at the Andamans, and the young were out in April. The young male has at first the garb of the female, which gradually changes to that of the adult male by moulting."

They appear to be permanent residents; at any rate we have obtained them from December to September.

A young male has many green feathers intermingled with the black of the chin, throat, and breast, while the feathers of the head, back, and rump, are green, only narrowly tipped with shining blue.

471 bis.—*Oriolus andamanensis* Tytler. (76.)

This very distinct species was only met with by us on the Southern Andaman and at Macpherson's Straits. We secured forty specimens, and have had 36 more sent to us, it being excessively common where it does occur. It belongs to the black naped sub-division of yellow orioles, and may readily be distinguished from *indicus* of Southern India by the almost entire absence of the yellow edgings to the secondaries and tertiaries, by its somewhat smaller size, by the greater extent of yellow on the tail, and by its narrower occipital black band.

The following are the dimensions recorded in the flesh from a large series of adults; the sexes do not vary in size:—

Length, 9.5 to 10.25; expanse, 15.25 to 16.75; wing, 5.25 to 5.4; tail, from vent, 3.75 to 4.25; tarsus, 0.9 to 0.95;

bill, from gape, 1.25 to 1.35; bill, at front, 1.0 to 1.2; wings, when closed, reach to within from 1.5 to 1.75 of end of tail; weight, 4 to 5 ozs.

The legs and feet are plumbeous, sometimes tinged with green; the soles dirty grey; the bill carneous, or delicate pink; the ridge of the culmen, in some specimens, brown for the terminal, one-half; irides carmine, and the eyelids brownish red. In the adult male the lores and a broad stripe over the eye running backwards till it meets the broad occipital band, like the latter, black. The whole of the quills, the winglet, the primary greater coverts, black, only some of the latter narrowly tipped with yellow, and a small triangular yellow spot at the tips of the tertiaries, and *sometimes* a very narrow edging of this color at the tips of the secondaries and even the later primaries. The inner webs of the quills and the tips of the primaries may perhaps be better described as *very* deep hair brown than black. Four central tail feathers entirely black, or blackish brown, generally, but not invariably, tipped with yellow. The next pair broadly tipped with yellow; for about 0.9 on the outer webs, somewhat less on the inner, the next pair for about 1.2, the next pair for about 1.8, and the external pair for fully 2 inches. These proportions vary considerably in various specimens, but they suffice to give a general idea. Similarly there is generally less yellow on the inner web, than on the outer web, but this is not invariable. The whole of the rest of the bird is a brilliant golden yellow, generally deepest on the breast, back, and upper abdomen. In some specimens the third, fourth, and fifth primaries have a narrow white or yellowish white margin just at the emarginations.

The adult female has the yellow everywhere less bright, and nearly the whole mantle suffused with a dusky greenish shade; the portions of the wings and tail, but especially of the former, which are black, or almost black in the male, are in the female much more decidedly brown; the whitish edgings of the third to the fifth primaries are much larger, longer, and more conspicuous than in the male, and in some specimens extend to the second and the sixth also. The outer webs of the secondaries and tertiaries, and some of the later primaries are more or less broadly tinged with dull olive yellow, the amount varying greatly in different specimens. The basal portions of the central tail feathers similarly, but more strongly, suffused.

In the young bird the upper and lower tail coverts are as in the adults. The back and head are a dull somewhat olivaceous yellow, a dull brown band indicates the future position of the

black occipital horse shoe; the entire lower parts, excluding the lower tail coverts already described, are white, or yellowish white, each feather, with a brown, central, shaft streak, linear on the chin and throat, somewhat broader elsewhere. The visible portion of lesser and median coverts like the back; the quills and the greater coverts pale, dull, hair brown; earlier primaries margined on the outer webs with brownish white; later primaries and secondaries, similarly but more broadly margined with dull, pale, olive yellow; and tertiaries with the entire outer webs of this color. Greater coverts margined and tipped with a brighter yellow, those of the primaries narrowly, of the secondaries more broadly. Tail feathers brownish olive yellow, the four lateral pairs tipped, almost exclusively, on the inner webs, for a breadth of from a quarter to one inch, with pure, pale yellow, and generally with a rather conspicuous brown spot just above this tipping. The bills in the young are in some almost blackish horny, in others dingy pink.

In what I take to be quite the youngest birds, the chin and throat are entirely streakless, somewhat fulvescent, white. There is scarcely a trace of the nuchal band, and both on the head and back are dim traces of brown striations. By August many of the birds are entirely pale yellow below, with only a few, narrow brown shaft stripes, and the nuchal band has become fairly well marked; but some birds probably hatched later, are no further advanced than this in October.

Davison remarks:—"This species is tolerably abundant at Mount Harriet and other well-wooded places in the vicinity of Port Blair. I did not observe it either on the Cocos or other islands of the Andaman group that I visited. In habits it is very similar to the other members of the genus to which it belongs, but is perhaps a trifle more shy than its congener *O. macrourus* of the Nicobars, keeping generally to the forest among the higher trees, and coming into gardens, only when these have large trees growing in them. I should say that the breeding season extended from October to at least April, as I have shot full-fledged young birds from December to March, and Lieutenant Wardlaw Ramsay, to my knowledge, obtained a fledgling at Mount Harriet, South Andaman, in April."

471 *quat.*—*Oriolus macrourus*, *Blyth.* (48.)

This species is at once distinguished from *indicus* by its larger size, much greater extent of yellow on the tail feathers, and by the entire absence of yellow on the exterior webs of the secondaries and tertiaries. It is one of the very finest members of

this sub-division of the orioles. The following are the dimensions recorded in the flesh from a large series of adults of both sexes. These latter I may mention do not differ constantly in size, though individuals differ a good deal in each sex:—

Length, 11 to 12; expanse, 17·5 to 18·75; wing, 5·75 to 6·12; tail, from vent, 4·75 to 5·4; tarsus, 1·0 to 1·1; bill, from gape, 1·5 to 1·7; bill, at front, 1·12 to 1·3; wings, when closed, reach to within from 2·4 to 2·6 of end of tail. The legs and feet plumbeous; claws dark horny; the bill carneous; the irides carmine; in the young dull red brown. The bills of these latter dull fleshy, but nothing like so dark as in the young of *andamanensis*.

The coloring is precisely the same as in the preceding, but the black occipital and nuchal band is much broader. The tipplings to the primary greater coverts are broader; the triangular spots at the tips of the tertiaries are scarcely ever present in the males; the third to the fifth primaries are very distinctly margined on the outer webs with white, or excessively pale yellow. There is much more yellow on the tail, the pair next the centre almost always very conspicuously tipped with yellow; the two external laterals on either side almost wholly yellow. These remarks apply equally to both sexes which, in all other respects, agree with *andamanensis*, and the same may be said of the young.

Davison says:—"Occurs only in the Nicobars where it is very numerous, frequenting the forest, cocoanut palms, secondary jungle and gardens, and is even met with in trees standing quite alone, and some distance from the forest; it is a somewhat larger, and I fancy brighter colored bird than *O. andamanensis*, and like this last is usually met with in pairs. When it is found in small parties these usually consist of the parent birds and the young; but on one occasion I shot eight in succession off a small tree that was covered with a fruit like red currants, and to which these birds, as well as *Hypsipetes nicobariensis*, seemed particularly partial."

We met with this species in abundance on every single island of the Nicobar group but nowhere else. Everywhere in the Nicobars it seemed to me to be very abundant, and in no way separable, so far as flight, habits, and voice are concerned, from our continental *O. indicus*. What is really remarkable is, that, both to the north and south, in the Andamans and at Acheen, this species is entirely replaced by others. *Andamanensis* in the former, *hippocrepis*, (STRAY FEATHERS, 1873, p. 457) in the latter, and this, although the northern and southern islands of the Nicobar groups are much further apart, then these are distant

respectively from the southernmost islands of the Andamans, or the northernmost point of Sumatra.

472.—*Oriolus melanocephalus*, *Lin.* (7.)

I do not think that the Andaman birds can be *properly*, as they have been, called a small race of this species. The wings of the males often run to 5·3, which is quite as large as those of most continental birds (though Northern Indian birds from the foot of the Himalays run somewhat larger); but they seem to have rather less yellow on the outer webs of the tertiaries and secondaries than the majority of continental specimens exhibit.

Davison says:—"I feel perfectly satisfied that this bird is only a seasonal visitant to the Andamans. On my arrival at the Andamans in December last, knowing that this bird had been obtained there, I was much astonished at my not obtaining any specimens, or even seeing it, but thinking that it might be rare (which comparatively it is), I kept an special look-out for it, listening for its note, which I should have recognized at once, as it differs very much from that of *andamanensis* and others of the *indicus* type, and with which moreover I have been for years familiar; but up to the time of my starting for the Nicobars in January, I failed to either see or hear it. On my return to Port Blair in April, going to Mount Harriet a day or two after my arrival, it was one of the first birds that drew my attention, and up to the time of my leaving the islands in May, I repeatedly heard and saw it, but only succeeded in securing two specimens."

I am not myself so sure about the bird being only a seasonal visitant, but it is certainly rare. Subsequent to our leaving the islands between May and the end of September five more specimens were procured for us, so that we got altogether seven against just eleven times that number of *andamanensis*. It may possibly, however, as Davison thinks, leave the islands during October and November, and return in March or April. Certainly I saw and heard it in Macpherson's Straits early in March.

475.—*Copsychus saularis*, *Lin.* (28.)

The Andaman bird, although I assign it to this species, is really intermediate between *saularis* and *mindanensis*.

Mr. Ball says:—"The Andaman bird appears to belong to the Indian and not to the nearly allied species *C. mindanensis* from Malacca, Sumatra, &c. A fully grown male had the four outer rectrices on either side white." There may not improbably be some mistake about this; we preserved eighteen

specimens and later received ten others, and in no single specimen were the four outer rectrices on either side white. I may add that as often as not even in true *sauularis* there is a narrow dusky margin to the inner webs of the innermost of the four pairs towards the bases. In the Andaman bird the third pair have always a certain amount of dusky black on the inner margin, and the fourth pair is black on both margins, which black is often so extensive that the white is reduced either to an acute-angled wedge, whose base is at the tip of the feathers, or to a triangle similarly placed, while rarely the whole white becomes obsolete and the entire fourth pair of feathers are black. As regards the tail and the somewhat coarser bill, and in fact as far as I can see in every respect, the Andamanese birds are not separable from those from the north of Sumatra. When we take the females, we find that their upper parts are decidedly darker than in Indian specimens, are in fact intermediate in color between Sumatran and Indian birds. On the whole I am not sure that the birds ought not more properly be united with *mindanensis* than with *sauularis*; but the females are generally not nearly dark enough for the former, and I have therefore for the present retained the name of *sauularis* for this race.

Lord Walden's observations in regard to five other specimens appear to coincide with mine, and but for Mr. Ball's remarks as to the specimen which he obtained I should have been inclined to separate the Andaman race as a distinct species. It is geographically well-defined, it does not appear to occur northwards on the Cocos, Preparis, &c., while southwards in the Nicobars we never observed it. If ultimately it be determined to separate this race it may stand as *andamanensis* nobis. I may add that the males of this race are generally much more strongly tinged on the sides and flanks with greyish dusky than our continental specimens.

This species of course breeds in the Andamans; a nestling bird obtained on the 24th August, a female, has the entire upper surface a dull dark sooty brown. The wing patch as in the adult, and the wings and tail feathers as in the latter; but the black everywhere replaced by a dull and faded hair brown, and the quills, except those that form part of the white patch, margined on the outer webs with dull rufous; the chin, throat, breast, and upper abdomen mottled dusky, and pale fulvous; sides and flanks dusky; lower abdomen, vent and lower tail coverts, greyish white.

Davison remarks :—"The Dyal bird is abundant all about Port Blair, it is found in all sorts of places, about houses, in man-

grove swamps, gardens, open fields, along the forest paths, &c., but it decidedly prefers the vicinity of man. On Ross Island, the head-quarters, and consequently the most populous part of the Settlement, it is, with the exception of *Acridotheres tristis* and *Corvus Levallantii*, the most common bird, and the male may often be seen seated on the top of a house, or stump, in the morning and evening, singing in a most lusty manner. They breed at the Andamans in April and May. I did not observe it at the Nicobars."

476. *bis.*—*Kittacincla albiventris*, *Blyth*. (26.)

This species, though in many respects closely resembling *macroura*, differs essentially in two particulars. In the first place the tail is differently formed, the central tail feathers in the present species rarely, if ever, project more than 0·3 beyond the next pair, while in *macroura* they project 1·3. Of course in both cases I speak of adult males; in the second place the female of *macroura* differs essentially from the male in plumage, whereas the adult females of this species, according to our dissection, are identical in plumage with the males. I know that Mr. Blyth says:—"The female is of a duller color than the male, specially on the wings and breast, which latter is glossless black;" but he must, I think, have got hold of a young bird to which these remarks fully apply. The only difference which we could detect in the females was that they were rather smaller. The following are the dimensions recorded in the flesh:—

Males.—Length, 8·8 to 9·55; expanse, 10·75 to 11·82; wing, 3·5 to 3·75; tail, from vent, 4 to 5; tarsus, 0·9 to 1·05; bill, at front, 0·55 to 0·63; bill, from gape, 0·9 to 1; weight, 1 to 1·2 ozs.

Females.—Length, 8·25 to 8·6; expanse, 10·75 to 11·4; wing, 3·4 to 3·65; tail, 4·1 to 4·35; tarsus, 0·9 to 1·03; bill, at front, 0·52 to 0·62.

The above dimensions refer to adults, young birds are very much smaller.

The legs and feet are very pale fleshy; bill black. The entire head, neck, breast, back, wings, four central tail feathers, and the bases of the four other pairs, black; the head, neck, breast, back, scapulars, lesser and median coverts, with a beautiful purple gloss. In fine specimens a slight gloss on the tail feathers and tertiaries also. The rump, upper tail coverts, abdomen, sides of breast, wing lining, and axillaries, tibial plumes, and the terminal three-fourths or more, of the four external pairs of tail feathers, pure white; lower tail coverts and flanks a rather pale ferruginous

The young are similar, but smaller; the chin, throat, and breast glossless black; the quills hair brown; the secondaries margined faintly with ferruginous on the outer webs, as are also their greater and some of the median coverts; the sides of the abdomen are tinged with ferruginous; the gloss of the upper parts is much fainter.

This bird is doubtless a permanent resident. A very young bird just out of the nest and killed in July, has the entire head, neck, breast, and back deep brown almost black on the breast, each feather with a smaller or larger, dull ferruginous, spot towards the tip; the quills and coverts are all margined on the outer webs with dull ferruginous; the lesser coverts with spots of the same color; the flanks and the sides of the abdomen mottled dusky and pale ferruginous.

Davison says:—"The White-bellied Shamah is confined, as far as is at present known, to the Andamans, and there it is, in some localities, comparatively abundant. It has from a short distance very much the appearance of *C. saularis*, and has the same habit of lowering its wings and erecting its tail; its flight is tolerably rapid and somewhat undulating. It usually frequents the sides of forest paths, but I have seen it in gardens, and in scrub on the edge of a clearing; it keeps near, or on the ground by preference, but when disturbed often perches at a height of six or eight feet from the ground. *Kittacincla macroura* is celebrated for its sweet singing; the present bird might lay a claim for celebrity too, not for its sweet voice, but for the power of giving utterance to a series of hoarse, anything but musical sounds, which it is difficult, at first, to conceive can have proceeded from the present bird, and which would not seem so strange if it were a bird of the size of a crow, and perhaps of the same family."

Mr. Blyth says the male is a good songster; but I have listened to it too often to be able to endorse this opinion, on the contrary it may be emphatically said that this bird has no voice, no ear, and not the faintest conception of singing.

433.—*Pratincola rubicola*, Lin. (3.)

The specimens of this species obtained in the Andamans belong to the somewhat smaller and darker race which is usually characterized as *indica*; but as already mentioned, STRAY FEATHERS, 1873, p. 183, I do not myself think that this race can be specifically separated.

The first specimen I obtained of this bird, STRAY FEATHERS, 1873, p. 307, is characterized by a long broad pure white supercilium, such as I have seen in no other specimen, giving the

bird quite a *rubetra* like appearance, but this is obviously merely an accidental variation, as other specimens are identical with the ordinary Indian bird.

Davison says:—"This bird is very rare at the Andamans. I only met with two specimens (both of which I secured) in some open ground, at Aberdeen, South Andaman. I did not meet with it at the Nicobars. The few that do occur at the Andamans are very probably permanent residents, for the first specimen I obtained in December, and the second in April." I consider it to be certainly a mere winter visitant. I only saw one specimen and that at Jolly Boy Junior early in March.

514.—*Cyanecula cærulecula*, Pallas. (2.)

As already noticed, STRAY FEATHERS, 1873, p. 190, I have not the materials for judging whether the Asiatic blue-throat ought properly to be separated from the European. The Andaman birds appear to be identical with Indian ones, though they seem to run a little darker. I never saw this bird, but Davison says:—"The blue throat is rare at the Andamans, and I have only met with it in one locality, viz., in the dry paddy flats at Aberdeen, South Andaman, where it frequents the cover of a short thick wiry weed that grows along the embankments of the paddy flats. When disturbed it generally only flies a short distance, and then plunges into cover again, occasionally seating itself on a stump or clod of earth. It is only a seasonal visitant, I found it for the first time about the first week in April immediately on my return from the Nicobars. At the Nicobars I did not observe it."

518.—*Arundinax ædon*, Pallas. (18.)

The Andaman specimens do not differ from others obtained in the neighbourhood of Calcutta. We preserved numerous specimens, and the following is a *resumé* of the measurements recorded in the flesh; individuals differ a good deal in size, but this difference is not dependent on sex:—

Length, 7·75 to 8·25; expanse, 9·5 to 10·25; wing, 3·12 to 3·4; tail, from vent, 3·4 to 4; tarsus, 1 to 1·12; bill, from gape, 0·8 to 0·85; wings, when closed, reach to within about 2·5 of end of tail; weight, 0·9 to 1·2 ozs.

The legs and feet are pale bluish horny; the upper mandible is brown, of a darker or lighter shade, edged paler; the lower mandible is a brownish or reddish yellow; the irides in some are yellowish, in some umber brown.

Davison says:—"This bird is not uncommon in hedges, thickets, fields, and secondary jungle, or in fact in any very

thick cover. I have found it in the forest just on the outskirts, and have met with it also in large, somewhat isolated trees, but as a rule it keeps to dense low scrub, through which it works its way with remarkable facility, and when once it has got into a good piece of cover it is uncommonly hard to dislodge. Its call and alarm note is a sort of click, click, like the cocking of a very coarse-sprung musket-lock; but frequently I have heard them make a very good attempt at a song, somewhat weak, and monotonous perhaps, but very pleasing withal. It seems to be very rare at the Nicobars, for I only saw and obtained one specimen, which I shot close to the shore in Camorta Island, as it was hunting among some half-withered secondary jungle that had been cut." We saw some specimens, and I shot one, but failed to retrieve it, in some flags and reeds surrounding a small pond in Tillangchong.

520. *bis*.—*Locustella subsignata*, Hume. (2.)

This species was fully described, and all we had to say in regard to it recorded, STRAY FEATHERS, 1873, p. 409.

539.—*Cisticola schoenicola*, Bonap. (6.)

I have compared the Nicobar bird with others from all parts of India, from Ceylon on the south to Goorgaon on the north, and from Sindh on the west to Dacca and Cachar on the east, and they appear to me to be perfectly identical. The color of the upper surface in this species varies very greatly according to the individuals; in some it is very much duller and darker than in others, in some the head is very conspicuously streaked pale rufescent and black, in others it is nearly uniform brown, sometimes lighter, sometimes darker; in others again almost uniform black, and so on; but these differences occur in specimens from the same locality and must depend, though I have not yet had time to work it out, on age, sex, or season, or all combined.

Davison says:—"Comparatively common at the Nicobars, in the large tracts of grass that occur on many of these islands; it is also very abundant, perhaps more so than in any other locality, all about the cleared portion of the settlement of Camorta, frequenting the patches of guinea grass, and low scrub that covers the hill sides where forest has been felled and burned. Like *Locustella* it seldom rises till you are almost on it; and then flies only a few yards, when it disappears in the long grass, through which it makes its way rapidly, often rising ten or twelve yards from where it first settled;

sometimes it makes it way to the top of a flowering grass stem or other elevated position, and there with partially erected tail and outstretched neck pours forth a weak twittering song of a few notes, seldom remaining on this exposed perch for more than a few seconds, and then diving out of sight as if it was ashamed of its poor apology for a song. It is, I think, a permanent resident at the Nicobars, but I did not succeed in finding its nest or procuring any specimens of the young. I did not observe it at the Andamans, and I do not think that it would be likely to occur there, as it is (as its name implies) a bird that frequents reeds, or long grass, and these the Andamans do not possess, at present, at least not like the Nicobars, where there are in the interior of some islands, as Camorta and Teressa, miles of land covered with long coarse grass from three to five feet high."

555.—*Phyllopseuste fuscata*, *Blyth*. (1.)

A single specimen which we obtained at the Andamans appears identical with our others from Cachar, Tipperah, and other parts of Eastern Bengal.

Davison remarks :—"I only met with this little bird on three or four occasions in some secondary jungle near Port Mouat, South Andaman; it was very shy, and I only succeeded in procuring one specimen."

556.—*Phyllopseuste magnirostris*, *Blyth*. (1.)

A single specimen which we procured at Mount Harriet, a wooded hill which overlooks the Port Blair harbour, is identical with specimens from Ceylon, Ahmednuggur, and other parts of India. It must be rare, as the specimen killed was the only one noticed by either Davison or any of our party.

558.—*Phyllopseuste lugubris*, *Blyth*. (2.)

Of this species also only two specimens were obtained, one at Mount Harriet, the other at the Great Cocos, and but few others were seen.

Davison remarks :—"I met with this little warbler in several localities on South Andaman, on Strait Island, the Great Cocos, &c., and on every occasion found it frequenting the forest, and not venturing into the comparatively open scrub, like the preceding species; its note is a sharp quickly repeated chick, chick."

590.—*Motacilla luzoniensis*, Scop. (O.)

Colonel Tytler and Captain Beavan say that this species is common at the Andamans in the cold season. None of us ever procured a specimen or indeed saw one (save a single bird seen by Dr. Stoliczka in Macpherson's Straits), neither did Davison, and considering how long he remained at the islands, and how entirely he devoted himself to collecting, we may safely assert that it is not now-a-days at all common in the cold season. I cannot say that I have the least confidence that Colonel Tytler correctly identified the particular species of grey wagtail that he saw, and Dr. Stoliczka could not, of course, be certain, but we may accept the fact that some grey wagtail does occur at the Andamans, and hence I admit the above species into our list partly to indicate this, and partly because of this group *luzoniensis* is the species most likely to occur.

592.—*Calobates boarula*, Penn. (G.)

The Andaman specimens belong to the somewhat smaller race which alone, so far as I am yet aware, occurs within our limits, and which Pallas separated as *melanope*. So far as I can discover the only difference between the two races is in size, the European being somewhat the larger of the two. I must confess that I scarcely think this difference sufficient to warrant specific separation.

We ourselves only met with a single specimen on Preparis, and one or two elsewhere, and Davison remarks "not common on the Andamans or Nicobars, at the former place I did not observe more than half a dozen, and only one at the Nicobars."

I do not suppose that this bird is a permanent resident, but four specimens have been recently sent me killed from the 4th to the 9th September, and we killed a specimen on Preparis as late as the 26th March, so that at most they are not absent for above five months from the islands.

593 *ter.*—*Budytes cinereocapilla*, Savi. (2.)

This is the Long-hind-clawed Yellow Wagtail, with the dark slatey grey head, and *no* conspicuous white supercilium. This occurs both at the Andamans and Nicobars.

Davison says:—"I secured only two specimens of this wagtail shot at Camorta, Nicobars, and Aberdeen, South Andaman, but I have no doubt that I overlooked it among the large flocks of *B. flava* that occur both on the Nicobars and Andamans.

593 *quat.*—*Budytes flava*, *Lin.* (26.)

This is the Long-hind-clawed Yellow Wagtail, with the pale slatey blue head, and conspicuous white supercilium. In fact at all seasons, and in both sexes, the conspicuous white supercilium suffices to distinguish this species. Our Indian birds are precisely identical with specimens that I have from Westphalia and Sweden, and the Andaman birds differ in no respect from Indian birds. This wagtail is the only one that is common in the Andamans. We only got one at all in full plumage. Lord Walden, *Ibis*, 1873, p. 308, gives *Budytes viridis* of Gmelin. I don't know what species this is; but I take it to be the same as *viridis*, Scop., which is, as I make out, the winter plumage of *melanocephala*, Licht. The yellow wagtail which has no conspicuous supercilium, and which has the head green in the winter and black in the breeding season. I have seen no specimens of this from the Andamans, and we collected wagtails vigorously everywhere. It remains to be seen whether Lord Walden means the same species by *viridis* as I do, or whether he assigns the name of *viridis* to what I call *cinereocapilla* or *flava*.

In winter plumage *cinereocapilla* is not, unless one has especially studied the group, to be distinguished from *viridis*.

Davison says:—" *Flava* is excessively abundant both at the Andamans and Nicobars; wherever the country is bare it occurs in large flocks, or scattered in parties over the hill sides and in the paddy flats. I have also met with stragglers along the sea shore on those parts of the islands that are thickly wooded almost to the water's edge. I found them very numerous on my arrival at the Andamans in December, and they appeared to be just as numerous in May, although many of them were apparently far advanced in the breeding plumage. I was told that they arrive at the Andamans about November, and leave again about the latter end of May."

We have a female with the rich fulvous tinge on the breast which characterizes this sex of *flava*, killed at Port Blair on the 1st June by Captain Wimberley, and we have numerous specimens, mostly young birds, killed by him in the first week of September, so that the birds are only absent from the *Andamans*, at most three months. How much more common this species is than *cinereocapilla* may be judged from the fact that we have secured altogether 26 specimens of the present species, and only two of *cinereocapilla*. I saw this species on the Cocos and Table Island at Prepara, in Macpherson's Straits, and at most of the islands of the Nicobar group.

594 bis.—*Budytes citreola*, Pall. (0.)

Captain Beavan says:—"The yellow-headed wagtail has been observed by Colonel Tytler on Aberdeen Point." None of us ever saw this species. Colonel Tytler did not know the *Budytes* group at all, and as *flava* is excessively common in the Andamans, this was probably the species that he observed. Anyhow until better evidence is forthcoming I cannot admit this species into our list.

595.—*Limonidromus indicus*, Gmel. (1.)

We never met with this species, but Davison observed it on several occasions singly, and in small parties, keeping in the shade of the trees, and flying up and perching on the branches when disturbed. I do not know whether it is a permanent resident. Captain Wimberley shot a specimen on the 16th November.

599.—*Corydalla Richardi*, Vieill. (7.)

This species appears to have been common in the neighbourhood of Port Blair, at any rate during the month of April when all our specimens were obtained. The following are the dimensions of several specimens measured in the flesh:—

Length, 7·6 to 7·82; expanse, 11·75 to 12·5; wing, 3·5 to 3·82; tail, from vent, 3·12 to 3·4; tarsus, 1·12 to 1·25; bill, from gape, 0·8 to 0·85; the hind claws varied from 0·7 to the astounding length, in one specimen, of 1·2; but they are most of them between 0·8 to 0·9. Although the claws appear to average longer, and the birds to be perhaps as a whole a trifle larger, I do not hesitate to identify the Andaman and Indian *Richardi*: as to whether the Indian *Richardi* is veritably identical with the Southern European race, I am by no means so certain.

Mr. Davison remarks:—"I only observed this pipit on South Andaman, at Aberdeen, Navy Bay, and that vicinity. It keeps to the paddy flats and bare hill sides, either in pairs or small parties. I found them comparatively numerous on my return from the Nicobars in April; they are evidently only seasonal visitants, but I am unable to say when they take their departure, as they had not left by the 12th May when I left the islands. I did not meet with it in the Nicobars."

605 bis.—*Anthus cervinus*, Pallas. (9.)

This, the Eastern Rufous-breasted Pipit is distinguished from *Cecilii*, Audubon=*rufigularis*, Brehm., the western form,

by its smaller size, and by the color of its breast and superciliary stripe, which are pinker in the present species, and more rusty in the European form. The Himalayan form, *rosaceus*, Hodg., differs from both in the bright yellow tinge of its axillaries.

The following is a *resumé* of the dimensions recorded in the flesh from a considerable series :—

Length, 6 to 6·75; expanse, 9·75 to 10·5; wings, 3 to 3·4; tail, from vent, 2·5 to 3·25; bill, from gape, about 0·8; bill, at front, 0·45 to 0·49; hind claw averages about 0·5; tarsus, 0·8 to about 0·93.

In winter plumage the whole of the top and back of the head, back, scapulars, rump, and upper tail coverts are a pale dingy olive brown, all the feathers with deep brown centres, or central stripes, narrowest on the head, broadest and most conspicuous on the interscapular region; the primaries and their greater coverts and the secondaries pale hair brown; the first primary narrowly margined on the outer web with pure white; the rest of the primaries and their greater coverts similarly margined with pale olivaceous; the secondaries with a pale yellowish brown; tertiaries elongate, a darker brown, rather more broadly margined, with a somewhat paler shade; secondary greater coverts, and median coverts, intermediate in color between tertials and primaries, margined on the outer web with a very pale dingy olive brown, and rather more conspicuously tipped with dull white. The first three primaries are equal and longest, the fourth is 0·05 shorter, the fifth is 0·45 to 0·5 shorter; the longest tertial is generally about 0·2 shorter than the longest primary, but this varies. The second to the fourth primaries are conspicuously emarginate on the outer web. All the first four primaries are very feebly sinuated on the inner web about 0·75 from the tip; the tail feathers are brown, narrowly margined with paler brown; the external tail feathers are mostly white, but they have a pale brown streak on the outer web towards the tip; the basal one-fourth on the inner web is brown, and this color extends upwards on the outer portion of the inner web for some distance in the direction of the point; the next tail feather has a triangular white spot on the inner web at the tip, and a narrow white or whitish margin to the outer web. There is a narrow, and not very conspicuous supercilium from the nostrils over the eye, yellowish white, but more or less tinged with rufous even in birds killed on Christmas day; the ear-coverts are

rufescent brown; the entire under parts yellowish white; the base of the throat and the whole breast, sides and flanks with large, conspicuous, blackish-brown, tear-like spots, very thickly set about the breast; a feeble line of such spots down each side of the throat. Even in some birds killed in the Christmas week, there are pinkish patches about the base of the throat and breast; the wing lining and axillaries a silky greyish white, tinged yellowish or creamy in some specimens.

Even in the winter plumage this bird may be distinguished from *rosaceus* by its somewhat smaller size, by its considerably smaller bill, which in *rosaceus* measured at front from 0.48 to 0.59; its somewhat smaller wing, which in *rosaceus* varies from 3.2 to 3.45 by the different proportion of the primaries, the fifth primary in *rosaceus* being longer than in our present bird, and being rarely more than 0.35 shorter than the longest primary, by the absence of the pale primrose tinge to the axillaries and edge of the wing from the carpal joint.

In the summer plumage, the distinctions are much more conspicuous. In our present species, a broad streak over the eye from the nostril, the cheeks, ear-coverts, chin, throat, and upper breast are a, slightly rusty, vinaceous pink, quite spotless; the rest of the lower parts are pale buffy or rufescent white, with the same spots on the sides and flanks as in the cold weather, and with two or three of these on the lower breast; even the crown and occiput have a faint rusty rufescent tinge, and the whole upper surface is much browner than in winter plumage. In *rosaceus* in summer plumage the whole upper parts are much greener. A broad superciliary strike extends from the nostril to the nape of a delicate pinky white; the lores, cheeks, and ear-coverts are much the same color as the crown, which is an olive green, streaked with dark brown, without the faintest tinge of rufous, and the chin, throat, and entire breast are a pale delicate pink, widely different from the bright somewhat rusty vinaceous of our present species, and the axillaries are primrose yellow, while in our present bird they are the same color as in the cold weather.

Rosaceus seems to occur throughout the Himalayas, and during the cold season may be met with in many parts of the plains. I have killed it in Etawah, and I have it from various localities in the Punjab and in Behar. *Cervinus*, on the other hand, seems to me to be very rare in India; besides these Andaman birds I have only one specimen, and that in full breeding plumage procured in July high up in the valley of the Sutlej beyond Chini.

Davison remarks :—" This pipit occurs both at the Andamans and Nicobars, frequenting similar situations. At the Nicobars I observed it only on Camorta Island, where it chiefly frequents the cotton fields, at least those parts of them that are comparatively free from weeds; it keeps in small parties. I am unable to say whether it is a permanent resident or only a seasonal visitant, but most probably it is only the latter."

631 *ter.*—*Zosterops nicobariensis*, *Blyth*.
J. A. S., XIV., 563. (14.)

Blyth was, I think, perhaps, correct in separating the White-eyed Tit of the Andamans and Nicobars, and though he failed to notice the leading characteristic of the species, it must, if distinct, stand under his name. I should thus characterize it; *nearly allied to palpebrosa of India, but with a longer and much broader bill. Upper plumage greener and less yellow.*

When one comes to compare a series of the White-eyed Tits from the Andamans and Nicobars, where the bird is a permanent resident, with another series from various parts of India, it is impossible to avoid noticing the difference in the size of the bills, that of the insular bird being at times nearly double the bulk of the continental one. It is not merely that it usually averages one-third longer, but it is very much broader. The color of the upper surface of the bird too, is somewhat different; it is decidedly greener and less yellow, approaching in this respect *ceylonensis* of Holdsworth, and while the bird is no larger than *palpebrosa* it has a bill all but as large as *ceylonensis*. This difference in bill and color appears to be fairly constant, we did not notice it in the field, and therefore unfortunately only preserved nine specimens, eight from the Nicobars, but it is absolutely constant in these. Later five more specimens were sent us from the Andamans, and it is these specimens which have made me somewhat doubtful in regard to the validity of this species. Two of the five specimens are similar to those previously obtained, one is scarcely if at all distinguishable from *palpebrosa* from India, whilst two present the characteristics of *nicobariensis*, but in a much less strongly marked degree.

The following are the dimensions of this race or species recorded in the flesh:—

Length, 4.25 to 4.77; expanse, 6.25 to 6.8; wing, 2 to 2.12; bill, at front, from edge of frontal feathers, 0.42 to 0.48.

In *palpebrosa* the bill similarly measured varies from 0.33 to 0.4 as a maximum. In the Ceylon bird it seems to average

0.5. It seems needless to give any detailed description because except in so far as the color of the upper surface is concerned, and the comparatively huge bill, the bird differs in no particular from the continental race, but this difference of bill is far greater than the figures above, given would perhaps lead one to infer.

This species was particularly common on Tillangchong, fluttering about low bushes at the margin of the jungle, exactly as the Indian race may constantly be seen doing.

Davison remarks:—"I found this White-eyed Tit much more common at the Nicobars than at the Andamans, but in neither place is it what can be really called common. It probably breeds at the Andamans, and certainly does at the Nicobars, for I saw in February young birds that had only just left this nest. It frequents chiefly the secondary jungle, coming also into gardens, and occasionally is found hunting in small parties about the tops of the higher forest trees."

660.—*Corvus Levallantii*, Lesson. (8.)

The Bow-billed Corby of the Andamans has perhaps sex for sex a larger bill than any continental race. At page 85 of the ornithological portion of Lahore to Yarkand, I have fully discussed the differences in size that exist in the various Indian races of this species, and I need say little further in regard to them. It should be noticed, however, that in this species the bills of the males are very considerably larger than those of the females, so that in comparing specimens from different localities it is necessary always to compare individuals of the same sex. The smallest billed race of all is that from the Himalayas, westwards of the Ganges; the largest billed that I have yet met with is the Andaman, and if fine specimens of each be placed together, few ornithologists would hesitate to separate them; but between the Andaman and Simla types every intermediate size of bill is met with, and though the birds themselves, as well as their bills are somewhat larger from the south, I think it perfectly impossible to separate any of these various races.

The following are dimensions taken in the flesh of males and females from the Andamans; fine adults having been measured in each case:—

Males.—Length, 21.5; expanse, 38; wing, 13; tail, from vent, 8.25; bill, at front, 2.63; weight, 1.25 lbs.

Females.—Length, 20; expanse, 36.5; wing, 12.25; tail, from vent, 8; bill, at front, 2.35; weight, 1 lb.

The smallest female of six has the wing 11.4, and they certainly average above 12.

Davison remarks:—"The Indian Corby occurs all over the Andamans, not merely in the vicinity of the habitations of men, but also on the uninhabited islands. I saw it on the Little Button, Strait Island, and on one of the little islands situated in Stewart's Sound. At the Nicobars it does not occur, except a few that have been taken over from Port Blair, and turned loose on Camorta, of which a pair at least by the way have flown over to the adjacent island of Trinkut, where they have taken up their abode among the *Casuarina* trees, growing on the banks of the fresh water ponds on the eastern side of the island. It seems strange that they should not keep about the Nicobarese huts; but this I fancy is because the fresh water ponds afford them more sustenance in the way of frogs, &c., than they would be able to pick up among the offal about the huts, owing to the numbers of dogs kept by the Nicobarese, and the very small waste of animal matter that occurs among them. From all I could learn, I conclude that the present species was never introduced into the Andamans like *C. impudicus* (which by the way has totally disappeared). Mr. Homfray tells me that in Colonel Ford's time these birds, though perhaps not so numerous as at present, were still not uncommon. I besides questioned many convicts who were among the first sent to the Settlement, and they all stated that they saw crows when they first went down."

Colonel Tytler and Captain Beavan both concurred in separating the Andamanese crow as distinct, on the grounds, chiefly, that its voice differs entirely from that of *culmenatus*, and that it has a habit of congregating. As regards the voice this most certainly does vary considerably in different parts of India. The birds of the plains of Upper India have decidedly a different call from those of the Himalayas, and that of the Andaman birds seemed to me very like that of our hill birds. Davison thinks that their call, though not perhaps so powerful as the Nilghiri birds, was not otherwise very perceptibly different. As for their going in flocks, although in the plains of India, they are almost always met with in pairs at long distances from each other, alike in the Himalayas and the Nilghiris they continually congregate in flocks. For my part I consider it impossible to separate any of the various races of the Bow-billed Corby that I have yet seen from the Himalayas or any part of India, Burmah, the Malayan Peninsula, or the Andamans.

In regard to these Andaman crows it is a curious fact that though so many of them are to be seen about Ross Island during the day time not one of them sleeps there; all wing their way towards nightfall to the mainland, chiefly, to the woods on Mount Harriet

663.—*Corvus impudicus*, Hodg. (0.)

This species was introduced by Colonel Tytler but has entirely disappeared.

674 bis.—*Dendrocitta Bayleyi*, Tytler. (36.)

This very handsome little Magpie almost deserves generic separation; it is intermediate between *Dendrocitta* and *Crypsirina*, and has all the tail feathers, 12 in number, but specially the central ones, gradually widening towards the tips, where in really fine fresh moulted specimens, the central pair are 1·3 wide against about 0·7 immediately beyond the upper tail coverts. Curiously enough, in the young birds, this difference is scarcely perceptible, and even in the adults it is only *conspicuous* in fresh moulted birds, but in these it is very noticeable in both sexes. We obtained a large series. The following is a *resumé* of dimensions of both sexes recorded in the flesh. The females average slightly smaller, but not sufficiently so to make it worth while to give the dimensions separately:—

Length, 12·5 to 14; expanse, 14 to 15·12; wing, 4·4 to 5; tail, from vent, 7 to 8·5; tarsus, 1 to 1·1; bill, from gape, 1 to 1·1; bill, at front, 0·85 to 0·96; closed wings reach from within 5 to 6·25 of end of tail; weight, 3·25 to 4 ozs.

The bill, legs, feet and claws are black; the soles plumbeous grey; the irides are bright yellow, in some a rich golden yellow.

The sexes do not differ in plumage; but in freshly moulted birds the females do appear to be slightly duller colored; the lores, forehead, and a patch at the base of the lower mandible, velvet black; the chin, cheeks, and ear-coverts black, passing into blackish iron grey; the crown, occiput, nape, throat, neck all round, upper back and upper breast, iron-grey, the two latter more or less tinged with rufescent; wings black. In the perfect wing, 4th, 5th and 6th quills sub-equal and longest, 7th about 0·15 shorter, 3rd about 0·3, 2nd about 0·95, and first about 2·2 shorter. All the secondaries and all the primaries but the first two, white at the bases on both webs, the white patch hidden on the first five or six primaries by the greater coverts, but showing on the rest of the primaries and secondaries as a conspicuous white bar, broadest on the latest

secondary. The white patch entirely wanting on the tertiaries. The lesser and median coverts not so pure a black as the rest of the wing, but greyer and duller. Middle and lower back and scapulars, a rufescent olivaceous brown; rump more ferruginous; upper tail-coverts iron grey more or less tinged towards the tips with olivaceous brown; abdomen, sides, flanks, vent and lower tail-coverts moderately bright ferruginous, deepest and becoming almost chesnut, on the lower tail coverts; the lower breast a mixture of iron grey and dull ferruginous, or more properly, perhaps, iron grey suffused with dull ferruginous; wing lining black; axillaries grey; tail black much graduated; the pair next the central ones from 1·7 to 1·9 shorter; the next pair from 2·7 to 3·2 shorter; the next pair from 3·7 to 4·1 shorter; the fifth pair from 4·5 to 4·9 shorter; and the exterior pair of all from 5·5 to 5·8 shorter. In freshly moulted birds the tail is very conspicuously obsoletely barred, but this is scarcely traceable when the plumage is at all worn or abraded.

Our party never met with a specimen. Davison, however, found them common in one place. He says:—"I only found this little pie in the immediate vicinity of Port Blair, where in suitable localities it is not uncommon; the two places where I have found it most numerous are Mount Harriet and its immediate neighbourhood, and in the forest at Aberdeen. It is a forest bird, and never ventures away from the cover of large trees; as far as I have observed, it keeps entirely to the trees, never descending to the ground like the other *Dendrocittas*. It has a sharp metallic note, something like that produced by drawing a coarse file across the teeth of a saw. Usually they keep in pairs, but I have seen five or six together. I obtained twenty-one specimens of this bird at the Andamans; but did not observe it at the Nicobars, Great or Little Cocos, or any of the other islands I visited."

It is a permanent resident. Captain Wimberley sent us numerous specimens killed from May to September, and we have specimens killed by one person or another in every month of the year.

It certainly does not occur at the Nicobars, every island of which was more or less worked by our party or Davison.

684.—*Acridotheres tristis*, *Lin.* (1.)

This species was introduced by Colonel Tytler and has thriven and multiplied greatly on Ross Island; but although the main land is not more than a quarter of a mile distant none have ever strayed thither, and though a pair are said to have been

seen about Aberdeen this would scarcely appear to be well authenticated. Davison lived there for about three weeks and he never either saw or heard them. On Ross Island they breed under the eaves of the houses and are very numerous.

686.—*Acridotheres fuscus*, Wagler (0.)

Beavan says that the dusky Myna, which was introduced by Colonel Tytler from Burmah had, when he visited the islands in 1865, largely increased, several being always visible on Ross Island. I was only once on Ross Island in daylight myself, so I cannot say anything on this subject, but Davison resided there for more than a month off and on, and he did not observe it, so it seems excessively doubtful whether it still survives, the more so that Captain Wimberley who collected in the neighbourhood for many months also apparently failed to procure a specimen.

683 *ter.*—*Temenuchus erythropygus*, Blyth.
(1.)

This species, which is very distinct from *T. andamanensis*, with which Blyth at one time identified it, is apparently very rare. Davison never once met with it during his lengthened sojourn at, and voyages from island to island of, the Nicobars. We only saw two specimens, and these at Car Nicobar, of which Mr. Ball shot one. This proved to be a male, and the following are the dimensions and other particulars recorded from the fresh bird. It will be seen that independent of its widely different plumage, it is perhaps a somewhat larger bird than *andamanensis*, which by the way occurs equally both at the Andamans and in the Nicobars :—

Length, 9.25; expanse, 14.25; wing, 4.4; tail, from vent, 3.25; tarsus, 1.0; bill, from gape, 1.2; bill, at front, 0.94; wings, when closed, reach to within 2.0 of end of tail.

The legs and feet are pale fleshy yellow; bill gamboge yellow, small blue at base; irides opalescent white. The entire head, including chin, throat and ear-coverts, the neck all round, breast, abdomen, sides, upper back, and wing lining, pure silky white; middle back and scapulars brownish or greyish white; rump and upper tail-coverts, vent and lower tail-coverts, two-thirds of the outer web and one-third of the inner web of the exterior tail feathers, and a gradually diminishing tipping to the rest of the tail feathers, (which tipping on the central pair is only about 0.1 in breadth), deep chesnut; the rest of the tail and the wings black, or blackish hair brown, strongly glossed with a dark metallic green lustre; edge

of the wing from the carpal joint to the base of the primaries white. Some of the longer axillaries, flanks and tibial plumes white, tinged with chesnut. There is a very faint greyish tinge on the cap, and traces of a *very* faint ill-defined brownish band running from the ear-coverts round the back of the neck which may be traces of immature plumage.

This is a very handsome bird, far more so than *andamanensis*, with which no one who had seen a really good series of this latter could ever confound it. Of *andamanensis* we must have shot nearly one hundred, and we preserved close upon fifty of the most perfect specimens, old and young, males and females, and have them killed in almost every month of the year, so that there really can be no question about the matter. I dwell upon this because the distinctness of *erythropygus*, the bird being so rare that no European ornithologist hardly has ever seen a specimen, is I believe by no means generally admitted.

**689 bis.—*Temenuchus andamanensis*, Tytler.
(47.)**

Of this species we measured a great many in the flesh; the following is a *resumé* of the dimensions. There is no difference in the size of the sexes :—

Length, 8 to 9·25; expanse, 12·5 to 13·25; wing, 4 to 4·25; tail, from vent, 3 to 3·5; tarsus, 1·0; bill from gape, 1·1 to 1·2; bill, at front, 0·72 to 0·93; the wings, when closed, reach to within 1·5 to 2 of end of tail; weight, about 2 ozs.

The legs and feet are usually pale yellow, rather a lemon yellow, but sometimes tinged fleshy; the claws are horny; the bill is greenish yellow; the upper mandible from the posterior margin of nostrils to gape, and the lower mandible from the gape nearly to the angle of gonys, smalt blue; the irides vary from opalescent white to very pale blue.

The entire lower parts, including the wing lining and axillaries, are pure white, except the flanks and lower tail-coverts which are more or less faintly tinged buffy; the head and back of the neck white; the head with a very faint greyish tinge; the back and scapulars pale grey or greyish white; the rump and upper tail-coverts similar but paler, and in many specimens with a faint fulvous tinge; wings black, or blackish hair brown, glossed with a very dark metallic bronzy green; tail similar. Four central tail feathers nar-

rowly tipped with brownish white, each of the succeeding pairs more and more broadly tipped, and nearly the terminal one-half of the external pair of this color. In some specimens the whole external webs of these outer laterals are white.

Davison remarks :—"This Myna is very abundant at the Andamans, less so at the Nicobars. At the Andamans it is usually seen in large flocks of about a hundred or more, feeding in the paddy flats, or on the hill sides; but it is also met with in pairs, or in small parties in the forest and secondary jungle; when a flock is disturbed in the open, they usually fly to some dry tree, or rock, or other bare object, and there all huddle together so close that a dozen or more may be killed at a shot; at the Nicobars where they are less numerous I have found them in pairs or in small parties, in the open country, in the forest, and in gardens. I should mention that at the Nicobars I have only met with them at the settlement of Camorta."

This bird is apparently a resident species, at any rate at the Andamans, from whence we have specimens killed in each month from December to September.

I cannot feel at all certain that this species is indigenous in the Nicobars. We never saw it anywhere except in the immediate neighbourhood of the settlement at Camorta, at which station I understand that some 20 were let loose many years ago having been brought down from Port Blair, where this species swarms. Even at Camorta it is far from plentiful, and it does not seem at present to extend to any of the closely adjacent islands of Nancowry, Katchall or Trinkut, all of which Davison very thoroughly worked or indeed even to the northernmost portion of Camorta itself.

689 *quint.*—*Temenuchus dauricus*, Pallas. (3.)

Besides the two species of this genus, already mentioned, a third and smaller one is certainly an occasional visitant to the Nicobars, if not the Andamans also. Of this third species one specimen, a male flew on board when we were at sea between Car Nicobar and the Little Andamans during a sharp squall. Mr. Davison met with a flock of 70 or 80 of this species on Camorta, and succeeded in securing two birds which were both females. All three specimens closely resemble each other, and so far as plumage goes do not bear traces of being immature. At the same time they correspond in so many, although not in all respects, with what I find recorded of *T. dauricus*, Pallas (= *malayensis*, Eyton, Blyth, J. A. S., XV., 35, *sturninus*, Pallas, *apud* Schrenck Vögel des Amur-landes, p. 329, fig. XI.

1,=*dominicanus*, Bodd=*striga* Raffles) which we know to be common, at Malacca, in Sumatra, Java, and the whole of Eastern Asia, that I cannot doubt that these specimens are really young birds of this species.*

From all the species with which I have been able to compare them, viz., *pagodarum*, Gmel., *malabaricus*, Gmel., *senex*, Temm., *andamanensis*, Tytler, *erythropygia*, Blyth, *burmannicus*, Jerdon, *nemoricolus*, Jerdon, and *sinensis*, Gmel., they differ, setting aside considerations of size and plumage, in the much greater proportional width of the basal portions of their bills. Besides these species already enumerated we can certainly say that these specimens are not referable to *Blythi*, Jerdon, *pyrrhogenys*, Müll., *ruficollis*, Wagler, *elegans*, Less., and should they prove not to be, as I at present presume, the young of *dauricus*, Pall. (which I do not know, and of which I have no sufficient particulars) they must belong to an undescribed species.

Of all the species with which I am acquainted, our present birds most nearly resemble *T. nemoricolus*, but the bill, legs, feet, and generally the whole bird are somewhat larger.

The irides are brown, legs and feet greenish horny, and the bill dusky, while the head is unicolorous with the back, which is considerably darker than in *nemoricolus*; the tail feathers have no pale tippings, there is no large whitish patch upon the greater wing coverts, and the scapulars are broadly edged with greyish white.

Supposing our birds to be indeed the young of *dauricus* (though as I repeat the character of the plumage would lead one to suppose that they were adults) the following are Mr. Blyth's remarks in regard to that species:—

"To the same genus *Sturnina* of Lesson, must be referred the *Pastor malayensis*, Eyton, P. Z. S., 1839, p. 103; but as an aberrant species with the bill short and approximating that of *Calornis*, more slender however than in that genus, and having the outline of its upper mandible less curved. Length about seven inches and a quarter, of wing four and one-eighth, and tail two and a quarter; bill to gape seven-eighths, and tarsi an inch. Head, neck, and under parts a silky subdued whitish or drab white; whiter on the belly and lower tail-coverts, and tinged with purplish on the crown and nape: an occipital spot, the interscapulars, proximate scapulars, shoulder of the wing and rump, black with a rich purple shine; outer scapulars and second range of wing-coverts subdued white; as also an elongated

* Since this was in type, Mr. Bowdler Sharpe, to whom I sent a specimen, has confirmed this identification.

central terminal spot on some of the greater wing-coverts, and more or less developed at the tips of the tertiaries; rest of the wing and the tail glossy green black, with some admixture of purple; the secondaries shaped at tip, and margined with deep black, as in *Sturnus vulgaris*; the outermost tail feathers having a whitish brown exterior web, and most of the upper tail-coverts are of the same dull, pale, brown color; bill dusky, whitish towards base of lower mandible, and the legs apparently plumbeous. What appear to be the females have a large triangular drab colored spot at the base of the secondaries, and the exterior half of the outer webs of the primaries are of the same hue, a trace of this appears also on the wings of some (presumed) males. The young are brown above, paler beneath, passing to whitish on the belly, and lower tail-coverts; the back and scapularies are darkest; there is a blackish occipital spot, in the place of the shining black spot of the adult; the wings are marked nearly as in the adult, but are much less bright; the secondaries brown with pale outer margins; and the bill pale with dusky on its terminal half; common at Malacca."

Raffles gives the following description of his "*Turdus striga*." "Seven inches in length, with rather a thick heavy body. Back, wings, and crown of head of a shining blue black, under parts, forehead, and neck, greyish white. Wing-coverts edged and tipped with white, bill short, nearly straight and scarcely notched. The colors of the female are much duller and the upper parts are brown."

Bonaparte defines *S. dauricus* thus:—"Minor: albo-cinereus dorso atro-violaceo: alis albo-variis: remigibus, rectricibus que aeneo-viridibus."

Schrenck figures the young of this species, and I am bound to say that his figure does not at all satisfactorily correspond with my birds. I subjoin dimensions, and a full description of my specimens:—

Male.—Length, 7·5; wing, 4·1; tail, 2·2; tarsus, 1·05; bill, at front, 0·6; bill, from gape, 0·95.

Female.—Length, 7·25 to 7·5; wing, 4; tail, 2·1 to 2·4; tarsus, 1·0; bill, at front, 0·6; bill, from gape, 0·9 to 0·95; weight, 1·75 to nearly 2 ozs.

In both sexes the legs were greenish horny; the bills dusky; the lower mandible whitish from the base to the arch of the gonys; irides brown.

Male.—A narrow, obscure, ill-defined frontal band extending to the upper margin of the eyes, dull yellowish white; chin very pale ferruginous; lores, cheeks, ear-coverts, throat, sides

of neck, breast, belly, and flanks greyish white, the grey almost obsolete along the centre of the abdomen; axillaries and wing lining pure white. Tibial plumes tinged buffy; lower tail coverts, a very pale cinnamon; whole top of the head grey, the feathers obscurely centred paler. A large, ill-defined, somewhat triangular, greyish brown patch on the nape, below which the base of the neck and the upper portion of the outer scapular region are grey like the crown, but some of the feathers with obscure brown striations; the whole of the rest of the back a rather dark earth brown; the rump and upper tail-coverts very pale buff, or buffy white; this color and the brown of the lower back not blended, but separating, on a well-defined line. Tail feathers dark hair brown, with a bronzy lustre, no pale tipplings, but the whole outer webs of the exterior lateral feathers, except just at the tips, synchronatic with lower tail-coverts; scapulars earth brown, broadly tipped with greyish or yellowish white, which is the only color visible until the feathers are lifted; wings hair brown; the median coverts tipped with yellowish white; the lesser coverts not so dark as the greater coverts, and these again not quite so dark, except those of the primaries, as the quills; the edge of the wing just above the base of the primaries yellowish white; the second to the fourth primary conspicuously margined on the outer web with pale ferruginous; the first three or four secondaries with the outer webs pale brownish white, for the basal one to two-thirds; tertiaries with more or less conspicuous yellowish white spots at the tips; quills and greater coverts generally with more or less of a bronzy lustre.

Females.—These are very similar, but have the chin, under tail-coverts and tibial plumes white; the head brown like the back; the upper portion of the interscapular region, pale whity brown instead of grey; the rump and upper tail-coverts, and the margins to the primaries, and the outer webs of the outer tail-coverts dingy brownish white.

690.—*Pastor roseus*, *Lin.* (O.)

Colonel Tytler says that "several of these birds arrive in flocks in January." We have been unable to verify this fact. Davison was specially on the look-out for them, but never saw them, nor do we know that any one has ever observed them except Colonel Tytler; but Colonel Tytler knew the bird well, so that we may accept the fact that in some years they do make their appearance in the islands. They can only however at present be classed as accidental visitants.

690 *quat.*—*Calornis Tytleri*, Hume. (66.)

IN STRAY FEATHERS for 1873, at p. 480, I fully explained my reasons for separating the insular race under the name above indicated, and on this head I need say no more here.

Davison remarks that:—"At the Nicobars this bird is very numerous; in fact I think that it is both one of the most generally distributed, and one that occurs in the greatest numbers there. It keeps much to the cocoanut palms, but is also found in the forest, and in the open country wherever this is dotted about with large trees; but I have never seen it descend to the ground, or to low shrubs. Just as in a flock of *Acridotheres fuscus* you will find several *T. pagodarum*, so I have frequently seen several of the present species mixed up with a party of *T. andamanensis*. It is a permanent resident at the Nicobars, breeding in holes in trees, and in the decayed stumps of old cocoanut palms, apparently from December to March. At the Andamans it is much less numerous and is only met with in pairs or in small parties, frequenting the same situations as it does at the Nicobars. My impression is that at the Andamans it is only a seasonal visitant; it is a bird that I think it scarcely possible to overlook, and yet I only met with it for the first time at the Andamans after my return in April to Port Blair from the Nicobars; previous to going to the Nicobars I had spent nearly a month at Port Blair, and its vicinity, keeping a good look-out for new birds the whole while, and yet I never chanced to see it; but on my return to Port Blair I noticed it at once, and secured several specimens. It is rather a noisy bird, and is continually, both on the wing, and when seated, uttering its peculiar single note, which very much resembles that of *C. insidiator* (which I shot at Acheen, North Sumatra), but somewhat harsher, and perhaps a trifle louder."

I cannot say that I concur with Mr. Davison as to this species not being a permanent resident of the Andamans; at any rate we have specimens killed there in every month from December to August. We found it very common about Macpherson's Straits, and also noticed several specimens on the Cocos. Of course, it is much more numerous at the Nicobars than at the Andamans, but at the former it is, I think, even more common than *Acridotheres tristis* is on the mainland of India. Alike in flight, in its manner of congregating, and in the positions in which it sits, this species reminds one instantly of the common starling, although it is very seldom seen as these latter so often are, feeding on the ground. I think that "Tree-stare"

would be the most appropriate trivial name for the species' of this genus.

693.—*Eulabes javanensis*, Osbeck. (40.)

After having very carefully examined a large series of Andaman and Nicobar birds I compared them with equally large series from Malacca, Thyet Myo, Tipperah, the Darjeeling and Kumaon Terrais, Sumbulpore, Raipore, and the Tributary Mehals. I confess that I am unable to see where the line is to be drawn between *javanensis*, *andamanensis*, and *intermedia*.

Of all the Indian races of this species with which I am acquainted, that from the Tributary Mehals has the smallest bill, and is the one nearest approaching in size to *religiosa*.

Dr. Jerdon remarks that:—"The bill myna of Southern India (*religiosa*) occurs in the thick forests of the Northern Circars as far as Goomsoor, extending west into the wooded portion of the Nagpore territories." As a matter of fact, however, the species which occurs immediately north and north-west of Goomsoor in the valley of the Mahanuddy and the forests of the Tributary Mehals and the Sumbulpore District is much more closely allied to *intermedia* than to *religiosa*; in fact it is *intermedia* with a very small bill, and with the lappets as in this species, and not with a bare streak on either side of the middle of the occiput running up to the crown so as to divide the whole occipital feathers into three narrow tongues, as in *religiosa*.

If we compare the Sumbulpore birds with specimens from Malacca, the latter have such very much larger and more massive bills that did no intermediate links occur, I would at once accept the two races as distinct species; but the fact is that every possible gradation of size of bill and bird appears to occur. Kumaon and Sikim birds have very much larger bills than the Sumbulpore specimens, birds from Tipperah are larger still, in fact one specimen from Tipperah is not distinguishable from Malaccan birds; Thyet Myo birds again are about the same size as those from Sikim. The Andaman birds have bills quite as long or longer even than the Malaccan ones, but as a rule they are not so deep. But then again they vary much *inter se*, and out of twenty-four specimens whose bills I have carefully gauged, I find one or two with bills within one hundredth of an inch as deep as those of several of the Malaccan birds. Under any circumstances the Andaman bird is, it seems to me more nearly, akin to the Malaccan *javanensis* than to the typical *intermedia*; but as with really large series, such as I have of these birds, I find it impossible to draw any definite line between the three

ances, I am constrained to unite them all under Osbeck's name, which is, I believe, the oldest. *Ptilogenys* and *religiosa* are of course clearly distinct, having differences in the feathering of the head, which prevents their ever being confounded.

On this subject, however, I think it only right to introduce here a note which my late friend Colonel Tytler gave me.

He says, writing of the Andaman bird :—"This species is very numerous in all the high forests of the Andamans, where their call is certain of attracting the notice and attention of the most unobservant. I have seen as many as twenty together, each one, if possible, calling louder than its neighbour. Although they confine themselves to the highest branches of lofty trees still on their being disturbed they are so inquisitive that several fly down to the lower branches, and with their heads placed on one side, closely observe all that the intruder does. Their principal food consists of wild fruits, young leaves, caterpillars, &c., and nectar in flowers. I have had several in captivity, and they live remarkably well, for they are strong, very hardy and exquisite imitators of sound, repeating words almost as clearly as the human voice can do.

The Andaman bird differs from *Eulabes javanensis* in having the bill more slender, and the ear lappets not so long, and in being a rather smaller bird, otherwise it bears a strong resemblance to it; it differs from *E. intermedia*, which latter equals it in size and is similar in colour, in having a much longer and slenderer bill, and considerably longer ear lappets. Again, the Andaman *Eulabes* differs from *E. religiosa* of Southern India, in being considerably larger than the latter though it bears a strong resemblance to it, particularly in the lengthened appearance of the bill; in fact *E. religiosa* is in appearance a miniature of *E. andamanensis*, except in the wattles which are proportionally longer and looser in *religiosa*, and are divided at the base by a black stripe beginning over the eye. This extraordinary resemblance is not confined to form and color, but also exists in its tone of voice and call. All the above species of *Eulabes* are perfectly distinct and well distinguished from the Ceylon *E. ptilogenys* which has the base of its mandibles bluish, and wants the nude skin under the eyes which is so strongly marked in all the other species. The ear lappets also of the Ceylon bird are less defined, and then in size the bird itself equals *E. intermedia* of India, and is larger than *E. religiosa* of Southern India."

To this I must add that so far as the ear lappets go, I have specimens from the Andamans with lappets as long as those of

any specimens that I have, or have seen from Malacca, while as to size again it does not appear to me that there is much to choose. The following is a *resumé* of the dimensions of twenty-two specimens measured in the flesh. I note that the two sexes do not appear to differ in size :—

Length, 11·5 to 13·5 ; expanse, 19·5 to 23 ; wing, 6 to 7·25 ; tail, from vent, 3·1 to 4 ; tarsus, 1·12 to 1·55 ; bill, from gape, 1·6 to 1·7 ; weight, from 7 to 11 ozs. ; wings, when closed, reach to within from 1·0 to 2·0 of end of tail. Length of lappets from occiput from 0·6 to 0·8 ; width of lappets from 0·5 to 0·55.

The legs and feet are yellow varying from pale to dull chrome yellow ; the bills vary from pale orange to coral red, but are always pale yellow at the tip ; the lappets vary from gamboge yellow to light orange ; the irides are deep brown.

Davison remarks :—"I found this bird exceedingly common both at the Andamans and Nicobars. It keeps to the trees never descending to the ground that I have observed ; it is usually in pairs, sometimes in small parties ; but in their feeding ground they congregate in large numbers, dispersing in twos and threes when they have satisfied their hunger. In a small piece of clearing, a short distance from Mount Harriet, a large number of Papeeta trees (*Carica papaya*) were full of fruit when I visited it, and there I must have seen at the very lowest computation a hundred of these birds feeding on the fruit, to which they are particularly partial, and on which they are usually fed when in captivity.

"They are largely caught by the ticket-of-leave men at Port Blair, and thirty to forty I am told are carried to Calcutta every month, and there fetch from Rs. 3 to 5 a piece ; the price at Port Blair varies from 4 to 8 annas each. They easily accustom themselves to captivity, and learn to speak in a wonderful manner imitating to perfection voices and sounds that they often hear.

"They breed in April and May, building a nest of grass, dried leaves, &c., in holes of trees. Their usual notes are so varied that it is impossible to describe them ; when hopping about the branches of a tree they continually utter a hoarse croak, varied occasionally by a regular metallic shriek that goes through one, and of which a very good conception may be formed by drawing a hard pointed substance down a window pane, or turning the stopper of a glass stoppered bottle quickly round in the neck, and then imagining the sound produced to be multiplied twenty fold."

701.—*Munia striata*, *Lin.* (28.)

Although I do not separate specifically the Andaman and Nicobar Munias, it is yet necessary to explain that not only do these differ somewhat from the Southern and Central Indian birds, but also *inter se*. The Andaman bird averages slightly smaller than the Indian *striata*, and it entirely wants those pale shafts to the feathers of the whole interscapular region and rump which characterize the Indian birds: moreover the upper tail coverts in the Andaman bird are all rather conspicuously margined with a somewhat rufous brown.

The dimensions of the Andaman bird are as follow:—Length, 4.25 to 4.75; expanse, 6 to 6.25; wing, 1.82 to 2; tail, 1.62 to 1.75; tarsus, 0.5 to 0.55.

The irides are reddish brown; the upper mandible black, and the lower leaden blue; the legs and feet plumbeous green or greenish horny.

The Nicobar bird is somewhat smaller still, but has a proportionally longer tail, it differs from the Andaman bird in having faint trace of striae on the back, and in having the whole of the feathers of the breast paler colored, and conspicuously though narrowly margined with pale rufous brown, much as is the case in *acuticaula*.

The dimensions of this bird. Length, 4.25 to 4.5; expanse, 6 to 6.12; wing, 1.82; tail, 1.75 to 1.9; tarsus, 0.5. The irides are brown, bill and legs much as in the other, but the lower mandible a brighter blue.

Of the former we preserved ten (and later received fourteen), of the latter only four specimens; should the differences I have indicated, which hold good for all my specimens, prove universally constant, the Andaman bird may stand as *nonstriata*, and the Nicobar one as *semistriata*.

Mr. Davison remarks:—"These little birds occur in large flocks about the paddy flats, and I have also seen them in the secondary jungle. I have found them most numerous in a clearing called bamboo flat below Mount Harriet. They must breed very early, or I should say late, for when I arrived at the Andamans in December the young had left the nests; several old nests that I found were large globular structures made of grass, with the entrance placed at one side and drawn out into a short neck, in fact very similar to the nest of *E. amandava*. At the Nicobars they are found about the cotton fields and gardens, but usually only in small flocks, though I have also seen them in pairs and in small parties of three or four."

704.—*Estrilda amandava*, Lin. (0.)

This was introduced by Colonel Tytler, but has entirely disappeared.

723.—*Euspiza aureola*, Pallas. (1.)

A single specimen, a female, of this species was procured in the Nicobars by Mr. Davison, who remarks:—"I saw a small party of about twenty of these birds sitting on some cotton bushes in Camorta. They had apparently only just arrived in the cotton fields as I had passed through them on the two previous days and had not seen them; in my haste to secure a specimen I unfortunately fired a charge of large shot, and nearly blew, the only specimen I killed, to pieces, I however preserved it, as it was new to the islands; on firing the shot, the birds all rose and flew away in a north-easterly direction, and although I hunted for them for several days I did not again come across them; the stomach of the one I killed was quite empty."

777 bis.—*Osmotreron chloroptera*, Blyth. (54.)

We procured a very large number of this species both at the Andamans and Nicobars. In size, and in every detail of coloring but one, the Andaman and Nicobar birds are precisely identical. One sole distinction appears to hold good invariably, and that is that there is less yellow on the outer margins of the secondaries (and generally, though not invariably, on those of their greater coverts) in the Nicobar birds than in those from the Andamans; this difference is certainly not sufficient to separate the two races specifically.

In this species the bill is very large and coarse, much larger than in any other of the following species with which I am acquainted:—viz., *malabarica*, *Phayrei pompadora*, *viridis*, *bicincta*; in fact the bill is considerably larger than in *Toria nipalensis*, and longer than in *Toria nasica*, though not quite so deep as in that species, but there is no nude space round the eye. This species belongs to the same sub-division as *malabarica*, has the whole top and back of the head grey, and the male with the mantle maroon, and no orange patch on the breast.

The following is a *resumé* of the dimensions and other particulars recorded in the flesh from numerous specimens. I may add that though some males appear to be bigger than any females, there seems no constant difference in size between the

sexes, as some females are larger than *many*, though not larger than all the males :—

Length, 11·5 to 13·5; expanse, 20 to 22; wing, 6·5 to 7·12; tail, from vent, 3·5 to 4·4; tarsus, 0·82 to 1·0; bill, from gape, 1·0 to 1·15; bill, at front, 0·74 to 0·85; weight, 7 to 10 ozs.

The legs and feet are purplish pink; the claws plumbeous, tinged pinky; the bill is pale leaden blue, almost white at tip, darker and tinged greenish quite at the base; the irides have three rings. The first pale, the second darker blue, and the third pinkish buff; the lores, a line over the eye, the ear-coverts, cheeks, chin, throat, neck all round, upper back, breast and upper abdomen, a dull, slightly yellowish green, yellower on the throat, greyer on the back; the forehead, crown and occiput, very delicate French grey, slightly purer and paler as a rule on the forehead, but occasionally tinged greenish there. Middle of back, scapulars, tertiary coverts, and some of the lesser coverts of the hinder secondaries, maroon. The rest of the lesser coverts, (except just at the carpal joint where they are dark grey, tinged greenish) darker green. Quills and secondary and primary greater and median coverts, greyish black. Primaries conspicuously though narrowly margined on their outer webs with white or in some specimens pale yellow; secondaries, and their greater and median coverts, with bright yellow; the hinder ones of each very broadly so margined. In the Nicobar birds the margins to the earlier secondaries are narrower than in those from the Andamans, and they are often white, or pale yellow instead of the bright yellow of the Andaman birds. The lower back, rump, and upper tail coverts bright yellowish green; central tail feathers entirely suffused on both webs with this color. The rest of the tail feathers, with broad French grey tipplings, below these black, but more or less suffused along the tips and at the margins, and on the whole outer webs towards their bases, with the same color as the central tail feathers. The vent, flanks, and lower tail coverts mingled dull green and pale yellow, the basal portion of the feathers being of the former color, and the tips and often the margins of the latter color. The whole under-surface of the wings, the axillaries, and part of the sides, vary from dark slatey grey to moderately dark French grey. On the lower surface of the tail all the feathers are blackish for the basal two-thirds and greyish white on the terminal one-third. In fine well plumaged specimens the lower tail coverts reach to within about 0·8 of the end of the tail. The second quill is the longest, the third nearly equal,

the first and slightly longer than the fourth; the second to the fourth quills are very conspicuously emarginate on the outer web, and there is generally a trace of this on the fifth and sixth.

The females are precisely similar to the males, except that they have the maroon everywhere replaced by the same dark green above described as characterizing most of the primary and secondary lesser coverts in the male.

Davison remarks:—"This Hurrial is exceedingly abundant both at the Andamans and Nicobars, more so at the former than at the latter place. It is always in flocks, keeping generally to the larger forest trees during the heat of the day, but coming into gardens and clearings, or wherever there may be trees with fruits, in the morning and evening. Its fine clear whistling note (very like, but more powerful than, that of *O. malabarica*) is one of those most frequently heard in the jungles about Port Blair. A few days before leaving Port Blair for Calcutta, I noticed one of these pigeons with a twig in its bill fly into the top of a tall slender tree standing just on the outskirts of the forest: this was in May, so it is probable that these birds breed during that and the following month."

780.—*Carpophaga ænea*, Lin. (25.)

I follow Lord Walden in adopting this name for the Indian and Andaman birds. He says:—"I have shown that Indian, Ceylon, Burmese, Javan, Bornean, and even Philippine individuals cannot well be specially separated." I have had no opportunity of comparing Javan, Bornean, and Philippine specimens, but as regards specimens from Ceylon, Burmah, and many localities in India, I am disposed to agree. No doubt if one compared a Ceylon bird (*pusilla*, Blyth,) with a Nepalese one, the difference in size is very great; as to the difference in the color, this appears to be individual; of two birds from the same locality killed at the same time, one will be bright green, with only a faint bronzy gloss, the other will be a red coppery bird with only a tinge of green. I have two such birds now before me, both killed in the same place in January in the Arakan Hills.

As regards size this increases slowly, from south to north, in India. In Ceylon birds the wing averages about 8 inches; in Anjango birds about 8.25; Calicut and Nilghiri birds 8.5 to 8.75; in Dacca and Tipperah and Arakan birds it is about 9; Nepal and other Himalayan birds seem to run a little larger still. The Andaman birds are fully as large as the largest continental Indian specimens, and taking a very large series, the fully adult birds have the frontal band and chin purer white, and the

lower tail coverts a deeper maroon chesnut than in any continental Indian birds I have yet seen, and out of 25 specimens from the Andamans not one has such a brilliantly red copper gloss as some continental examples exhibit, but these differences are quite insufficient to separate our bird, and I could pick out many Andaman specimens absolutely identical with continental Indian ones. All that can be said is that as a race it is of the largest size, greener, with deeper colored under-tail coverts and whiter forehead and throat than any continental race taken as a whole. These remarks apply only to the Andaman bird, that from the Nicobars must, I believe, be specifically separated.

The following are the dimensions and other particulars recorded from the fresh birds. Here also there is no constant difference in the size of the sexes, all that can be said is that here and there a male is met with larger than any female :—

Length, 15·5 to 17·5; expanse, 26·25 to 28·5; wing, 8·5 to 9·5; tail, from vent, 5·75 to 7; tarsus, 1·1 to 1·25; bill, from gape, 1·4 to 1·5; bill, at front, 0·9 to 1·0; weight, 12 ozs. to 1 lb. 4 ozs.

The legs and feet are purplish pink; the bill dull pinkish blue; nail whitish; the irides vary from dull brownish red to deep crimson lake.

Davison remarks :—"The Imperial pigeon was very abundant at the Andamans when I first arrived there in December, but they had become much less numerous by April following; this was no doubt owing to the growing scarcity of wild fruits which abound in the forests about December and January. In habits they are precisely similar to the Indian bird, being found singly, in pairs, or small flocks, keeping entirely to the larger forest trees and living exclusively on fruit, especially on the mace of the wild nutmeg, for although they swallow the nutmeg and as well as the mace, it is only this latter that is digested, the former being voided."

In Southern India this is so well known, and the good taste of the birds who always select the ripest and finest fruit so thoroughly relied upon, that people are sent round specially to collect the nutmegs thus discarded by these pigeons, as these are the best nutmegs and can most be relied on for seed. In the same way coffee berries passed by jackalls and monkeys are collected for seeds, and used in preference to those gathered in the ordinary way, the theory being that birds and animals only eat the perfectly ripe fruit when they have a large choice, and that the seeds of these germinate more freely than the more or less unripe ones of which the coolies are certain to

gather so many, and I believe that this theory stands the test of practice better than most similar ones.

A nestling obtained on the 10th July (for the birds breed in the islands, and are probably permanent residents there) was similar to the adults, and just as brightly glossed on the back, wings, and tail, but was of course very much smaller, wanted the vinaceous tinge below, and still had quantities of pale rufous thread-like down attached to the tips of the feathers.

780 *ter.*—*Carpophaga insularis*, *Blyth*. (60.)

The Nicobar Imperial pigeon must necessarily, it seems to me, stand as a distinct species under Blyth's name. It is in the first place a much larger bird; in the second place the green of its upper plumage is altogether darker and bluer than in any of our huge series of the preceding species from the Andamans, Ceylon, Burmah, and very numerous localities on the continent of India; in the third place its under tail coverts are always a dingy brown, tinged no doubt in places with chesnut, but totally unlike any color ever seen in adults of the preceding species.

It must not be supposed that I assert these differences on the strength of insufficient data; we preserved and brought home with us no less than sixty specimens obtained on the following islands:—Camorta, Nancowry, Katchall, Trinkut, Bompoka, Teressa, Tillangchong, Treis, Track, and Pilu Milu, and we also shot them, though we did not preserve them, on Chowra, Meroe, Batty Malve, and Kondul, and in every one of the hundred odd specimens that we examined these characteristics held good.

The following is a *resumé* of the dimensions of no less than thirty-five specimens measured in the flesh:—

Length, 17·5 to 19·5; expanse, 29·62 to 32·5; wing, 9 to 10·25; tail, from vent, 6 to 7; tarsus, 1·1 to 1·25; bill, from gape, 1·5 to 1·8; bill, at front, 1 to 1·27; weight, 1lb. to 1lb. 12 ozs.; closed wings reach to within from 2·12 to 3·75 of end of tail; the legs and feet are dull deep pink, pinkish red, or livid purple; the bill is pale plumbeous, paler at tip and darker on cere and base; the irides vary a good deal, sometimes they are pale ruby red, sometimes clear, and sometimes dull lake red; the eyelids are pale lavender.

No separate detailed description of the plumage seems necessary. With the exception of the points already noticed, this species is precisely similar to that of our Indian imperial pigeon, *sylvatica*, Tickell, or, if Lord Walden is correct, *aneas*, Lin.

Davison remarks :—"The Nicobar Imperial pigeon is very numerous all over the Nicobars, much more so than its congener is at the Andamans. In habits it is much the same, being found singly, in pairs, or small parties; its deep low coo may be heard resounding through the forest all day. They breed in February and March; on the 17th February I found a nest on the island of Trinkut; it was built in a cocoanut palm, and was about twenty feet from the ground; as usual with pigeons and doves it was simply a platform of dry twigs very loosely put together, and was built on a dried-up fruit branch, which is itself merely a mass of dry twigs; it contained one large white egg. It is my belief that the normal number of eggs laid by this pigeon is only one; this is certainly the case with *Calenas nicobarica*, for I must have examined at least a couple of dozen nests, and in no single case was there more than one egg or one young one, and I have found that one egg was the usual number laid by *Palumbus Elphinstonii*, and I was informed by several convicts that they usually obtain only one young one from the nests of the present species, and from those of *C. bicolor*."

The egg measures 1.9 in length by 1.39 in breadth.

780 quat.—*Carpophaga palumboides*, Hume.
(2.)

This species was fully described, STRAY FEATHERS, 1873, p. 302.

Lord Walden remarks :—"Classed by Mr. Hume as a *Carpophaga*, but clearly belongs to the *columbidæ*, it has twelve rectrices," and Lord Walden accordingly places it under *Ianthanas*, Reichenbach, the type of which is *Columba ianthæna* of Temminck, Pl. Col. 503. Now in the first place it seems to me undesirable to unite this present species with *ianthæna* and *metallica*, which belong, it seems to me, to a totally different sub-group of pigeons. The present species is a regular *Carpophaga* in habits, mode of feeding and the like, and whatever its tail may be cannot possibly, I should have thought, be included in the same minimum sub-division as *ianthæna* and *metallica*.

But now as regards the tail, which Lord Walden says has only twelve rectrices, I rather fear that Lord Walden's tale (or if you like it better tail) was incomplete; my specimen undoubtedly had only twelve tail feathers, but then the first on the one side, and the third on the other appear to me to be wanting, and I presumed and do so still that the tail *when perfect* will prove to have fourteen feathers. We were unfortunate, we got only

one specimen in the Andamans, and one rag of a thing in Chowra, which has only eleven tail feathers; both outside ones wanting and one of the others; but Lieutenant Ramsay was more fortunate, he got six I believe one day from a soldier, and Lord Walden will, therefore, soon have an opportunity of ascertaining certainly whether this bird has twelve or fourteen rectrices; but in either case it is much more nearly affined to *Carpophaga* than *Ianthanas*, and any one may make a new genus of it who likes.

Davison writes:—"I was very unfortunate in securing specimens of this pigeon; I shot the type specimen at Port Mouat just before starting to the Nicobars, and although during my absence at these, Lieutenant Wardlaw Ramsay secured several, not one was to be found on my return to Port Blair. I got one specimen at the Nicobars; it was shot on Chowra Island by General Stewart, who very kindly gave me the specimen. I know nothing special of the habits of this fine species, which seemed to me in every respect an Imperial pigeon. I found the one I shot at Port Mouat sitting on a low branch by the side of a forest path; it was not at all shy, and allowed me to get close enough to shoot it with the walking stick gun; it had swallowed several fruit about the size of a walnut, two of them with stalks, about two inches long, and as thick as a goose quill, attached."

There were numerous small parties of this bird in Macpherson's Straits, which repeatedly passed over us, flying from the tops of the trees on the hill slopes on one side to similar positions on the other, and of course well out of shot. One party settled high up on Bird Island, a tiny precipitous wooded islet, and though we could hear their loud deep coo, and from the waters edge, watch them feeding, scuffling, and making love on the branches of the highest central trees, we could see nothing of them, when with infinite trouble we worked a way up to near the base of these trees, though we could still hear them.

I have no doubt that this species is a permanent resident of the Andamans and Nicobars, moving as "*bicolor*" does from island to island, as the different fruits and berries which constitute the sole food of these large pigeons, ripen.

781 *quat.*—*Carpophaga bicolor*, Scop. (41.)

This bird breeds commonly in the Nicobars where we shot many nestlings though no eggs were obtained. To the Andamans and the Great Cocos, Barren Island, and Narcondam, it is a seasonal visitant. There were none at the Great Cocos when

we were there in March; but the Lighthouse-keeper told us that in Table Island he had often shot dozens, and a month later when Davison visited the Cocos he found them abundant. At Narcondam they were very numerous, and in the jungle clad sea-face of the exterior crater of Barren Island we saw a good many.

The following are the dimensions of this species recorded in the flesh; there is no difference in the size of the sexes, or indeed in the plumage, except that some of the males are more strongly tinged with yellow than any of the females:—

Length, 16 to 17; expanse, 27·5 to 30; wing, 8·82 to 9·5; tail, from vent, 5·12 to 5·5; tarsus, 1·10 to 1·3; bill, from gape, 1·4 to 1·5; bill, at front, 0·9 to 1·05; wings, when closed, reach to within from 1·5 to 1·75 of end of tail; weight, from 12 ozs. to 1 lb.

Legs and feet pale smalt blue, (what *does* Bonaparte mean by "*pedibus nigricantibus*"?) The bill is leaden blue; the tip darkish horny or dark plumbeous; irides dark brown.

The winglet, primaries, and secondaries, the terminal one-half of the central tail feathers, and a smaller portion of each succeeding pair, black. The terminal three-fourths of the outer web of the external pair of all also mostly black, only a certain portion of this web next the shaft being white, the white portion increasing in breadth towards the comparatively narrow black tipping, which in this feather is only about half an inch deep, against an inch and a half in the next pair, and two and a half in the central pair. The anti-penultimate pair have a narrow black margin for about three quarters of an inch to the white portion of the outer web immediately below the black tip; on the inner web of the outer tail feathers, the black tipping is very slanting, running from half to one inch further down on the inner margin of the inner web, than at the shaft. The whole of the rest of the bird everywhere is white, with a delicate yellow creamy tinge, very strongly marked in the fresh bird, but fading much in the dried skin; this tint is always strongest on the head and there it fades least, so that in the dry skin the contrast between the buffy yellow head, and the almost white back is much stronger than in life; next to the head the tint is strongest about the vent, lower tail coverts and the base of the primaries, and on these latter also it fades comparatively little.

Davison says:—"This handsome pigeon, though occurring in some localities in almost incredible numbers, is not nearly so generally distributed throughout the islands as *C. insularis*, I did

not notice it at Katchall, Bompoka, Teressa, the Great or Little Nicobars, or Pilu Milu, though it probably does occur on these islands but only in very limited numbers: on Katchall the natives were quite unacquainted with the bird, and had no distinctive name for it, as the natives of Nancowry, Camorta, &c., had. On Camorta, Nancowry, and Trinkut, I found that this pigeon, though occasionally found some little distance in the forest, kept in general to the mangrove swamps, but on Kondul, Chowry, Treis, and Track, there is little or no mangrove, and consequently the birds were found equally all over the island; the two latter islands were simply alive with them.

"Although I did not obtain the nest or eggs of this bird myself, from all I could ascertain from the convicts, &c., these birds breed in January, February, and March, building their nests, which like those of other pigeons are merely platforms of sticks, by preference in the mangroves, and laying usually only one white egg. I observed it on the Great Cocos, but did not meet with it at the Andamans."

In the young bird all the feathers of the upper surface are broadly tipped with pale buff, and the under-surface is a good deal tinged and mottled with this same color.

It is probable that another large fruit pigeon visits the Nicobars. Mounking, a very intelligent Burmese, who has resided for eighteen years at the Nicobars, told us that the Nicobarese at certain times catch and bring him a large whitish pigeon something like *bicolor*, but greyer and with a large red-naked space round the eye. It is to be hoped that we may yet obtain a specimen and ascertain the species. I think Mounking's testimony reliable, as he described correctly enough all the species that the Nicobarese habitually catch and cage, and which, with the exception of this one species, were all known to us.

791 *bis*.—*Macropygia rufipennis*, Blyth. (37.)

Specimens of Blyth's Cuckoo-dove from various parts of the Nicobars and Andamans are identical, but the birds themselves vary *inter se* to an incredible extent. There are two strongly marked types; in one the bird has the whole of the upper part of the head a rich uniform chesnut, the lower parts paler chesnut, paling on the abdomen to a dingy, yellowish, slightly rufescent, brown, the whole breast and abdomen with narrow transverse, dark brown lines; in the other the head is the same color as before, but is regularly longitudinally streaked with blackish brown, and the whole lower surface is a rich, uniform chesnut, without any

cross barrings. This difference, as our large series from both groups of islands show, is not dependent on either sex, locality or season. It must be dependent on age, but all the birds seem perfect adults, and though I fully believe that the uniform, unbarred, lower surface is characteristic of the adult, I cannot be perfectly positive of this. The sexes do not appear to differ in any way either in size or plumage.

The following are the dimensions and other particulars recorded from a series of twenty-five specimens, measured in the flesh :—

Length, 15 to 16·5; expanse, 21 to 23; wing, 7 to 7·75; tail, from vent, 7·5 to 8·5; tarsus, 0·75 to 0·9; bill, from gape, 0·9 to 1·05; bill at front, 0·63 to 0·73.

The legs and feet are dull pinkish to dull reddish brown; tarsi brighter in front but paler behind; bill, dull pinkish red to dull horny red, pinker towards the gape; irides light, but bright, blue, encircled with a ring of carmine; orbital skin leaden blue.

What I take to be the adult, has the whole lower parts including the wing lining and axillaries, the whole of the front, top, back and sides of the head, including cheeks and ear-coverts, and the sides of the neck, a rich deep chesnut. The whole of the forehead, crown, and occiput conspicuously streaked with blackish brown; these streaks being caused by rather lengthened spots of this color, on each margin of each feather, not far from the tips. The back of the neck and interscapular region, pale brown, tinged with rufous, most strongly so on the nape, and closely freckled with irregular spotty bars of dark brown; a certain number of the feathers, at the base of the neck behind, with more strongly marked, transverse, black tippings preceded by a narrow white bar. The coverts (except the greater primary ones) scapulars and tertials pale hair brown, every feather tipped with chesnut; the tippings much brightest and broadest (where indeed they are almost ferruginous) on the lesser and median coverts, and dullest and narrowest on the tertials and longest scapulars. The primaries and their greater coverts and the secondaries hair brown, strongly suffused, especially the two first, with ferruginous chesnut on the outer webs, and more feebly so at the tips, and almost the whole of the inner webs, except the tips of the first four or five primaries, and the extreme tips of the rest of the primaries and secondaries, a delicate pale chesnut. Middle back, nearly the same color as the scapulars, but more rufescent; rump, upper tail coverts and tail feathers, a warm chesnut brown, the exterior three or four feathers on either

side, with a dark brown slanting bar on the inner web, which varies very much in size and shape in different specimens, and in some birds extends on to the outer web also of the first two or three feathers. Seen from below, this spot has a bluish grey appearance, and the inner webs, below this spot, of the two or three exterior tail feathers on either side, are often a bright pale chesnut

In, what I take to be, the young, the top and back and sides of the head are as in the adult, but entirely want the black streaks, the chin and throat are a pale, ferruginous, the breast is a pale, somewhat yellowish chesnut, fading on the abdomen to a pale yellowish brown with a slight rufescent tinge, and the breast and the abdomen are pretty regularly barred with narrow transverse blackish brown lines, as are the sides of the neck also; on the abdomen, besides these tolerably well-defined bars, traces of intermediate irregularly freckled bars occur. On the back of the neck and interscapular region the freckled barring is much as in the supposed adult, but the well marked yellowish white bars preceding the black tippings of some of the feathers are wanting, though in some specimens pale freckly lines appear to indicate their future position. The rest of the bird appears to be as in the adult, but the covert tippings are less conspicuous.

Davison says:—"This dove is very abundant at the Andamans, but somewhat less so at the Nicobars; it frequents gardens, clearings, the secondary jungle, &c., retiring to the forest during the heat of the day. As far as I have observed, and I have examined a great many of these birds, I find that they live exclusively on the small Nepal, or bird's-eye chilli.

"This plant grows abundantly all over both Andamans and Nicobars, especially in the secondary jungle and on the edges of clearings. I was informed, when at the Andamans, that the flesh of this bird was quite pungent from feeding on these chillies, but I tried several, having had them cooked without even the usual adjuncts of pepper, or salt, and although the flesh had a somewhat peculiar, but not unpleasant flavour, I could not detect the slightest trace of this attributed pungency.

"The amount of the chillies consumed by these doves must be enormous. I have often shot them with their craws so distended that falling from a moderate height they have burst. I have never found the nest of this bird, nor could I obtain any authentic information as to its nidification beyond that it breeds about May, building among the mangroves on the island of Trinkut. I found a nest, and from the sight I got of the bird as

she left her nest, I put it down at once as that of the present species; but a few days afterwards I found a nest exactly similar, and containing exactly similar eggs, and of this nest I shot the female which proved to be *Chalcophaps indica*, so I infer that the first nest was also one of *C. indica*."

795 bis.—*Turtur tigrina*, Temm. (O.)

We never observed this species either on the Andamans, or Nicobars, but Blyth actually received a specimen of this species brought from the Nicobars by Capt. Lewis, and it does therefore, apparently, occasionally occur there.

797.—*Turtur humilis*, Temm. (1.)

One single specimen, a female, which I refer to this species, was obtained at Aberdeen. Though excessively closely related to our Indian *humilis*, I am by no means certain that the Andaman species will not prove distinct. The upper surface of the bird is altogether darker. The whole crown is a bluish grey, something like in the male of *humilis*. There is no blue grey at all about the wings, and the wing is slightly larger than in any Indian specimen I have compared it with. The bird was dissected and carefully sexed by Mr. Davison. It is impossible, however, to arrive at any conclusion from a single specimen.

Davison says:—"This little turtle dove is exceedingly rare at the Andamans, I did not see above half a dozen during the whole course of my stay, and no male that I remember, and I only obtained a single specimen, shot close to the shore near Aberdeen. I am unable to say, whether they are permanent residents, or merely seasonal visitants; if the former, where they breed, what localities they usually frequent, or anything about them; all I do know is that the few I occasionally saw were flying as if for dear life, across the mainland, and the craw of the one obtained contained only a few grass seeds. I did not observe this, or any other turtle dove at the Nicobars, nor could I learn that they ever occurred there."

And I may add that this latter means more than may be supposed, because the Nicobarese are very fond of catching and caging all kinds of pigeons, parrots, mynahs, and the like, and, some of them at any rate, can count over to you on their fingers every kind of bird they ever capture.

798.—*Chalcophaps indicus*, Lin. (35.)

This bird is common in many parts of the Nicobars and Andamans. I find myself quite unable to separate any of my

Nicobar specimens from the Andaman birds, or from Indian ones. Doubtless, as a body, *all* the insular specimens have the rump bands somewhat less strongly marked than is customary in continental Indian specimens. The white frontal band also is generally somewhat narrower, but I can discover no other difference. The birds are certainly not smaller, there is no difference in the color of the under parts whatsoever, nor in that of the lesser coverts, and though in one or two specimens the hind head is darker than is usual in Indian birds, I have a male from Anjango in which this is as dark as in any Nicobar bird. Either therefore *Augustæ* of Bonaparte (*vide* STRAY FEATHERS, 1873, p. 81) is not a good species; or, while meeting with plenty of *indicus*, we failed to come across it, though we visited every island of the group and several of them twice.

As regards the broad bluish grey stripe descending from the crown to the interscapular region, (*vide* *Ibis*, 1873, p. 315) this is present in many Andaman and Nicobar specimens. I do not think that its presence or absence has any reference to the breeding of the bird. One specimen killed in January has it very strongly, another not a trace of it. One specimen killed in February has it strongly, another has no trace of it: a March bird has it an April bird has not; and all this while the birds were breeding.

Davison says:—"Generally distributed in both Andamans and Nicobars, and exceedingly numerous in some localities at the former. Its habits are those of the Indian bird, feeding along shady paths, &c."

At the Nicobars Mr. Davison found this species breeding in the latter half of February, and the beginning of March. The nests were placed in small trees about 6 feet from the ground or laid on the frond of a young cocoanut palm at about the same elevation. The nests were built entirely of twigs, but rather more compactly than is usual with doves; they were mere circular platforms devoid of any lining, and contained each two eggs.

The eggs vary from broad to moderately elongated ovals, some are rather conspicuously pointed just at one end; the shell is fine and fairly glossy, the color varies from very slightly creamy white to white with a decided though very pale *café au lait* tinge. They are of course entirely free from all markings.

The eggs vary in size from 1.05 to 1.1 in length, and from 0.82 to 0.86 in breadth.

798 ter.—*Caloenas nicobarica*, Lin. (54.)

The real head-quarters of this magnificent pigeon are, I believe, situated on the uninhabited, and all but inaccessible, island of Batty Malve. Our party was certainly the first of Europeans who landed on this island; the natives too, according to the accounts of the Nicobarese, never visit the place, there being no fruiting pandanus, and very few cocoanuts, but still some one had at some time visited the island since the remains of a tiny hut, and the ashes of a fire were met with.

On this island the birds swarm by thousands, and in the early morning may be seen flying from the island in flocks out to sea, doubtless to other islands of the group to feed. When well up in the air their flight is swift and powerful, and they remind one much of sand grouse. We killed an enormous number on this one island, and including specimens shot on Katchall and Treis, &c., we actually preserved fifty-four.

The following is a *resumé* of the dimensions of this species. The sexes do not apparently differ in any way either in size or plumage, though perhaps the hackles of the females do average somewhat shorter:—

Length, 15·25 to 16·5; expanse, 30 to 32·5; wing, 9·8 to 10·6; tail, from vent, 3·1 to 3·82; tarsus, 1·55 to 1·85; bill, from gape, 1·4 to 1·6; bill, at front, adult 0·95 to 1·1; in the nestlings and quite young birds the frontal feathers do not advance nearly so far forward, and in these the bill varies from 1·2 to 1·4; closed wings reach exactly to the end of tail; in weight they vary from 1·25 to 1·75 lbs.

The legs and feet vary from pinkish lake to dull purplish lilac; the claws are chrome yellow; the soles, dull greyish yellow; bill, cere, and fleshy protuberance at the base of the culmen (which by the way appears to be less developed in the female than in the male), dark blackish grey or deep slatey; the irides are deep brown.

In the adult the entire tail and longer lower, and upper tail-coverts are pure white; the entire head and neck all round deep slatey grey, blackish slatey, or even blackish brown in some; from the base of the occiput, and the whole back of the neck, stream down a thick bunch of narrow hackles; those from the occiput more or less disintegrated and hair like, while those from the base of the nape are more regular feathers; the former entirely dark slatey grey, the latter metallic green, shot with gold and copper, and margined everywhere with this slatey grey. The whole of the rest of the upper plumage, excluding the tail and longer upper tail coverts, is refulgent with metallic

reflections not surpassed by the plumage of the minaul. (*Lophophorus Impeyanus*). The lesser coverts immediately along the ulna and at the carpal joint, the outer webs of the primaries, winglet, and greater coverts, the earlier secondaries and their greater coverts are glossed with a deep blue; the rest of the secondaries and their greater coverts, most of their median coverts, and the rump and shorter upper tail coverts brilliant green like the speculum of a drake's wing, but with more or less of golden and bronzy reflections in some lights; scapulars, interscapulary region, lesser and median coverts adjoining the scapulars similar but with a much stronger coppery glow. This fairly represents the general distribution of colors, but some birds are altogether greener and some are altogether more coppery, and the colors of the feathers vary in every light, and it is as difficult to convey in words any adequate description of the ever-changing tints of this bird as it would be to paint the sparkle of a diamond. The upper breast is the same color as the head, but even here if the feathers are lifted it will be seen that inside the broad slatey grey tippings there is a broad patch tinged with metallic green, and the lower breast, abdomen, sides, flanks, vent and a few of the shortest under tail-coverts are all variegated deep metallic green, and blackish slatey, the latter color being confined to a terminal fringe to each feather. The first two primaries almost entirely want the blue metallic gloss, and these, together with the inner webs of the primaries and secondaries, their entire lower surfaces and their longest lower coverts, are blackish brown. The rest of the wing lining and the axillaries are a brighter, or duller, metallic green, generally tinged bluer along the edge of the wing. In some specimens these parts are deep blackish slatey, only faintly tinged with metallic green and blue; in some specimens again the grey tippings to the breast and abdomen are wanting; the breast is deep metallic green; the feathers tipped purplish; the tibial plumes are a rich purplish blue; the abdomen, flanks and sides are a somewhat bright metallic green, with more or less of a golden glow at the tips and margins of the feathers. Almost all the scapulars, the feathers of the interscapulary region, and most of the lesser and median coverts, are split at the ends in a very curious manner, the shaft only reaching to within from an eighth to a quarter of an inch of the end of the feather.

In the young bird the protuberances at the base of the culmen, which in the adult males, when we obtained them, were fully as large as a pea, are entirely wanting; the frontal feathers do not advance nearly so far as in the old birds, there are no

hackles; the tail and all its upper tail coverts are bronzy green; the whole mantle and scapulars are duller, and at the same time much redder and more coppery than in any of the adults; the head, neck all round, and entire lower parts are brown; the tips of the feathers glossed with dull, dark metallic green; the whole of the rest of the plumage is duller everywhere than in the adults.

Davison gives the following interesting account of this fine species:—"I endeavored, during my sojourn among the Nicobar islands, to learn all I could about this beautiful bird, and from my observations, &c., I find that in its distribution through the islands it is somewhat local. I obtained it on Katchall and Batty Malve, and saw it on Treis Island, and I was informed by the natives that it occurred on Pilu Milu, Bompoka, and Teressa, and on the western sides of Nancowry and Camorta,* but at Trinkut, Kondul, the Great and the Little Nicobars I failed to see it; and the natives declared that they did not occur there. Soon after my arrival at the Andamans,† while going through the jungle at Aberdeen, South Andaman, I saw one of these birds, it rose off the ground and flew rather low. I watched it for some twenty or thirty yards, and then lost sight of it; I could not obtain a fair shot while it was flying amongst the trees, and did not like to risk the chance of missing it; but although I followed it up I was unable again to see it. I had not up to that time seen the bird in its wild state; but I had seen one in captivity, and knew it well from descriptions, and I at once recognised the bird as it rose as *Calanus*. I feel perfectly satisfied as to the identity of the bird, indeed its conspicuous white tail, large size, and heavy clumsy flight, were not to be mistaken. This was probably only a straggler, the underwood of the jungles on the Andamans is so very dense that it is, from what I have observed, unsuited to the habits of a bird that spends at least three-fourths of its existence on the ground.

On Katchall Island I first observed these birds "at home," if I may use the expression; I met with them in the vicinity of some caves situated in the forest about a mile from the shore, sometimes singly, at other times a pair together, and occasionally in small parties of from about half a dozen to a dozen. I went several times to Katchall especially to study the habits of these birds.

"I always found them on the ground; when disturbed they fly some distance almost always beyond range of shot, and

* We observed it on Tillanchong.

† It has been sent from the Cocos.

then perch, usually high up, but sometimes low down, invariably on the thicker horizontal branches, along which I have often seen them walk. On Batty Malve I had the best opportunity of observing them. I had wandered some distance away from the rest of our party, and got into a part of the jungle where the birds had not been disturbed; feeling very tired when forcing my way through the tangled underwood, I seated myself at the foot of a large tree; after remaining here for some little time, several of these birds flew down from the adjacent trees and settled on the ground within ten yards of me, they were soon joined by others, till there must have been at least thirty, old and young, all around me, I remained perfectly still (hardly daring to breathe) and watched them for some time.

"Their gait is quite pigeon-like, every now and then one would stop, and tossing the leaves aside, dig into the ground with its bill; they did not move in any regular manner, but walked hither and thither, and if two adults, or two young ones met, they generally made a peck or two at each other before separating. I did not observe them use their feet to scratch aside the leaves, like gallinaceous birds, nor did I see any of the adults run, they kept to a steady but sprightly walk the whole time. Occasionally a young one would rush up with outspread wings to one of its neighbours, and then stand with open mouth flapping its wings till it was either beaten off, or the other beat a retreat, but I did not see any of the young fed by their parents. They are very silent birds, and the only note I heard was a somewhat hoarse guttural kind of croak, not unlike that sometimes made by a domestic pigeon when taken in the hand.

"There is apparently no authentic information on record of the breeding of this species, and the surmises that I have seen in regard to this subject are quite inaccurate. For instance, in 'Cassell's Book of Birds' translated from the text of Dr. Brehm, I find under the head of *The hackled ground pigeon* (*Calenas nicobarica*) the following statement:—'We are without particulars respecting the incubation of this pigeon, except that like the partridge, it builds its nest upon the ground.' This of course is quite inaccurate. *Calenas nicobarica* builds a regular pigeon's nest and always on trees; on Batty Malve where we found this bird in thousands, almost every thick bushy tree contained several nests. I counted thirteen on one tree, and I must have examined a couple of dozen of these nests; we visited the island rather late, nearly all the occupied

nests contained young, and hundreds of young had left the nest, I only succeeded in finding two eggs, one partially incubated, the other ready to hatch off; the former of these unfortunately got broken on the island, the latter I succeeded in preserving by cutting a hole in one side, and then placing the egg in a small paper tray near an ants' nest. The nests were, as I have mentioned above, regular pigeons' nests, merely a platform of twigs, very closely and carelessly put together, and without lining of any kind, and in no single case contained more than one young one or one egg, so I think we may safely assert that the normal number of eggs laid by this bird is only one. Many of the nests I examined contained young ones only a day or two old, perfectly devoid of even down and with closed eyes, in fact exactly like the young of the domestic pigeon when first hatched; other nests contained young that flew from the nest on our climbing the tree. One nest I found was only about 10 feet, but the others ranged from twenty to thirty from the ground, and were always placed in thick bushy trees.

"On the other islands that we visited in which this bird occurs, I could learn nothing about whether they bred there or not, except on Katchall, where a native told me that they built on trees, but he could neither get me the eggs nor could he even give me a description of them, or of the number laid, probably it was merely a good guess of his that they built in trees, and that they do not really build on Katchall Island, but all resort to Batty Malve to breed. I certainly never met with any but adult birds on the other islands where they occur; but again on the other hand, while most of the birds were breeding on Batty Malve, some few others, at any rate, were to be found on Katchall, Treis, Track, &c.

"The stomachs of all those I shot on Katchall contained seeds very similar to a prune stone, more or less broken up, but on Batty Malve they seemed to have eaten a whitish seed about the size of the head of a blanket pin. The gizzard of this bird is very peculiar, being composed of two discs of cartilage hard as and of the same texture as bone, slightly convex on the inner surface, between which is a single pebble usually of white quartz a little larger than a fresh pea.

"I may here mention that the figure of this bird given in 'Cassell's Book of Birds,' Vol III, p. 168, is a capital one, and well represents the attitude of the bird when at rest, but it should have been sitting on a branch, instead of on the ground; too much of the tail is exposed, the bird naturally carries its wing lower, so that only a very little of the tail is exposed.

"Many of these birds are caught on the western coast of Nancowry and Camorta with horse hair nooses, placed on the ground in places they frequent, the bait used being wild fruit. They sell at Camorta for Rs. 3, or 6 shillings per pair, and a good many find their way to Calcutta. The Nicobarese call it Lo-ung, and it is known by this name to the Malays and many of the Burmese who trade at the islands."

The egg, which measures 1·84 by 1·27, is pure white and spotless; the shell, though compact, is *very* finely pitted all over, and it has scarcely a trace of gloss.

803.—*Pavo cristatus*, *Lin.*

Peafowl are very numerous on Ross, where their cries during the night, each time a gong is struck, are rather exasperating to visitors. Although numbers have been from time to time deported and turned loose on the mainland, they would not appear to have yet thriven there, as they have at Ross, where they were turned loose only about five years ago.

803 *sextus*.—*Megapodius nicobariensis*, *Blyth.* (15.)

Although we only obtained this species in the Nicobars we saw what were apparently mounds made by this species on Table Island off the Great Cocos, and the Lighthouse-keeper described to me brown hen like birds with large feet that he had shot on the island on several occasions, and which can scarcely have been anything but this species.

The following is a *résumé* of the dimensions of 15 specimens measured in the flesh. The birds vary a good deal in size but this is probably due to age, and certainly not to sex, as some of the largest and some of the smallest birds belonged to each sex:—

Length, 14·5 to 17; expanse, 28 to 32·5; wing, 8 to 9·5; tail, from vent, 2·75 to 3·5; tarsus, 2·6 to 2·75; bill, from gape, 1·2 to 1·3; bill, at front, 0·94 to 1·1; wings, when closed, reach to within from one inch, to quite, the end of tail; in weight they vary from 1 lb. 5 ozs. to 2 lbs. 2 ozs.

Legs and feet; front of tarsus dark horny, in some greenish horny; scutæ often irregularly marked with lighter horny; front of toes darker horny than tarsus, darkening still more towards claws; claws dark horny above, lighter horny beneath, and tipped light horny; soles pale carneous, sometimes pale yellow; tibio-tarsal articulation, back and sides of tarsi, dull brick or litharge red. Bill light greenish or yellowish horny, yellower along edge of mandibles; lores and whole orbital and aural region, and visible portions of the skin of the neck, showing through between the sparse feathers, varying from a

light, somewhat dull, cherry red to a bright brick red; irides light brown or hazel brown.

In, what I take to be, the old bird, the feathered portion of the forehead, and the central portion of the crown, is a rather pale olive brown; the sides of the crown from behind the eyes, the occiput and the sides of the head behind the ears, is a very pale French grey. The whole of the rest of the upper surface is a nearly uniform olive brown, with a rufescent tinge, strongest on the outer webs of the quills, the inner webs of which are darker and browner; the few feathers of the chin are whitish; the sparse feathers of the throat and sides of the neck pale French grey; the breast pale hair brown tinged with grey, more and more as it approaches the abdomen, which with the sides, and the rest of the lower parts, are a pale very grey brown, but browner and not so pale as the occipital band; the flank, feathers and lower tail-coverts are somewhat browner.

In the less mature adult the crown and rest of the top of the head is a rufous brown, the whole upper surface is somewhat more rufescent; there is only a faint trace of a narrow grey occipital band. On the lower parts, the chin and throat alone are greyish, and the whole of the rest of the lower surface is a rich rufescent brown, a sort of snuff color without the slightest trace of grey. We were inclined at one time to believe that this difference was sexual, because all the four females that we first shot had the grey lower surface, but amongst our numerous males we have both the above stages of plumage represented, together with several intermediate stages, and subsequently we obtained a female in the entirely brown plumage, with scarcely even a trace of a grey occipital band.

These birds are always dusty and dingy, and the feathers of the neck and throat are so sparse and tender that it seems impossible ever to make a really fine specimen.

The quite young bird, when rather less in size than a quail, is a uniform snuff brown all over, everywhere densely feathered, even about the throat and neck, and with the feathers of the forehead and the top and back of the head, much longer, *actually* and not merely *relatively*, than in the adult; no bare space in front of or round the eye, no tail developed, only a large bunch of fur like feathers, but the wings large, strong and well formed; the bill very short. One such bird measured 5.5 in length, had a wing of 4 inches; tarsus, 1.1; and bill at front, 0.3.

Davison states :—"This bird occurs on all the islands of the Nicobar group, and it appears to be most numerous on those islands where the soil is somewhat sandy, and consequently the undergrowth less dense, as on the Trinkut, Treis, &c. It is found singly, in pairs, and in small parties, and I was informed that one of the convicts employed in collecting cocoanuts on the island of Trinkut one morning saw about 30 together. I have a note that on the island of Bompoka I met with a party of about six, and this is the largest number I have seen together. Usually they go in pairs, and keep calling to each other in a loud sort of cackling note which might be syllabized by kük-ä-kük-kük, repeated several times very quickly.

"I have seen a great many mounds of this bird ; usually they are placed close to the shore, but on Bompoka and on Katchall I saw two mounds some distance inland in the forest ; they were composed of dried leaves, sticks, &c., mixed with earth, and were very small compared with others near the sea coast not being above three feet high and about twelve or fourteen feet in circumference ; those built near the coast are composed chiefly of sand, mixed with rubbish, and vary very much in size, but average about five feet high and thirty feet in circumference, but I met with one exceptionally large one on the island of Trinkut, which must have been at least eight feet high, and quite sixty feet in circumference. It was apparently a very old one, for from near its centre grew a tree about six inches in diameter, whose roots penetrated the mound in all directions to within a foot of its summit, some of them being nearly as thick as a man's wrist ; I had this mound dug away almost to the level of the surrounding land, but only got three eggs from it, one quite fresh, and two in which the chicks were somewhat developed.

"Off this mound I shot a megapod, which had evidently only just laid an egg ; I dissected it, and from a careful examination it would seem that the eggs are laid at long intervals apart, for the largest egg in the ovary was only about the size of a large pea, and the next in size about as big as a small pea. These mounds are also used by reptiles ; for out of one I dug, besides the megapod's eggs, about a dozen eggs of some large lizard.

"I made careful enquiries among the natives about these birds, and from them I learnt that they usually get four or five eggs from a mound, but sometimes they get as many as ten ; they all assert that only one pair of birds are concerned in the making of a mound, and that they only work at night. When newly

made the mounds (so I was informed) are small, but are gradually enlarged by the birds. The natives never dig a mound away, but they probe it with a stick, or with the end of their *daos*, and when they find a spot where the stick sinks in easily, they scoop out the sand with their hands, generally, though not always, filling in the holes again after they have abstracted the eggs. The Nicobarese and the Malay and Burmese traders take numbers of these eggs which they generally cook by placing them in hot ashes, but they also sometimes boil them quite hard, and they do not seem to be very particular whether the egg is fresh or contains a chicken in a more or less advanced stage of development. The Nicobarese, at any rate, appear to relish a boiled or roasted chicken out of the egg, quite as much as they do a fresh egg.

"The eggs are usually buried from three and a half to four feet deep, and how the young manage to extricate themselves from the superincumbent mass of soil and rubbish seems a mystery. I could not obtain any information from natives on this point, but most probably they are assisted by their parents; if not entirely freed by them, for these latter, so the natives affirm, are always to be found in the vicinity of the mounds where their eggs are deposited.

"We obtained about 70 of these eggs, sixty-two of which were preserved; these vary much both as regards color and size, and they undoubtedly darken very materially by being buried in the sand, for I have found that eggs containing chickens in a more or less advanced stage of development were dark colored, the depth of shade increasing as the eggs approached the hatching point; but it does not follow from this that all dark colored eggs will be found to be not fresh, for very often very dark colored eggs are laid. There are three types of eggs—a dull clayey pink, an earthy yellow, and an earthy brown of several shades.

"The surface soil of the mounds only is dry; at about a foot from the surface, the sand feels slightly damp and cold, but as the depth increases the sand gets damper, but at the same time increases in warmth."

I cannot myself agree with Davison about the coloring of the eggs. On the contrary the brightest pink egg we got was one which the bird had not even time to bury before she was surprised. Moreover the *shells* tell their own tale, almost all the small holes in pink eggs, most of the medium sized ones, in the buffy stone colored ones, and all the largest holes in the brownish ones.

I saw a considerable number of these mounds, chiefly at Galatea Bay, and there I examined some of them very minutely. These were situated just inside the dense jungle which commences at spring tide high-water mark. It appeared to me that the birds first collected a heap of leaves, cocoanuts, and other vegetable matter, and then scraped together sand which they threw over the heap, so as not only to fill up all interstices, but to cover everything over with about a foot of pure sand. I say sand but this term is calculated to mislead, because it does not contain much silex, but consists mainly of finely triturated coral and shells. After a certain period, whether yearly or not, I cannot of course say, the birds scrape away the covering sand-layer from about the upper three-fourths of the mound, cover the whole of it over again with vegetable matter, and then cover the whole in again with the sand. In the large mound, an old one, into which I carefully cut a narrow section from centre to margin, this arrangement was very perceptible; in it I thought I could trace, by the more or less wedge-shaped portions of pure sand along the base, the remnants of successive outer coverings of sand, the basal portions of which have never been removed, ten or perhaps eleven successive renovations of the mound; even the central portion was perfectly cool. The vegetable matter had in a great measure disappeared, leaving only the hard woody portions behind, but showing where it had been by the discoloration of the sand. The decay of the vegetable matter, and the bird's habit (as I judge from appearances) of not removing the basal portion of the sandy covering, at each renovation, sufficiently explain why the mounds increase so much more in radius than in height.

A smaller mound, one as I take it still in use, though I could find no eggs in it, contained a much greater amount of vegetable matter, and was sensibly warm inside. I could make no section of it, as it was too full of imperfectly decayed vegetation. I believe that the bird depends for the hatching of its eggs, solely on the warmth generated by chemical action. The succulent decaying vegetation, constant moisture, and finely triturated lime, all combined in a huge heap, will account for a considerable degree of artificial heat.

I am by no means satisfied that only one pair of birds use the same mound. On the contrary the Nicobarese, I had with me that day, explained as I understood that the one pair begin the mound, they and all their progeny keep on using and adding to it for years, and as "*Cuscem*," or whatever the wretches

soubriquet was, interpreted, the men with us had, during the previous month, taken at one time some 20 eggs out of one and the same mound, which also they took us to see, and which was perhaps 5 feet high and 16 or 18 feet in diameter, and which was the freshest looking I had seen.

The eggs are excessively elongated ovals, enormously large for the size of the bird. They vary a great deal in size, and a good deal in shape: all are much elongated, but some are more like turtle's eggs than those of a bird. When first laid they are of a uniform ruddy pink, as we know from having obtained one before the bird had time even to bury it; after being buried, so long as the egg remains quite fresh, it continues a pale pink, but as the chicken develops within, the egg becomes a buffy stone color, and when near about hatching it is a very pale yellowish brown. The whole coloring matter is contained in an excessively thin chalky flake, which is easily scraped off, having a pure white chalky shell below; this outer colored coat seems to have a great tendency to flake off in spots, specks, and even large blotches, as the chicken is developed within. Quite fresh laid eggs rarely exhibit any white marks of any kind, while those more or less approaching hatching (one cannot say incubated in this case) are invariably more or less mottled with white. Occasionally fairly fresh eggs are dug out, bearing along their entire length on one side two parallel white lines made apparently by the claws of the mother bird when scraping the sand over them. The eggs are always a little pointed towards one end, and some, especially the less cylindrical ones, are conspicuously so. The shell is entirely devoid of gloss, and the surface is everywhere roughened with innumerable minute pores which occur equally in the exterior colored flake, and the white somewhat less chalky shell beneath.

In length the eggs vary from 3.01 to 3.4, and in breadth from 1.90 to 2.25, but the average of 62 eggs that I have carefully measured is 3.25 by 2.07.

834.—*Turnix joudera*, *Hodg.*? *albiventris*,
Hume. (3.) STRAY FEATHERS, 1873, p. 310.

Whether the little *Turnix*, which is found alike in the Andamans and Nicobars, should be considered a distinct species, I am not as yet in a position to decide. To do this one would require to compare an enormous series of *joudera* and *maculosus*, Temm. Of the latter I have only one specimen, a male with a wing four inches; of the former only five with wings

varying from 3·3 to 3·45; our present bird differs from all these specimens, is much brighter colored, and has the wings in the male 3·0 and in the female 3·12. The female too is conspicuous by its very broad uniform unspotted rufous collar; it is certainly neither *rufescens* of Wallace nor *rufilata* of Wallace; the latter by the way belonging to a totally different group it seems to me, and being nearer to *pugnax*, *occellata*, and *taigoor*, than to the *joudera* or *tanki* sub-division. I note here that Jerdon, who describes *joudera* under the name of *Dussumieri*, gives the wing of this species as only 2·75; but in none of my specimens, which are from Kumaon on the borders of Nipal, Tipperah, and Raipoor, are the wings less than 3·3, and in three out of the five they are 3·4 and upwards.

There are no birds of which it is so excessively difficult to obtain specimens as of these button quails. Of the true *Turnix Dussumieri* (described by Jerdon as *T. Sykesii*), the smallest button quail, I have received very many specimens, but of these *jouderas* I have found it almost impossible to procure specimens. Moreover the plumage in this species is excessively variable, not merely according to sex, but as far as I can judge according to age and season likewise, hence though these present birds differ both in size, and coloring from any specimens of *joudera* that I possess or have seen I am not prepared to assert that they really are distinct and retain them for the present under Hodgson's name in preference to my own.

The following are dimensions and description of a pair of apparently perfect adults:—

Male.—Length, 6; expanse, 10·25; wing, 3·0; tail, from vent, 1·25; tarsus, 0·9; bill, from gape, 0·65; weight, 1·4 ozs.

Female.—Length, 6·5; expanse, 10·5; wing, 3·12; tail, from vent, 1·4; tarsus, 0·9; bill, from gape, 0·7; weight, 1·75 ozs.

In both the irides are white; in the male the legs and feet are yellow tinged orange or chrome yellow; the upper mandible horny brown, yellowish at the gape; the lower mandible yellow, tipped horny. In the female the legs and feet are pale yellow; the entire bill yellow the extreme tips only of the two mandibles being brownish.

In the male the lores and a circle round the eye are pale fulvous; the point of the forehead and two broad stripes running over the crown down to the nape are black, each feather narrowly margined with bright chesnut. These stripes are divided by a narrow line beginning opposite the centre of the eyes, mingled fulvous white and very pale rufescent; the ear-coverts are unspotted fulvous; the sides of the neck, imme-

diately behind the ears, are fulvous buff, spotted with black; below this the sides and back of the neck, the interscapular region, and the scapulars are bright chesnut, more or less variegated with yellowish white and black.

The centre and lower portion of the back, rump and upper tail-coverts are black or blackish brown; the feathers fringed at the tips with bright rufous or chesnut, with one or more freckled bars of the same color towards the tips, and some of the tail-coverts, and some of the lateral feathers of the back with yellowish white spots or streaks on the outer margin; the tail feathers which are completely hidden by the upper tail-coverts are greyish brown, with obsolete blackish brown bars; the primaries, secondaries, and the greater coverts of the former are very pale satin brown; the outer web of the first primary nearly white, and all the rest of the quills, which pale towards their tips, excessively narrowly edged with pale fulvous; the tertiaries are more of a pinkish brown, mottled with blackish brown towards their tips, and with a yellowish brown spot there on the outer webs. Their coverts and most of the secondary coverts, fawn colored or pale buff, with blackish brown, irregularly-shaped spots near the tips; the chin and the upper portion of the throat pure white; the rest of the throat and the middle of the breast bright ferruginous; the sides of the breast pale buff with regular, narrow, transverse blackish brown bars. A few circular black spots on either side below where the barring ends. The central portion of the abdomen white; the sides, vent feathers, tibial plumes, flanks, and lower tail-coverts tinged buffy, the two latter most strongly so; some of the feathers of the sides of the upper abdomen with broad subterminal blackish brown spots or imperfect bars.

In the female the black stripes on the head are edged with white, and not with chesnut, and the stripe dividing them is white, the feathers with dark brown tips, thus giving the head a totally different appearance. The back of the neck and upper back are occupied by a broad, intensely-bright, chesnut half-collar, entirely unmarked and unspotted, and nearly three-quarters of an inch broad; the ear-coverts, sides of the head, and a line under the eye are pale fulvous dotted with black; the entire chin, throat, and upper breast are bright ferruginous, only the point of the chin paler; there is no barring on the sides of the breast as in the male, only a few large blackish-brown ovate spots which continue downwards on the sides and flanks; a few similar but smaller spots adorn the middle portion of the lower breast and upper abdomen. The rest of

the plumage is similar to that of the male, but there is a greyer shade on the middle of the back, and the spots on the coverts and tertials are larger and more numerous.

I only once saw this species alive, but Davison remarks:—"This quail is very rare at the Andamans, where I only once saw it and obtained one very indifferent specimen; but at the Nicobars, at least on Camorta Island, it is not uncommon frequenting the long grass, occasionally straying into gardens, &c. I have never seen them in coveys, but have found them usually in pairs, sometimes singly; they are difficult to get as they will not rise without being almost trodden on. When they do rise they only fly such a short distance that it would be impossible to fire without blowing them to pieces, and then they drop again into the long grass from which it is almost impossible to flush them a second time. I found them most numerous in the large grassy tracts in the interior of Camorta. I do not know if they are permanent residents or not, but most probably they are; the Nicobarese were quite unacquainted with the bird, and had no name for it."

842.—*Glareola orientalis*, Leach. (4.)

This species, though by no means plentiful, was occasionally seen both at the Andamans and Nicobars; both Jerdon's description, *Birds of India*, Vol. II., p. 631, and that contained in Gould's *Hand-book to the Birds of Australia*, Vol. II., p. 245, appear to me somewhat unsatisfactory, and I cannot say that the generality of the descriptions of *G. pratincola*, such as I have been able to find in Macgillivray, Yarrell, Jardine, or Gerbe and Degland, are much more complete.

My European specimens show the bird to be considerably larger than *orientalis*, and with a wing varying from 7·75 to 8, instead of from 7 to 7·25, as Yarrell and others give it.

The characteristic of *pratincola* is the conspicuous white-tipping to the short secondaries which in the closed wing take the form of a well-marked white bar; this is figured in the Naturalist's library correctly enough, but is not referred to in any one of the descriptions. The absence of this band constitutes one of the chief distinguishing points between it and *pratincola*. Another is to be found in the degree to which the tail is forked; in *pratincola* the exterior tail feathers project from 2 to 2·5 inches beyond the central ones, in *orientalis* they scarcely project above an inch.

Then the adult *orientalis* is altogether a darker and warmer colored bird; the pectoral band is blacker and broader, and

the wing a brighter and more distinct white band inside the male than in *pratincola*; moreover the upper surface of the shaft of the first primary in *pratincola* is almost white, while in the adults of *orientalis* it is either pale brown, or very decidedly brownish white.

Dr. Jerdon remarks of the present species that it "is found throughout India in suitable places." My experience does not corroborate this view of the distribution of this species. I have never heard of this species occurring in Sindh, the Punjab, Rajpootana, or the Central Provinces, and it is of extreme rarity, as far as my experience goes, both in Oudh and the North-West Provinces; almost the only place in which I have known it to occur, within these latter provinces has been along the Ganges from Futtelghurh downwards, and there only in small numbers and at comparatively rare intervals.

The following are the dimensions of insular specimens of this species recorded in the flesh:—

Length, 8·82 to 9·5; expanse, 21·5 to 21·75; wing, 7·12 to 7·5; tail, from vent, 3·4 to 3·75; central tail feathers about one inch shorter; tarsus, 1·2 to 1·3; bill, from gape, about 1·0; at front, about 0·5 to nearly 0·6.

The legs and feet are brownish; the bill black; the gape in the adult vermilion, brightest in the male, paler and duller in the female; the irides umber brown.

In the adults the forehead, top, and back of the head are a moderately dark hair brown, a patch immediately in front of the eyes occupying nearly the whole of the lores, black; the entire chin and throat pale rufous fawn, palest on the chin. A broad black line runs down from the centre of the lower margin of the eye, across the cheeks and round the base of the throat; inside this is a somewhat narrower, pure, white line, which may be traced beyond the origin of the black line, quite to the gape, above which and under the black loreal patch it commences; the ear-coverts and sides of the neck outside the black line, the whole breast, and the back of the neck a rather pale rufescent brown, or brownish rufescent. The entire mantle, including scapulars, tertials, lesser and median, and secondary greater coverts, a dull greenish brown, varying in intensity in different specimens; primaries and their greater coverts, secondaries and winglet dark hair brown, with, in old adults, a blue gloss; in younger birds this gloss, especially on the secondaries, is rather greenish than blue. Some of the secondaries just edged albescent at the tips; the rump colored like

the scapulars and back; upper tail coverts pure white, greyer greater portion of the tail white; the central feathers coverts about the terminal half, (*viz.*, rather more than the visible portion projecting beyond the upper tail-coverts,) pale hair brown with a greenish tinge, paling very much towards the tips; lateral tail feathers successively more and more narrowly tipped, the brown growing darker and on the two exterior pairs not paling at all towards the tips; the sides are a greenish grey brown; the axillaries and wing lining, (except the primary greater, lower coverts, and those along the edge of the wing) deep ferruginous chesnut; the greater primary lower coverts pale satin brown, and those along the ridge of the wing paler or darker hair brown, more or less margined and tipped with white; upper abdomen more rufescent and less brown than the breast; lower abdomen, vent, flanks and lower tail-coverts pure white.

The sexes are precisely alike, but the males seem to average rather larger.

Somewhat younger birds have the head unicolorous with the back, exhibit scarcely any trace of the rufescent nuchal collar, have the breast almost unicolorous with the back, and only faintly tinged with rufescent, and have the whole of the coloring everywhere somewhat paler and duller.

In the quite young bird the whole top and back of the head and entire mantle are a pale grey brown with a decided green tinge, every feather with a narrow yellowish white edging; the tail feathers, especially the central ones, are very narrowly tipped with pure white; the chin, cheeks, throat, in fact the whole space that would lie within the gorget in the adult, is white, here and there tinged yellowish; the chin is spotless; the whole of the rest is striated with grey brown streaks or lines all radiating, as it were, from the central spotless chin; the sides of the neck are like the back; the sides, breast and upper abdomen pale grey brown, each feather with an albescent fringe at and towards the tip; the rest of the lower parts pure white.

Davison remarks:—"This bird is migratory at the Andamans and Nicobars. On the 10th March I saw them for the first time at the Nicobars. At the Andamans they had not arrived when I left in January for the Nicobars, but I found them on my return. I shot them also on Table Island in April. They frequent gardens, ploughed fields, hill sides, &c. They are said to breed both at the Andamans and Nicobars, but I obtained no reliable particulars of their nidification."

the wile—*Squatarola helvetica*, *Lin.* (1.)

male observed several of this species on the Jolly Boys in Macpherson's Straits where they were very wild. Davison also says that he "only secured a single specimen of this bird which I shot at Port Mouat, South Andamans, feeding on the black mud left bare by the receding tide. I did not see it at the Nicobars."

845.—*Charadrius fulvus*, *Gm.* (25.)

In regard to the distinctions between this species, the European *pluvialis*, and the American *virginicus*, *vide ante*, STRAY FEATHERS, 1873, p. 229. What I wish specially here to remark is that Mr. Hartings' dimensions of the bill and tarsus of this present species, *viz.*, 0·8 to 0·9 and 1·5 will not hold good. I have taken the trouble to measure some twenty specimens from Sumatra, various islands of the Nicobar, and Andaman groups, Ceylon, various places in the continent of India and Yarkand, in the very smallest bird, the tarsus is 1·6, in several it is over 1·7, and in one Acheen bird it is 1·87. Again, as to the bills, though many of them do vary from 0·8 to 0·9, in no less than three out of twenty, they exceed an inch. As regards the wings, however, he seems quite correct; in none of the specimens do the wings exceed 6·6. Almost all our insular specimens, even those killed in January, exhibited more or less of the summer plumage, and one killed on the 1st of May had many of the abdominal feathers black. On the continent of India they assume the summer plumage earlier; a specimen killed at Raipoor, Central Provinces, on the 27th April, is in full summer plumage.

We met with these plovers occasionally the whole way from Calcutta to Galatea Bay; a flock passed over us when we were just beyond the Sandheads; we saw another flock when we were at sea about opposite Diamond Island; we shot them at Preparis and saw them at the Cocos, and shot or saw them at many of the islands of both groups, besides getting specimens at Acheen, but at the same time we nowhere saw them in huge flocks of several hundreds, or even thousands, as one meets with them on the continent of India. In India again they are generally to be met with inland; in the islands I always saw them along the sea coast. Davison however says:—"I found this plover numerous in paddy flats and gardens about Aberdeen, South Andaman, and also in the cotton fields on Camorta, Nicobars. I also met with it on Chowra and several other islands of the Nicobar group, and I think, but am not positive,

that I saw it on the Great Cocos. They arrive at the greyer mians, I was informed about the latter end of November; they leave again late in May or early in June. It usually occurs in small flocks of twenty or more, but I have occasionally met with it in pairs."

It would appear that some, at any rate, of these plovers remain all the year round at the islands. We ourselves or Davison shot them in every month from December to May. We have since received specimens killed in June and also in July, and numbers killed in September; but the curious thing is that not one of these is in full breeding plumage. It would seem probable that most of these are birds of the year, and that some at any rate of them do not breed the first year, and do not leave their winter quarters. At any rate this one fact is certain that we have specimens killed in every month from the first week in December to the first week in July, and that we have numerous specimens killed on all dates in September. It will be seen further on that of many of the grallatores, heretofore considered to be only winter visitants, a certain number appear to remain throughout the year in the Andamans.*

845 *ter*.—*Eudromias veredus*, Gould. (O.)

For full description of this species, *vide ante*, STRAY FEATHERS, 1873, p. 83. A single specimen was obtained at the Andamans in May 1872 by Dr. Dobson's collectors; but we obtained none, though we specially went in for all waders, nor has any other specimen I believe ever been obtained there.

846.—*Cirripidesmus Geoffroyi*, Wagler. (10.)

We obtained this species in the neighbourhood of Port Blair, at Macpherson's Straits, Camorta and Montschall, and saw it at several other places, but it was nowhere numerous. A specimen killed on the 8th March had begun to assume the rufous breeding plumage; but others killed on the 25th April showed as yet no signs of this. It is almost needless to say that the specimens we obtained in the islands were entirely identical with birds procured in Sindh and other parts of India.

Davison says:—"This plover occurs, though somewhat sparingly, both at the Andamans and Nicobars. I am unable to say when they leave for their breeding haunts, but they were with *Æ. mongolicus*, *Tringa minuta*, *Strepsilas interpres*, and a host of others to be seen about Port Blair a few days before I left

* Since this was written, Mr. Legge has remarked the same fact at Ceylon.—*vide* STRAY FEATHERS, 1873, p. 490.

the winds in the middle of May." We obtained specimens male, about the cold season, and other specimens were sent us secured in the first week in September.

847.—*Cirripidesmus mongolicus*, *Pall.* (36.)

Pallas' shore plover was very abundant on all the islands of the Bay of Bengal, and next to *Tringoides hypoleucos* it was the commonest species along their coasts. All the birds, though some were shot quite at the end of April, are in winter plumage. One alone shot on the 24th April exhibits very faint traces on the sides of the breast of the rufous summer plumage.

Davison remarks that:—"This like the last occurs both at the Andamans and Nicobars, and is much more numerous, occurring in flocks of twenty or thirty, frequenting the sea shore at low water, and retiring to the swamps and fields at high tide. I have often seen this species and *Geoffroyi* associating together. Sometimes a solitary pair may be found about the sea shore." We have numbers of specimens of this species shot right through from the first week in September to the first week in May. All the September birds and the May birds are more or less strongly tinged with rufescent on the breast, and exhibit other signs of summer plumage. Then we have one specimen killed in July with fainter traces of summer plumage than any of these, and then we have three birds killed on different dates in August entirely in winter plumage. It would seem that the mass of the birds leave early in May to return early in September; but that some few birds, either young ones, or perhaps weakly or wounded birds, remain all the year round, and that those that do this do not assume the summer plumage. There is a great deal still to be ascertained in regard to these small waders at the Andamans. Some individuals, at least, of many species, which elsewhere in India are migratory, remaining apparently throughout the year.

849.—*Ægialites fluviatilis*, *Beck.* (1.)

This species appears to be rare in the islands of the Bay of Bengal; we only preserved a single specimen, and what is more curious we never once met with the Kentish plover. This may perhaps be explained by the fact that the latter is less of a sea shore bird with us, and more of a river bank species than *mongolicus* and *Geoffroyi*. Lord Walden says that he has never met with examples of this present bird from Southern Asia in full breeding dress. I have met with thousands, and have probably twenty specimens by me now in this plumage, and

with others have repeatedly taken its eggs. The bird greyer to has the wing 4.5. This is the common species and overts India, whereas the so-called small Indian plover, which has the wing on the average 4, is much rarer.

Davison says of the present species:—"I obtained only one specimen of this bird shot at Aberdeen, South Andaman, soon after my arrival there. I did not meet with it again, nor did I see it at the Nicobars." I shot one or two on the Cocos and Preparis, but not having then realized its comparative rarity in the islands of the Bay of Bengal, did not preserve them.

858 bis.—*Esacus magnirostris*, Geoffr. (2.)

This very fine species, hitherto known only from Australia and the more eastern portion of the Archipelago, occurs and breeds alike in the Cocos and the Andamans. We shot single specimens at both the Great and Little Cocos; at the latter we obtained an egg. We saw the bird, but failed to obtain a specimen at Escape Bay in Macpherson's Straits. Mr. Mason the year previously obtained an egg, precisely similar to the one we got, and which must have belonged to this species, at Corbyn's Cove, a few miles south of Port Blair. One egg was obtained on 24th March; it was quite fresh, and was placed in a small depression in the coral sand a little above high water mark, both parents, one of which we secured, were standing close to it. Mr. Mason's egg was obtained on the 15th April. The eggs closely resemble those of *E. recurvirostris*; but are handsomer, and I think more elongated. They are large oval eggs, usually I judge a good deal compressed towards one end. The shell is tolerably fine and smooth, but the egg has no gloss. The ground is a creamy stone color or very pale *café au lait*, boldly blotched, streaked and spotted with blackish brown, paling in some places to a yellowish or raw Sienna brown. Besides these primary markings a few small pale inky purple sub-surface looking spots and clouds are thinly scattered everywhere about the egg. The blackish brown markings are chiefly confined to the large end. The eggs measure 2.6 by 1.75. The largest *E. recurvirostris* egg that I have ever obtained, and I have taken a vast number, measured 2.32 by 1.7. The average is 2.15 by 1.59.

This present species is readily distinguished from the common Indian one by its comparatively enormous bill, (which is not only longer but very much broader and deeper,) and by the much greater amount of dark brown about the face and on

the wing bar. The following are the dimensions of a fine male :—

Length, 22·5 ; expanse, 3·8 ; tail, from vent, 5 ; wing, 11·0 ; bill, from gape, 3·5 ; at front, 3·1 ; tarsus, 3·5.

The bill is blackish or greenish horny ; the base of the upper mandible and membrane covering the nares greenish yellow ; the legs and feet yellow.

A band round the eye, not quite meeting in front but extending backwards behind the eye over the ear-coverts, a line from near the culmen, along the anterior margin of the eyes, over the gape and under the cheeks, together with the entire chin and throat, pure white. A broad short stripe from the sides of the lower mandible at its base, the lores, and a broad stripe running round over the eyes above the white band already described, and a similar but broader stripe below the eye including the cheeks and nearly the whole of the ear-coverts, deep brown. The posterior ends of these two latter stripes generally meet behind the termination of the backward prolongation of the white eye band, and then run as a narrow dark streak a little way down the neck. All these dark bands are much broader and more strongly developed in this species than in *recurvirostris*, and generally the color of the present species is everywhere darker than in the Indian bird. The forehead, top and back of the head, hair brown, the shafts darker. The posterior half of the neck, the back and scapulars, earthy brown, somewhat paler than the head, the feathers dark shafted ; the anterior half of the neck varying from white above to pale French grey below, the feathers brown shafted. The first five primaries, their greater coverts and the winglet, dull umber brown ; the first primary with a two-inch or more white band across both webs not far from the tip, and the rest of the inner web above this nearly all white ; second primary similar, but the band less broad and only partially extending on to the outer web, and more brown on the inner web than on the first ; third similar, but less white than the preceding and none on the outer web ; in the fourth and fifth, the white confined to a broad stripe on the outer portion of the inner web, sixth to the tenth primaries, and their greater coverts pure white, the sixth with a brown band on the outer, the tenth with a similar band on both webs towards their tips. The secondaries white on the basal portion, tipped white, more broadly in the earlier, more narrowly in the later ones, and with an oblique hair brown band, inside the tipping occupying but a small portion of the inner web,

but running much further down the outer web, where it is suffused with French grey. There is much more white therefore on the wing of this species than on that of *recurvirostris*, in which moreover the seventh and not the sixth primary is the first white tipped one. Nearly the whole of the lesser coverts from the carpal joint along the ulna dark brown; beyond these extends a broad white wing band, and then below this the rest of the secondary and median coverts are pale French grey. In *recurvirostris* the dark brown is not so dark and is confined to a narrow band above the white band, which latter is not near so bright or pure as in the present species. The elongated tertials are a grey brown intermediate in color between the French grey of the secondary greater coverts, and the earth brown of the back. Two or three of the shorter tertials, not seen till the more elongated ones are raised, are greyish towards the tips and margins, and with one or two pale brown zig-zag bands towards the tips following the contour of the feathers. The upper tail coverts are grey brown paling towards the tips where they are banded with irregular zig-zag darkish brown lines. The tail feathers are broadly tipped with blackish brown, edged at the points in some specimens with yellowish white. Inside the broad blackish brown tipplings is a broad white band narrowest on the central, broadest on the external tail feathers, below which the basal portions of the feathers are greyish brown with irregular zig-zag darker brown lines. The breast is a pale French grey, the feathers darker shafted and fringed towards the tips with dingy yellowish white. The upper abdomen, sides of the abdomen, dingy yellowish white, the feathers with faint traces of rather broad zig-zag imperfect grey bars. Centre of the abdomen, vent and lower tail coverts dingy yellowish white, or even on the latter pale fawn color; sides of the body, axillaries and entire wing lining (except the lesser lower coverts along the ulna and at the carpal joint, which are brown,) pure white.

The occurrence of this species in the Andaman group and so far north as the Great Cocos, while it has never yet been noticed, so far as I am aware, at the Nicobars, in Sumatra, Java or Borneo, is somewhat remarkable, and should it prove ultimately that this species really does not occur in these latter islands, it will be excessively puzzling.

860.—*Cinclus interpres*, *Lin.* (7).

This species, though nowhere numerically abundant, was seen by us on almost every one of the islands of the Bay of Bengal, Prepara, the Great Cocos, various parts of the

Andamans, Camorta, Montschall, and other islands of the Nicobar group. We only preserved seven specimens, and all these curiously enough proved to be females; one obtained on the 29th April was nearly in full breeding plumage.

The following were the dimensions of the females:—

Length, 9 to 9·5; expanse, 18·5 to 19; wing, 5·75 to 6·25; tail, from vent, 2·5; tarsus, 1 to 1·05; bill, from gape, 1 to 1·1; weight, 4 ozs.

Davison says:—“I met with the Turnstone in small flocks about the sea shore, both at the Andamans and Nicobars. One specimen that I got on the 29th April at Aberdeen is very far advanced in the breeding plumage.”

861.—*Dromas ardeola*, Payk. (4.)

During our visit to the Andamans this species was certainly not common. I myself only observed it in one locality, and that was in Macpherson's Straits where we shot four specimens. During all his journeying throughout the islands Davison never once saw a specimen, but during our absence at the Nicobars Lieutenant Ramsay met with a small party at Haddo, Port Blair, and shot the whole of them. Where we met with them, they were very wild. At low water feeding about on a coral reef, and at high water collecting together in a dense crowd as closely packed as they could stand on a single isolated rock standing out in the midst of deep water some two or three feet, at most, above high water level.

The following are the dimensions and other particulars recorded in the flesh from the four specimens that we obtained. The sexes do not differ in size:—

Length, 15·65 to 16; expanse, 28·5 to 29·5; wing, 8·05 to 8·3; tail, from vent, 2·75 to 3; tarsus, 3·5 to 3·75; bare part of tibia, 1·5 to 1·87; bill, from gape, 2·75 to 2·8; at front, 2·2 to 2·35; wings, when closed, reach to from within 0·25 of, to 0·5 beyond, end of tail; weight, from 15 to 17 ozs.

The legs and feet are pale glaucous blue; the feet generally more glaucous than the legs; claws and bill black; irides deep brown.

Dr. Jerdon's description of the adult is scarcely satisfactory to me, and he does not describe the young at all.

In the adult there is a narrow black ring round the eye, only conspicuous at the anterior and posterior angles; the whole of the rest of the head and neck all round, the whole of the under parts, including axillaries, wing lining, lower tail coverts, and whole lower surface of the quills, except the

tips of the primaries, and the outer webs of the secondaries; the whole of the lesser and median coverts, the scapulars, elongated tertials, rump and upper tail coverts and a patch on the margin of the wing between the winglet and the primary greater coverts, pure white; the upper and middle back, the feathers of which latter are considerably elongated, jet black with a greenish blue reflection; the central tail feathers pale brownish French grey, the color fading successively on each pair as they recede from the centre; the winglet, primaries and secondaries, and their greater coverts, black or nearly so on the outer webs, and in the case of the earlier primaries on both webs at the tips; inner webs, paler brown towards the tips, and white or nearly so on the basal portion; some of the less elongated tertials, next the secondaries, grey brown on the outer webs, white interiorly; the shafts of the primaries are very broad, and except at the extreme tips pure white; the lower tail coverts extend quite to the tip of the tail.

In the young bird the whole of the occiput and nape are streaked with black, the portions that are black on the back in the adult are dull grey powdered with black in the young; the scapulars, tertials and lesser and median coverts are pale grey brown, as are also the tail feathers: the quills and their greater coverts have the blackish brown of the adults replaced by a dirty umber brown.

870.—*Gallinago stanura*, Kuhl. (19.)

Specimens from the Andamans are identical with birds from Southern India. We observed the bird in the Nicobars also, especially on the fresh water ponds at Trinkut, but we, by some oversight, neglected to preserve specimens.

IN STRAY FEATHERS, 1873, p. 423, my friend Captain G. F. L. Marshall expressed an opinion that the bill in this species was not shorter than in *scolopacinus*, and that the lower wing coverts were not more richly barred than in many specimens of that species. I am absolutely unable to concur in this view. First, as regards the bill, of course specimens of the same sex of both species must be compared. The females in both species have considerably longer bills than the males, and it will not, therefore, do to compare males of the one against females of the other. Taking a number of *stenura* from all parts of India at random, the bills in the males vary from 2.2 to 2.4; of the females from 2.5 to 2.65; in *scolopacinus* the bills of the males vary from 2.5 to 2.6; in the females from

2.7 to 2.9. I am, therefore, certainly of opinion that the bill of our present species is decidedly shorter, sex for sex, than that of *scolopacinus*. Then as regards the richly barred under-wing coverts; in *stenura* the axillaries and the entire wing lining except the lower greater coverts are invariably, to judge from my large series, strongly and distinctly barred with blackish brown. This, according to my experience, is never the case in *scolopacinus*. In many specimens there is no barring at all, properly speaking, on the lower surface of the wing, but even where the axillaries are strongly barred, the median secondary lower coverts are always unbarred, forming a white unbarred patch in the centre of the upper portion of the lower surface of the closed wing. I have been unable to detect a single exception to this rule, and believe it to hold good universally.

Davison remarks:—"This is certainly the common snipe of the Andamans and not *G. scolopacinus*. I examined every snipe I could, and I only met with a single specimen of *G. scolopacinus*. The present species is comparatively abundant about the swamps and paddy flats, more especially so at Aberdeen, South Andaman, and Mount Augusta opposite Port Mouat. I think it very probable that at least several pairs of this species breed at the Andamans, as they were still to be found about the middle of May. The greater number have left the islands by the end of January; they are said to arrive about the middle of October.

"On the 27th of last December I saw one of these birds feeding on the sea shore about 2 p.m.; it was running hither and thither like an *Actitis*; as I approached, it rose and settled in a piece of swamp about 23 yards from the shore, from which I flushed and shot it."

This species is very common in September and throughout the cold season and up to the beginning of May; but we have also two specimens in June and two in July, so that it is pretty certain that whilst the mass of the birds are migratory some few couples remain throughout the year, and may possibly breed there.

861.—*Gallinago scolopacina*, Bonap. (O.)

Very rare in the Andamans but does occur; we did not procure a single specimen; but Davison carefully examined one shot in the neighbourhood of Port Blair, and made sure of the species.

876.—*Terekia cinerea*, *Güldenst.* (8.)

The Avocet Sandpiper was only met with in the Andaman group. It appears common enough in the neighbourhood of Port Blair. Specimens killed as late as the middle of April exhibited no sign of the summer plumage.

Davison says :—"Large flocks of this bird are to be met with about the creeks. At high water they settle on the mangroves, and at low water feed along the bare mud banks."

877.—*Numenius lineatus*, *Cuv.* (2.)

I have already, *STRAY FEATHERS*, 1873, p. 257, fully discussed the difference between the Indian and European curlews. Large grey curlews were seen by several of us in the Andamans, but no specimens were preserved; it is impossible, therefore, to be certain that they belonged to this present species.

Davison says :—"I have often seen this bird about the creeks, but obtained no specimen; it is excessively shy and difficult to approach. I find from my notes that the last time I observed this bird was on the 8th April. I did not observe it at the Nicobars."

Since this was written I have received two of these curlews killed at Port Blair on the 16th of August and the 24th September, and now that I have got them I am just as much in doubt as ever as to what the species is.

They are a male and female of the *lineatus* and *arquatus* type; one, the female, is an excessively pale bird, the other, the male, an excessively dark bird. The female measures, wing, 12·4; tarsus, 3·45; bill, at front, along curve, 6·0. The male, wing 10·55; tarsus, 3·2; bill, as above, 5·5. Both these birds have the rumps pure white, the upper tail coverts white with narrow longitudinal shaft stripes; both birds are slenderer and smaller than any specimen of *lineatus* I have ever seen. The male, long as his bill is, is scarcely bigger than a whimbrel. The birds do not look like *lineatus*. I have shot some hundreds of this latter species, and I never saw one with the same tone of coloring as either of these birds, moreover the axillaries in both birds are absolutely pure white. *Lineatus*, in India at any rate, always, as far as my experience goes, has a narrow dark brown shaft streak towards the tip of each axillary; *arquatus* from Europe not only has this but often has the axillaries more or less barred. Of course on finding these pure white axillaries I thought the birds were *P. Cassini*, Swinhoe, but they are much too big for the

dimensions given by him, *Ibis*, 1867, 398, and they certainly do not belong to any other known species. So many curlews have been named and renamed, and so much difference of opinion still seems to prevail, as to what are and are not good species, that (although independent of other points, the mere fact of their being at the Andamans in August affords some presumption of their distinctness), I hesitate to describe them as new, but if they prove to be so they might stand as *subarquata*.

878.—*Numenius phæopus*, *Lin.* (5.)

Specimens from the Andamans and Nicobars differ in no way from specimens from other parts of India and England. In this species as in that last mentioned the bills of the females are considerably longer than those of the males. The following are dimensions of two males and two females:—

Males.—Length, 17 & 17·25; expanse, 31 & 31·5; wing, 9 & 9·5; tail, from vent, 4 & 4·25; tarsus, 2·3 & 2·4. Bare portion of tibia, 0·95 & 1·1; bill, from gape, 3·05 & 3·12; bill at front, 2·95 & 3·09; closed wings, reach to end of tail; weight, 12 ozs.

Females.—Length, 18 & 18·5; expanse, 31·5 & 32; wing, 9·75 & 10·6; tail, from vent, 4·5; tarsus, 2·45; bare portion of tibia, 1·25; bill from gape, 3·5 & 3·58; bill at front, 3·2; closed wings reach to within 0·5 of end of tail; weight, 1lb.

The legs and feet are pale blue or bluish green; the claws black; upper mandible and tip of lower mandible brownish black; basal two-thirds of lower mandible, gape, and margin of upper mandible for about one inch beyond nostril, pink; irides dark brown.

Davison remarks:—"The Whimbrel is much oftener met with than the Curlew, but as it is almost as wary it is difficult to procure. It occurs both at the Andamans and Nicobars, feeding along the mud banks left exposed by the ebb of the tide, and retiring at high water either to the mangroves or to some part of the shore above high-water mark. It is usually in small flocks, but single individuals or pairs are often met with. A few were still to be seen about Port Blair in the second week in May, but the greater number appeared to have migrated." One of our specimens was shot on the 16th September.

882.—*Tringa subarquata*, *Gould.* (8.)

Davison says:—"Small flocks of this bird are to be met with about the creeks and sea shore at the Andamans; I did not obtain it at the Nicobars nor did I observe it at Port Blair

after my return from the Nicobars in March." I, however once saw a small party of three or four on the northern coast of the Great Nicobar, and this was the only time I saw it.

From October to April this species is common, but we also have specimens shot in June and July, neither of which are in full summer plumage, though birds killed at the end of April in India are already in full summer plumage.

884.—*Tringa minuta*, *Leisler*. (12.)

The little stint was not uncommon in the Andamans and Nicobars, we only preserved seven specimens, how this happened I cannot tell, but it is to be regretted as Lord Walden identifies a specimen he received from the Andamans with *albescens*, Temm. His bird was killed on the 24th January, and I venture to question whether it is possible to distinguish certainly *minuta* and *albescens* in winter plumage. All our specimens too, though killed on very various dates from December to June,* were in winter plumage, so that I cannot positively assert that they are not *albescens*, but they are absolutely identical with specimens obtained in other parts of India and Europe. In some the tarsi are slightly stouter, in others slightly slenderer, just as much as is the case in European and Indian specimens of the same bird, and no more.

Davison remarks:—"I met with a small flock of this little stint in December, at Aberdeen, South Andaman, and obtained four specimens, they were feeding along the dams in the paddy fields; at the Nicobars I met with it on several occasions, always on the sea shore, in flocks varying from twenty to fifty or more. I did not observe it after the 2nd of February."

886.—*Tringa platyrhyncha*, *Temm*. (3.)

I never met with this species on any of the islands of the Bay of Bengal, and it must, I think, therefore be rare. Davison says:—"I only met with a few of these birds at the Andamans, they were associating with a small flock of *T. minuta*. I did not observe them at the Nicobars."

891.—*Totanus glareola*, *Lin*. (3.)

Not common in the islands, but Davison says:—"This bird is occasionally met with about the swamps and paddy fields at Port Blair. I did not observe it at the Nicobars, but it most

* Five of our specimens were killed in the first week in June, but not one of them exhibit the smallest traces of summer plumage.

probably occurs there in suitable localities, for I obtained it at Acheen, North Sumatra." All our three specimens were killed in the first week in September.

893.—*Tringoides hypoleucos*, *Lin.* (38.)

From Preparis to Galatea Bay, the common sandpiper was the *one* bird that, wander where one might along the coast, it was impossible to avoid seeing. Davison says:—"This is certainly the most common of all the shore birds that occur at the Andamans and Nicobars; it frequents the sea shore, salt water creeks, fresh water streams, in fact there is scarcely a little puddle about the place where it cannot be found. I have seen it in small parties, but it is usually found singly or in pairs. At night it roosts in small parties among the mangroves or on some branch over-hanging the water. Very favorite resorts at night for this bird, *Strepsilas interpres*, &c., are the boats that are anchored some little distance from the shore, and here they may be seen seated in a row along the gunwale. It had not left on the 12th of May, and appeared as numerous as ever."

We have, however, no specimen killed later than the middle of April, and then the first specimen, killed apparently on the return of the bird, was obtained on the 24th August.

894.—*Totanus canescens*, *Gm.* (O.)

Von Pelzeln tells us, *Reise Novara*, Vögel, p. 129, that "a male of this species was killed on the 22nd March on the swampy banks of the stream running into Ganges haven on the north coast of the Great Nicobar." Neither we nor Davison ever met with the bird, and it must be an excessively rare straggler to either the Andamans or Nicobars.

897.—*Totanus calidris*, *Lin.* (16.)

I never saw this species at the Nicobars, but noticed it at Macpherson's Straits.

Davison says:—"I have met with this bird only along the salt water creeks and mangrove swamps. At high water it perches among the mangroves usually choosing some exposed branch overhanging the water; generally it is in small flocks, occasionally singly or in pairs; it is shy and difficult to approach. I shot one on the 5th May among the mangroves near Aberdeen, it was quite alone; I did not observe any after this date." These birds are quite common from the first week in September to the beginning of May. Some of the September specimens are still nearly in full breeding plumage, but

this is not the case with either of our May specimens. We have also a specimen killed in June, but this also shows no sign of summer plumage.

904.—*Gallicrex cinereus*, *Gm.* (1.)

I never observed this species anywhere, but Davison remarks:—"The Water-cock found at the Andaman belies its name by never, (as far as I have observed), being found near water; the only places in which I have observed it are the sugarcane fields; in these it is not uncommon especially about Aberdeen. During the day it keeps under shelter; but in the morning and evening comes into the open to feed, seldom however wandering far from cover, to which it retreats on the slightest alarm. I am unable to say if it is a permanent resident at the Andamans; but most probably it is, so, I was unable to learn anything about its nidification. I did not observe it at the Nicobars."

The following are the dimensions recorded in the flesh of a female shot at Aberdeen, South Andamans:—

Length, 13·5; expanse, 23·4; wing, 7·12; tail, from vent, 3; tarsus, 2·65; bare portion of tibia, 1·4; mid toe and claw, 3·35; bill, from gape, 1·4; bill, at front, from posterior margin of shield, 1·5; weight, 10 ozs.

The legs and feet were greenish horny; bill light brownish horny; lower mandible pale yellowish horny, pinkish white at tip; irides umber brown.

907.—*Gallinula phoenicura*, *Penn.* (19.)

We met with this Water-hen in suitable localities everywhere from the Great Cocos to Acheen, the northernmost point of Sumatra. I do not think it possible to separate the Andaman and Nicobar birds from the Indian, but it may be useful to point out certain differences of plumage which are noticeable in many of the island birds.

In the first place in the full breeding plumage the whole head in some birds, as far back as the occiput, becomes perfectly white, while in some even the feathers of the nape are mingled with white. In a large series of the Indian birds, some of them taken off the nest, the width of the white frontal band in none exceeds 0·45; in the Nicobar and Andaman birds the white, in one specimen, extends over an inch backwards from the forehead, and it exceeds 0·6 in several. In the second place in adults there is very much less white on the under-surface than is usual in Indian examples; in these latter from the chin to the vent there is usually a broad uninterrupted band of white; in the Nicobar

specimens, in adults in full plumage, the white on the breast is confined to a comparatively narrow central stripe, which ceases entirely on the upper abdomen, where the dark slatey color of the sides stretches right across. Thirdly in the Indian birds the lower belly, vent, feathers and tibial plumes are usually white, or only faintly tinged rufescent; whereas in the island birds these parts are chesnut colored, only slightly paler than the lower tail coverts.

If these differences were persistent at all ages and in every case they would probably be sufficient to constitute a distinct species, but it appears to be only in the perfect adult that these distinctions are most clearly brought out. I have a young bird from the Cocos which is not separable from a young Indian bird, and another from Camorta (Nicobar) which only exhibits, in a less pronounced degree, the characteristic differences of the adult island bird. The Acheen bird resembles the Indian, but there is nothing surprising in this since the Acheen *Halcyon* is *chloris* like that of the Sunderbunds, while the intermediate Nicobar bird is *occipitalis*.

Four females measured gave results as follows:—

Length, 12·3 to 14; expanse, 19·5 to 21·25; wing, 6 to 6·5; tail, 2·75 to 3; tarsus, 1·25 to 1·5; bill, from gape, 1·5 to 1·8; weight, 8 to 13 ozs. The legs and feet varied from chrome to deep yellow; the irides varied from light reddish brown to pale light red; the bill from dull or pale green to lemon yellow; and the frontal plate and base of culmen from dull to bright red.

As far as my experience went these birds were entirely confined to the small inland fresh water ponds and swamps, which are met with occasionally in the jungle, and which form the favorite haunts also of *Ardetta cinnamomea* and *sinensis* and *Goisakius melanolophus*.

Davison says:—"Of all the birds of this family that occur on the Andamans and Nicobars this is the most common. It is widely distributed over the islands. I have found it in the secondary jungle, sugarcane and paddy fields, along the edges of mangrove swamps, in fact everywhere where there is cover. It is when alarmed very difficult to flush. It is very noisy and may be heard calling in the morning and evening, and often long after dark."

This bird is of course a permanent resident.

910.—*Ortygometra pygmæa*, *Naum.* (1.)

Davison obtained a single specimen of this. He remarks:—"I have only seen one specimen, a female, of this little rail, at

the Andamans, and that I flushed from the side of a fresh water pond at Port Mouat."

It does not differ from Indian killed specimens.

912 *bis.*—*Euryzona Canningi*, *Tytler*. (O.)

For original description, *vide* STRAY FEATHERS, 1873, p. 86.

This large and handsome rail is either excessively rare, or else conceals itself so effectually as to be very seldom seen. Altogether I believe from first to last only four specimens have been procured, but these were all shot or captured at Bamboo flat or other similar localities in the neighbourhood of Mount Harriet. We never saw the bird, and Davison, who made special exertions to secure a specimen, only once caught sight of it.

913.—*Hypotænidia striata*, *Lin.* (6.)

I am very doubtful whether the Andamanese specimens are really referable to this species; they are of precisely the same type; but they are infinitely darker colored, and very much larger than any Indian specimens I possess.

In none of my Indian specimens is the wing quite 5·2 inches; in none of the Leyden Museum specimens do the wings reach to 5·2; but Jerdon doubtless gives the wing at 5·25. Now in the Andaman birds the wings in five specimens vary from 5·2 to 5·5; the sixth, a small female, has the wing barely 5·0. Jerdon gives the total length at 10·5, and this agrees with my Indian specimens, whereas the Andaman birds are from 12 to 12·5 in length. In our Indian birds, the bill never appears to exceed 1·65; in the Andamanese bird it runs to 1·8, though of course some are smaller.

As regards color, the upper surface is all but black, banded, of course, with white, and so too are the abdominal region and flanks; there is much less white on the throat of the Andamanese birds, the front of the throat and breast are very dark ashy instead of a very pale ashy grey as in my Indian specimens. If all these differences are constant, the Andaman bird will have to be separated, and may stand as *obscuriora*; at present I am miserably off for these rails having only one Madras, two Malabar, one Ceylon, six Andaman, one Malaccan, one Thyet Myo, and three Rangoon specimens, and I therefore hesitate to separate positively the Andamanese form.

The following are dimensions of specimens measured in the flesh :—

Length, 12 to 12·5; expanse, 18·5; wing, 5·45 to 5·5; tail, 2 to 2·25; tarsus, 1·55 to 1·75; bill, from gape, 1·75

to 1.9; bill, at front, 1.65 to 1.8. Legs and feet slatey green, and dark greenish horny; irides deep brown; bill Indian red; tips of both mandibles and ridge of upper mandible deep horny brown.

Davison remarks:—"I have only observed this bird at Aberdeen, South Andaman, where I have flushed it from the sugarcane fields, and secondary scrub, on the outskirts of fields and gardens; generally they are found singly, occasionally in pairs. I have never heard them utter any note; I have always found them silent, and very shy of observation. The flight is slow and somewhat heavy, and seldom extended more than twenty or thirty yards. I did not observe it at the Nicobars."

This species breeds in the neighbourhood of Port Blair. I have as yet no particulars of its nidification, but Captain Wimberley kindly sent me two eggs which he had taken there. They are very regular ovals, slightly more pointed at one end, and with a faint gloss. The ground is a pale brown or pinkish stone color, and it is rather sparingly spotted, streaked, blotched, and speckled with a rather rich red. These markings are somewhat more numerous towards the large end. Besides these primary markings, a number of pale purple clouds and spots are scattered thinly about the egg, mostly towards the large end. The eggs measured 1.4 and 1.46 in length, by 1.1 in breadth.

924.—*Ardea purpurea* Lin. (1.)

I myself only noticed this species at a small swampy pond at Tillangchong.

Davison says:—"I only managed to obtain one specimen of the purple heron; but I frequently saw them early in the morning flying out of a large tree near Aberdeen, in which they evidently roosted at night, and I have on several occasions seen them on the paddy flats. At the Nicobars in Trinkut, I flushed a specimen from the edge of a small fresh water pond; it appears to be comparatively rare, and is very shy and wary. I do not know if it is a permanent resident or not."

926.—*Herodias intermedia*, v. *Hasselq.* (5.)

We only procured specimens of this species in the Andamans, and though I think I saw them at the Nicobars, it is impossible to be certain, having no specimens to compare. Our Andaman specimens agree entirely with Indian ones. Davison says:—"Found singly or in small parties about the paddy flats and

mangrove swamps, where these have been only partially reclaimed. At Phoenix Bay I have frequently observed them in parties of ten or more, but they were nowhere very numerous."

927.—*Herodias garzetta*, Lin. (3.)

The Andaman specimens, for of these also we preserved none from the Nicobars, are precisely identical with the Indian bird, and are not, as might have been expected, *Herodias melanopus*, Wagler, which more or less replaces *garzetta* in Tenasserim and the Malayan Peninsular, and which thence extends throughout the Archipelago to Northern Australia. This latter species may be distinguished by its somewhat smaller size and much shorter feet.

Davison says :—" Found in the same situation as the preceding, the two often associating together. I did not obtain specimens of this or the preceding at the Nicobars, but often noticed white egrets about the coast and mangrove swamps, and on the banks of the river at Galatea Bay. These were, however, not improbably the white form of *sacra*."

928 *bis*.—*Demi-egretta sacra*, Gmel. (39.) 2
white.

We paid particular attention to this species, and preserved numerous specimens from the following localities :—Preparis, Great Cocos, Little Cocos, South Button, Port Blair, Camorta, Trinkut, Nancowry, Katchall, Teressa, Bompoka, Pilu Milu, Great Nicobars, besides which seven more were sent us subsequently from the neighbourhood of Port Blair, and we saw them on every single island in the whole of the three groups, and on Barren Island and Narcondam, and I think we are in a position to assert positively that there is only one species of the Blue Reef-heron throughout the whole of the islands of the Bay of Bengal, and that this species is identical with that which occurs in Arakan and along the Burmese Coast generally. Von Pelzeln separates three specimens from the Nicobars (Novara Reise, Vögel, p. 123,) on account of their " smaller size, shorter bills, and shorter tarsi ;" but these distinctions will not hold good under any circumstances. The dimensions he gives are in no way smaller than those of many of our specimens, and not so small by any means as some of ours, and between these smallest and the very largest every intermediate dimension occurs.

This species is no doubt very variable alike in size and in plumage, even supposing that the white race, of which I shall

speak hereafter, be separated as a distinct bird, but it is quite clear with the very large series that we now possess of the ashy bird, that all those inhabiting the islands of the Bay of Bengal and its Eastern Coast belong to one and the same species.

The following is a *resumé* of the measurements of the insular bird. There appears to be no constant difference in the size of the sexes, though the birds vary very greatly in size according to age, especially where the length of bill is concerned:—

Length, 21 to 24; expanse, 36·5 to 40·75; wing, 9·85 to 11·75; tail, from vent, 3 to 4·25; tarsus, 2·7 to 3·1; bare portion of tibia, 1·05 to 1·5; bill, at front, 2·65 to 3·5.

Variable as these dimensions are, every tenth of an inch between the extremes is represented in one or more specimens, so that it is absolutely impossible to separate the larger and the smaller, as Von Pelzeln, with only a limited series before him, has been led to do.

The color of the soft parts is excessively variable. In the adult the bare portion of the tibia varies from dark grass green to greenish plumbeous; the back and sides of the tarsus and the greater part of the toes are generally pea green, sometimes duller, sometimes yellower; the front of the tarsus and the first joint of the mid toe black, but sometimes these parts are green, only patched or mottled with black, and sometimes the black extends along the ridges of all the toes; the bill and bare skin in front of the eye vary from sienna brown to chocolate; sometimes the bill is a sort of light mahogany color, and the bare skin a sort of greenish brown; usually the bills are yellowish at the tips; the lower mandible is generally lighter, sometimes brownish horny, sometimes yellowish horny; and in the breeding plumage the whole lower mandible becomes apparently a very decided, though dull, yellow; the irides vary from bright to deep yellow. I suspect, though we have not been able to work it out, that these differences in color are due both to age and to season.

The adult in full breeding plumage is everywhere of a deep blackish slate color; the feathers of the head almost black; the feathers of the upper breast greatly elongated, as are those of the middle back, some of the latter disintegrated; the elongated feathers of a paler slatey grey, those of the breast not exceeding 3·5 inches in length, those of the back reaching quite to the end of the middle tail feathers. In most specimens there is a somewhat brownish ashy tinge on the abdomen and vent feathers. In some

adults there are not more than one or two white feathers on the whole chin and throat; in others there is a well-marked pure white streak from the tip of the chin down the centre of the throat fully four inches in length, and between these two extremes every intermediate amount of white occurs. There is a broad full occipital crest about an inch long, but without the two or more very elongated feathers, such as *D. gularis* exhibits; (as to other differences between the present species and *gularis*, vide STRAY FEATHERS, 1873, p. 254).

In some quite young birds only just able to fly, the general color is somewhat duller and less dark. The whole under-surface is paler and duller, the throat streak is much broader, the elongated breast and back feathers are entirely wanting, and the crest is only indicated. Birds are met with apparently not very young in which the back is strongly tinged with brown, in which the quills, especially the secondaries, are brown rather than slatey, and in which the under parts and the neck are a good deal mottled with a dull wood brown. One specimen, apparently an old adult, everywhere blackish slatey with about five white feathers only on the throat, has a large pale wood brown patch on the upper breast, at the base of the throat. It is quite clear that the nestlings are sometimes at any rate ashy like the adults; we shot two such on Trinkut, they are quite young birds with the down still peeping out through the feathers, and only just able to fly, with little short beaks about two-thirds the length of that of an old adult; but as regards color all that can be said is that on the upper surface they are a little paler, and on the lower surface somewhat browner than adults.

On this subject too I reproduce a note given me some years ago by the late Colonel Tytler. He says:—"This species is very common on Ross Island and all the rock-bound coasts of the Great Andaman and the minor islands. They are solitary birds, seldom more than one being seen at a time, though occasionally a pair may be seen fitting across the bay together, but invariably separating when they approach the land. They appear to breed either on the rocks or on stunted bushes, growing amongst the rocks. They lay as many as five or six eggs, very similar to those of *Ardeola leucoptera*. The nestlings are covered with a dark slate-colored down, which, as time progresses, is replaced by dark slatey feathers. These again becoming somewhat darker in the breeding season. I have had a dozen young ones at a time and have reared them all on fish."

There is therefore no doubt that in some cases the young of this species is, from the first, colored like the parent, but then, *per contra*, Davison at Trinkut shot one of the old ash-colored birds, and a Nicobarese boy who saw the bird shot said at once:—"I have got one of the young of that bird, which I took from the nest, now alive, which he thereupon brought, and Davison preserved it. This bird is about the same size, and about in the same stage of plumage as the ash-colored nestlings shot on the same island and already referred to. It is pure white, but here and there on the head a few tufts of ash colored down project through the white feathers and all over the back, wings, tail, and neck are tiny ash colored streaks, most of the feathers having the whole, or part, of three, four, or occasionally more, barbs of one or both webs, blackish ashy, these being generally towards the tips of the quills. The boy, of course, was a mere savage, and had certainly no idea of the discussion that has prevailed as to the connection between these white and ash colored races, and I think it may be fairly presumed that this pure white bird only, here and there delicately pencilled with ashy grey, was really the offspring of dark ash grey birds.

Then we have the pure white adult with fully developed dorsal plumes, rather more disintegrated than in the adult ashy bird, and some of them extending fully an inch beyond the end of the tail (which is the case in no specimen of the ash-colored bird that I have seen), and with the pectoral plumes as much developed as in the dark ash-colored adults, and which in every dimension and proportion corresponds exactly with these latter. In regard to this Colonel Tytler notes:—"A distinct species, which I call provisionally *D. candida*, but which may prove identical with *D. Greyi*, and which precisely resembles *D. concolor*, Blyth, has erroneously been assumed to be the young of this latter, I have had them from the nest, and can certify that the plumage is at all times white, just as that of *concolor* is always ashy."

Australian specimens of both races are identical with our Andaman bird. In regard to the former Macgillivray remarks:—"I was convinced that they were specifically distinct by seeing that the half grown young from the nests had assumed the distinctive color of the parents."

As regards habits the birds are not to be distinguished. The white perhaps are somewhat less numerous than the ash-colored ones, but we found them in many places associated

together, and I cannot recall ever seeing three or four ash-colored herons without seeing a white one somewhere near them; but there is this to be noticed that the white ones are infinitely more wary, so much so, that setting aside the young bird obtained by Davison, we ourselves only succeeded in shooting one white adult against 32 ashy ones, though we were daily seeing and trying to shoot the white ones. On the whole, the conclusion I provisionally arrive at on this, avowedly, very imperfect evidence is, that the white birds are only a sort of albinoid race of the dark ones, a race however that very commonly, if not invariably (and this remains to be ascertained) produces offspring similar to itself; that the dark birds generally have young colored like themselves, but sometimes white ones more or less variegated with ashy, which as they grow up may either assume the plumage of their parents, or join the ranks of the white variety. We tried very hard to master this problem, but without any marked success.

Davison remarks:—"I found this reef heron whenever I went both at the Andamans and Nicobars, sometimes singly, sometimes in pairs, or small parties, frequenting chiefly the sea shore and rocks left bare by the receding tide, but also up the salt water creeks.

"At the Andamans, at least in Port Blair and its immediate vicinity, it is not nearly so abundant as it is at the Nicobars. At the Andamans it breeds on a small islet off Corbyn's Cove, South Andaman. This islet is low and rocky, and is partially covered at high tide; about the centre it rises into a rugged crag about fifteen or twenty feet high, full of crevices; it is partially covered with coarse grass, and out of one side grows a stunted ragged tree. In the crevices and in some of the larger branches of the tree these birds build their nests, which are simply platforms of sticks, with only a slight depression for the eggs. In the early part of May there were six nests on the island, but I only obtained one egg; the birds had not laid in the others, though they had apparently ceased building—the vicinity of these nests had a very disagreeable fishy smell. All the herons I saw on this island were the dark ashy ones, and one that was caught on her nest was also of the dark variety.

"At Trinkut Island the natives told me that they built their nests on the cocoanut palms."

To judge from those taken by Mr. Davison and others sent me by Captain Wimberley, which were taken somewhat later in the year, the eggs are of the ordinary heron type, moderately

elongated ovals in shape, the shell rather coarse, much pitted with minute pores and entirely glossless. The color is an uniform very pale sea green. They have, of course, no markings or spots of any kind, though as incubation proceeds, they get more or less stained and tinged with brownish soils. They vary from 1.7 to 1.85 in length; and from 1.25 to 1.33 in breadth.

As regards the white variety, Davison remarks:—"This species, if it really is a species, and not merely an albinoid variety of *H. sacra*, is not uncommon about the Andamans and Nicobars, it usually associates with *H. sacra*; but is so shy and wary that it is almost impossible to get a shot. In size, gait, habits, &c., it is identical with *H. sacra*, differing only in color."

As to the allied *gularis*, Bosc, there is now no possible doubt that it extends along the whole western coast of India, and also occurs in Ceylon. My friend Mr. Carter has just procured a specimen for me in Tinevely. Jerdon remarks that he has found it 200 miles from the sea coast in the Deccan, but this may be safely said to have been a somewhat exceptional occurrence. The bird is essentially a salt water heron, and ninety-nine out of every hundred will always be found within an easy flight of salt water.

929.—*Bubulcus coromandus*, Bodd. (10.)

We did not observe this species anywhere in the Nicobars, but it very likely may occur there as it was plentiful at Acheen and in the Andamans, and again on Table Island. Specimens from these localities differ in no perceptible degree from continental examples.

Davison says:—"The cattle egret is not very common at the Andamans. I usually found it singly in the paddy fields and occasionally in gardens; but I do not think I observed it either in the sea shore or in the mangrove swamps. I did not see it at the Nicobars; but shot it at Acheen. The specimens I obtained were only beginning to assume the breeding plumage."

This is doubtless a permanent resident, but birds shot in July show scarcely a trace of summer plumage.

930.—*Ardeola Grayii*, Sykes. (2.)

I never observed this species except at Barren Island. Davison, however, preserved a couple of specimens, and remarks that:—"It is very common in the neighbourhood of Port Blair, where it is found on the sea coast, in mangrove swamps, along

salt water creeks, and fresh water streams, in paddy fields, in fact wherever there is water. It is, I believe, migratory at the Andamans, but it was still to be seen when I left the islands in May."

931.—*Butorides javanicus*, Horsf. (15.)

Specimens from the Andamans and Nicobars agree precisely with others from the continent of India, but they seem to average somewhat smaller. A fine, perfectly adult male, as the plumage shows, measured as follows:—

Length, 16.75; expanse, 25; tail, from vent, 2.5; wing, 6.75; tarsus, 3; bare part of tibia, 0.5; bill, at front, 2.45; from gape, 3.1; wings, when closed, reach to end of tail; weight, about 6 ozs.

Front of tarsus, toes and claws, brownish green; bare portion of tibia and back of tarsus, dirty greenish yellow; soles clear, slightly greenish yellow; bill black; lower portion of lower mandible, from base to tip, edged pale horny; irides bright yellow; naked skin round eye dull green, tinged yellow in front; eyelids deep green.

We obtained a young bird, probably about eight months old, which, as it differs very markedly from the adult, and has not yet I believe been described, may as well be more particularly noticed now. The head is dark brown with a greenish tinge; each feather with a narrow central rufescent white stripe; the crest little developed. The back and scapulars brown, tinged greenish, each scapular with a triangular fulvous white spot at the tip. The wing coverts brown, broadly margined with pale rufous and with a long triangular white or rufescent white spot at the tips; all the secondaries and primaries with a pure white spot at the tips, largest and most conspicuous in the later primaries. The entire lower parts fulvescent white, whitest along the chin and the centre of the throat, everywhere streaked, broadly on the breast and abdomen, and more narrowly on the throat and sides of the neck, with dark brown, and strongly tinged on the cheeks and ear-coverts, and in patches elsewhere, with pale ferruginous. The vent and lower tail coverts less perceptibly streaked, but mottled with pale brown.

In a somewhat older bird the crest is longer, the head more decidedly green, the fulvous white stripes reduced to mere lines, and many of the triangular spots of the coverts have diminished in size, and those of the scapulars have disappeared; the striation of the lower parts is paler, and not so marked.

The nestling however is quite different from these; recently we have obtained one killed on the 24th of July, not yet able to fly properly. This has the head and nape (the crest very little developed) and the entire upper parts including wings and tail, a dark brown almost black, everywhere more or less glossed with a dull green metallic lustre, duller and more coppery on the back, brighter on the coverts, secondaries, and tertiaries, and very little apparent on the small portions of the quills that have as yet emerged from their sheaths; some of the coverts, the secondaries, and tertiaries, narrowly margined with ferruginous. The chin, throat, and neck sooty brown, with a central stripe from the chin, down the front of the neck, caused by a pale rufescent white streak or patch on each feather; sides of the neck, each feather with a dull ill-defined central ferruginous streak. Breast feathers, the same sooty brown, each feather with a broad rufescent white shaft stripe; abdomen, vent, and lower tail coverts dusky, most of the feathers tinged with pale ferruginous towards their tips; axillaries sooty brown with a faint coppery gloss.

How soon this bird passes into the spotted plumage I am not certain, but I believe about October or November at the first moult.

Davison remarks:—"Very common at the Andamans and Nicobars; found chiefly among the mangroves but occasionally along the sea shore. It breeds both at the Andamans and Nicobars; I shot the young at the Nicobars in the latter end of February, and I shot a female at Port Blair in May which had in the oviduct an egg almost ready for expulsion."

933.—*Ardetta cinnamomea*, Gm. (1.)

We only preserved one single specimen of this species, a male in fully adult plumage which we shot at Tillang-chong (Nicobars) in a little swampy fresh water pool. The following were the dimensions of this specimen:—Length, 15.5; expanse, 21; wing, 5.7; tarsus, 1.7; bare portion of tibia, 0.7; bill, at front, 2.1. We shot the bird, but failed to preserve it, at Preparis.

934.—*Ardetta sinensis*, Gm. (4.)

Specimens from the Andamans and Nicobars are brighter colored than any that I have seen from the continent of India. I have already fully described a specimen in this bright plumage, STRAY FEATHERS, 1873, p. 308. In the Nicobars, we shot a single specimen on a little fresh water swamp on Tillang-

chong. This was an adult female and measured:—Length, 15·25; expanse, 19·25; tail, from vent, 1·8; wing, 5·3; tarsus, 1·87; bare portion of tibia, 0·12; bill, from gape, 2·75: at front, 2·25; the closed wings reached to the end of the tail; weight, 6 ozs.

Legs and feet dingy yellow, greenish on joints, soles bright yellow; orbital skin greenish; cheeks and sides of the bill at base, greenish yellow; lower mandible and sides of upper mandible yellowish horny; culmen brown; irides golden yellow.

Davison says:—"I only saw four of these little yellow bitterns during my stay at the Andamans, of which I was fortunate enough to secure three. The first I obtained was one I flushed out of a paddy field while beating for snipe, and the other two were beaten out of a patch of sugar-cane. All three specimens were shot at Aberdeen, South Andaman."

936 bis.—*Goisakius melanolophus*, *Raffles*.
(3.)

We only met with this species in the Nicobars, but even here it is apparently rare. We only procured three specimens, one at Tillangchong and the others at Camorta. This species was originally described from Sumatra, and has been found in Japan, the Philippines and Pelew Islands, but the only other place *within our limits* where it has been observed is Ceylon, where a few specimens have at rare intervals been obtained on the west coast near Columbo, at Arippe, &c. This species, though well defined by its short neck and short and powerful bill, varies very much in plumage. Raffles' original description was as follows:—"Has a shorter thicker neck; is of a chesnut color mottled with black; tail and crest black; bill rather short; belly variegated with white, black, and brown. It is about eighteen inches long."

Temminck's description Pl. Col., 582, runs as follows:—"The adult bird is one-third less than the European bittern. The top of the head, the occiput and nape are clothed with wide elongated feathers which form a full occipital tuft, these feathers, as also those of the forehead, are a fine reddish purple; the cheeks are rusty red; the nape dull red, the whole without spots or streaks. The throat and the front of the neck are whitish-ashy, and these parts exhibit wide, longitudinal red, black, and white streaks, the black occupying the middle of the feathers, while either the rufous or the white cover the sides; the chest, and the whole of the rest of the lower parts are similarly adorned with the same colors, but broad white streaks occupy the centres

of the feathers, the margins of which are marbled with dull black and rufous. The whole back and wings are chesnut rufous, studded with a multitude of black striae and zig-zags; the quills are an ashy black, their tips rusty red; the tail feathers are bluish black; the iris red; the beak and feet yellow. Total length, 16·5; the bill, at front, 2·2."

Schlegel also gives two figures of this species in the *Fauna Japonica*, and gives the following additional dimensions:—

"Length, 19·7; wing, 10·95; tail, 4·65; bill, at front, 1·65; from the gape, 2·5 nearly; tarsus, 2·85; mid toe, without the nail, 1·73; hind toe, 0·83; tail slightly rounded; first quill, 0·63, and third quill, 0·3 nearly, shorter than the second which is the longest in the wing."

Now the plumage of this species is very variable, and though the figures given by Temminck and Schlegel leave me no serious doubt that our birds belong to this present species, I yet cannot say that either descriptions or figures adequately represent any one of *our* three birds.

A supposed adult male measured, wing, 10·3; tarsus; 2·3; bill at front, 1·75. It has the forehead, crown, occiput and nape, and the elongated pointed occipital crest, which is fully three inches in length, a deep blackish brown exhibiting in some lights a faint maroon tinge; over the eyes there is an ill-defined chesnut band; the cheeks, sides of the neck, and the whole back of neck, underneath the crest, are *bright* chesnut; the whole mantle is a *dull* chesnut, closely freckled, vermicellated and irregularly but finely barred with blackish brown; the rump and upper tail coverts dull, dusky, slate color; tail uniform slaty black; the primaries dingy black; the first three conspicuously tipped, and margined towards the tips on the outer webs, with white or rufescent white, and a little freckled and mottled inside the tippings with rufous or rufescent white; the greater coverts of these first three primaries blackish brown, broadly tipped with white, and here and there tinged on the outer web with chesnut; the rest of the primaries very broadly tipped with dull chesnut, these tips obscurely margined with rufescent white, and freckled towards these margins with dull blackish brown; their greater coverts bright chesnut, paling towards the tips, and with a narrow, subterminal, freckled brown band; secondaries similar, blackish brown, freckled, towards the tips, most especially on the outer webs, with dull chesnut; visible portion of tertiaries and the whole of the rest of the wing coverts, not already specially described, similar to the back and scapulars, and above described as

forming part of the mantle. The wing lining, axillaries, flanks, tibial plumes, and shorter under tail-coverts are barred black and white; the latter in most cases strongly tinged, and suffused with ferruginous and chesnut. The chin and throat white, more or less tinged rufescent, with a few small blackish brown spots down the centre; the front of the neck and breast a sort of dingy ferruginous brown, the central feathers with long black and buffy white streaks; the abdomen white, more or less strongly tinged rusty; the feathers everywhere, more or less, freckled and mottled with imperfect irregular blackish brown transverse bars; the longest tail coverts pure white, with a few imperfect irregular blackish bars towards the tip.

The female procured at the same time and place measured:—

Length, 17; expanse, 29·5; tail, from vent, 3; wing, 9·12; tarsus, 2·3; bare portion of tibia, 0·8; bill, from gape, 2·4; bill, at front, 1·8; weight, 0·75 lbs.

The legs and feet were dull green; claws horny; irides greenish yellow; the upper mandible horny brown, edged with dull green; the lower mandible greenish horny; she differs from the male in having no line of dark spots down the centre of the chin and throat; in having no feathers of the crest as dark as in the male, and in having several of them, and amongst others the longest, a sort of purplish red instead of black; the whole mantle is somewhat paler, and the quills are markedly slatey; the barrings of the wing lining, sides, &c., are much less conspicuous, and less tinged with ferruginous; the ground color of the breast is more of a fawn color, tinged with ferruginous, and there is very much more white about the abdomen, and this is less rufescent than in the male.

A young female measured:—Length, 18·75; expanse, 36·5; tail, from vent, 3·5; wing, 10; tarsus, 2·6; bare portion of tibia, 1·12; bill, at front, 1·8.

The whole of the top, sides and back of the head and back of the neck black; each feather, including those of the crest, with a larger or smaller white subterminal spot, which, especially on the longer crest and neck feathers, are more or less cuneiform; besides these there is a tiny white dot at the tips of most of the feathers. The chin and throat are white, and the cheeks, sides and front of the neck are buffy or buffy white, all or more or less mottled, or imperfectly barred with blackish brown; the breast and abdomen are rufous buff, most of the feathers, with white central streaks towards their bases, some of them with one web entirely deep brown, and all of them more or less freckled, or irregularly barred, or

streaked with this color. The wing lining and axillaries deep brown, strongly, but somewhat narrowly, barred with white, and here and there somewhat tinged with ferruginous brown; the whole mantle is hair brown with here and there a faint ferruginous tinge, everywhere closely variegated with narrow imperfect freckled, or zigzag bars of buffy yellow, and with here and there a few narrow shaft spots of this same color. The first three primaries are much as in the bird first described, and the rest of the primaries and secondaries are freckled towards their tips with white or pale buff, but the primaries are a very deep, and the rest of the quills a pale hair brown; the chestnut colored greater coverts of the fourth, and following primaries are broadly tipped with white, and freckled all over with hair brown.

Comparing our three birds with the descriptions and figures already referred to, it would seem that the species referred to is very variable in its plumage, and that a very large series is required before its various changes can be properly described. We shot one bird on Tillangchong, Mr. Davison obtained two from Malay birdcatcher at Camorta, who caught them at False Harbour. Our bird was shot in the afternoon; but Mr. Davison tells me:—"The man from whom I obtained these birds informed me that he caught them during the night on the edge of a small stream in the forest whither they came to feed; during the day he informed me that they remained perfectly still seated on the branch of a tree or among the pandanus, and that they fed during the night only; the note he informed me was loud and like a bark."

937.—*Nyctiardea nycticorax*, *Lin.* (O.)

Davison says:—"I saw several of night herons at the fresh water ponds on Trinkut Island, Nicobars, but failed to secure a specimen."

951.—*Nettapus coromandelicus*, *Lin.* (O.)

Lieutenant Wardlaw Ramsay secured a single specimen of this bird at Corbyn's Cove, South Andaman, which he shot out of a small flock. None of us met with it during our stay at the islands, but after our departure Captain Wimberley shot a pair.

952.—*Dendrocygna arcuata*, *Cuv.* (11.)

This is *the* duck of the Nicobars, where it occurs in great numbers. Nicobar specimens are identical with Indian ones.

Davison remarks :—"This teal occurs in very large flocks on some fresh water ponds situate on the north-eastern coast of Trinkut Island. When disturbed from one piece of water they all rise high up and keep circling over head, uttering their peculiar whistling note; after sometime they all swoop down and alight together on one of the other ponds, occasionally a few would separate from the main flock and settle for a few minutes on the large forest trees growing round about. I do not know if they are permanent residents on Trinkut; I did not meet with them anywhere else."

963 *bis*.—*Mareca gibberifrons*, Müll. (10.)

Lord Walden says that my *Mareca albobularis*, STRAY FEATHERS, 1873, p. 303, is identical with the above-named species from Celebes. I am not absolutely certain of this, because he does not appear to have compared the males, because this species does not appear to be found either in the Nicobars or in Sumatra, and because it is a permanent resident in the Andamans, and it is it seems to me somewhat doubtful whether birds, permanent residents in Celebes and Timor, and others permanent residents in the Andamans, and yet not occurring in the intermediate Nicobars and Sumatra, can be absolutely identical. However for the present, as Lord Walden says that one Andaman female is identical with a Celebes example, I follow him in recording the bird under Müller's name. Full dimensions and description of this species are given, STRAY FEATHERS, 1873, *loc cit*.

Davison says :—"This teal is said to have been very common, at one time, in the Andamans, but it is far from being so now. It appears to frequent alike both salt and fresh water. During the day it either perches among the mangroves, or settles down in some shady spot on the bank of a stream; when wounded it does not attempt at first to dive, but swims for the nearest cover in which it hides itself, but when hard pressed it dives but does not remain long under water, and appears to get soon exhausted. It feeds by night in the fresh water ponds, and I was informed that it is to be seen during the rains in small flocks in the morning and evening in the paddy flats about Aberdeen. Sometimes in going up the creeks a pair will slip off the bank into the water, and keep swimming about 20 yards ahead of the boat, only rising when hard pressed, but they are very wary when in flocks. I could learn nothing about the breeding of this species. The only note

I have heard them utter is a low whistle, and this apparently only at night when they are feeding."

975 *bis.*—*Prion*, *Sp.* ? (O.)

When at sea, between Preparis and the Cocos on the 4th of March, we saw several parties of blue and white petrels; the officers of the ship called them whale birds, but they were manifest *Prions* of some species or others.

976.—*Thalassidroma*, *Sp.* ? (O.)

The same day, some hours earlier, we saw a few, small dusky petrels, of the stormy petrel type, hovering about a mass of water-logged cocoanut stems and other wood. We changed the course of the steamer two or three times and even lowered a boat, but we failed to get anywhere near any of them.

989 *bis.*—*Sterna gracilis*, *Gould.* (3.)

It is with considerable doubt that I refer to this species, three specimens of a beautiful little tern killed at the Andamans during July last, I having no specimens of that species to refer to, and neither Gould's description in the Hand-book of the Birds of Australia, (and he gives no dimensions), nor Professors Schlegel's brief diagnosis in the "Musée, Pays Bas," sufficing to enable me to make certain of the species. Indeed these birds appear to me in some respects intermediate between *gracilis*, Gould, and *paradisea*, Brünn.

The total length of the bird is about 14 inches; wing, 8·5; tail which extends an inch beyond the points of the wings, nearly 7; the bill, which is very slender, is in shape almost a perfect counterpart of that of *Sternula melanauchen*, and measures 1·4 to 1·5 from forehead to point. The tarsus is 0·75; mid toe and claw, 0·9; the webs are ample, scarcely at all scalloped.

The bill was orange red; the legs and feet red, claws brown; the entire top and back of the head, and a point descending on the nape, velvet black, the black extends on the sides of the head in a straight line almost but not quite as low as the lower margin of the eye. The whole of the side of the head below this, the chin, throat, neck all round, breast and entire lower parts, and the whole of the outer tail feathers, pure white; the white of the cheeks just extends up to the central one-third of the lower margin of the eye. The rest of the upper parts, except the first three primaries, very delicate pale

French grey. The first three primaries very dark grey, almost black on the outer web of the first primary, dark grey on the outer webs of the second and third (which are however more or less powdered, and silvered over with pale French grey) and dark smoky grey, on a stripe on the inner webs of all three, nearest the shafts. The rest of the inner webs of these three are pure white. The rest of the quills are margined at the tips, and on the inner webs with white, the fourth and following primaries have the grey *slightly* darker, while the tail feathers (excluding the longest which are pure white) have it slightly paler than on the back. The shafts of all the quills are pure white; but the earlier primary greater coverts have them darker, or have a trace of a narrow darker grey shaft stripe.

If this species is new, which the above description will doubtless enable Mr. Howard Saunders to tell us, it may stand as *Sternula korustes*, nobis. The black on the head is so arranged, and so runs down the back of the neck, that the bird looks just as if it had a black helmet on with a plume running down the back of the neck.

I may add that there is no black at all about the bill of the adult, which, but for the difference of color, appears to me absolutely identical with that of *Sternula melanauchen*. There is no white about the forehead, and the tarsi and feet, except for the difference of color, appear to be perfectly like those of this latter species.

990.—*Sterna bengalensis*, Less. (3.)

In all our journeyings we never saw a single specimen of this species about any of the islands. In fact the entire dearth of gulls and terns was what most surprised me during my trip. Davison, however, shot three specimens of this species, all females. He says:—"I only met with this tern twice, and on both occasions, on the north coast of Camorta; once I saw a small party of about twenty, and once only a pair. On both occasions they appeared to be flying away westwards, but were attracted by the boat, around which they hovered for a few minutes."

These females measured as follows:—

Length, 15.25 to 15.75; expanse, 35 to 36.5; wing, 11.4 to 11.7; tail, from vent, 5 to 5.6; tarsus, 1 to 1.1; bill, at front, 1.95 to 2.15; wings, when closed, reach to 2 inches beyond tip of tail. Legs and feet black; soles yellow; bill yellow; irides deep brown.

991.—*Sternula melanauchen*, Temm. (45.)

In March when we visited the Andamans and Nicobars we scarcely saw any terns at all. The very few that I saw all belonged to this species, and Davison's experience throughout the islands from December to near the end of April was very similar; but after we had left in April and May, *melanauchen* became in some localities in the neighbourhood of Port Blair by no means uncommon.

The sexes in this species do not appear to differ in any way except that the bills of the males average rather larger than those of the females.

The following is a *resumé* of the dimensions of twenty-four specimens which we preserved of this species, all of which were shot at Aberdeen or Corbyn's Cove, besides which a large series were sent up by Captain Wimberley, obtained between June and September, and two skins were given us which had been procured in the Nicobars. Length, 12·9 to 14·5; expanse, 25·5 to 27; wing 8·4 to 9; tail, from vent, 5·5 to 6·5; tarsus 0·72 to 0·8; bill, at front, 1·3 to 1·58; weight, 2·7 to 3·75 ozs.

Bill black; the extreme points of both mandibles pale yellowish horny; feet black; irides wood brown.

Dr. Jerdon in his description omits to notice that the whole of the lower plumage, and generally the back of the neck, the wing lining, axillaries and lower surfaces of the quills have a beautiful roseate tint, even brighter than that of *Larus Lambruschini*. In *Lambruschini* the color fades very greatly, in fact almost disappears; but this is not so much the case in the present species, many specimens of which now before me still glow with the most delicate roseate tints.

Davison remarks:—"A flock of these small terns arrived in Port Blair harbour in the last week of April. I first saw them on the islet of Corbyn's Cove on the 28th April; they appeared to have only just arrived, and were all huddled together on the rocks; a day or two later they had, to a certain extent, spread over the harbour, for I found them off Viper and Chatham Islands; but the main body kept to Corbyn's Cove; there were about 100 or more."

This species breeds freely during the monsoons at the Andamans, laying in July and the early part of August in the immediate neighbourhood of Port Blair. Like the rest of their congeners they make no nest, but lay in a tiny depression on the bare ground. The place where Captain Wimberley (to whom I am indebted for several specimens) found the eggs was a small rocky islet near the main island, and, but for a

little low scrub, entirely bare. The eggs are regular ovals, rather more pointed towards one end than the other, and though smooth and satiny in their texture exhibit but little gloss. The ground color varies from creamy yellow to pinkish stone color, and is sparingly, but usually boldly, blotched and spotted with a more or less sienna brown, which in some spots is almost black. Besides these primary markings, as in all terns eggs, numerous clouds, spots and blotches, in some eggs small, in some large and conspicuous, of pale purple or dusky grey, are scattered here and there about the egg, looking as if they were below its surface. In some spots the brown is excessively red, and in others a reddish halo surrounds part of the spot as if the color had run. The eggs vary from 1.49 to 1.63 in length, and from 1.08 to 1.16 in breadth.

992.—*Onychoprion anosthætus*, Scop. (O.)

Of this species Mr. Blyth received a specimen from the Andamans as noticed in Mouat's Appendix. We did not ourselves observe the bird there, but it unquestionably occurs in all the islands and indeed throughout the Bay of Bengal during the monsoons.

In the young of these birds the bill is almost black, and the feet are a dark dingy brown with a very faint reddish orange tint. The whole upper plumage, (except the forehead and edge of the wing which are white,) is hair brown, very pale at the back of the neck and dark on the primaries (the outer web of the first being almost black), and most of the feathers, except the primaries, are more or less narrowly tipped with fulvous white. The measurements of a young one obtained in the Bay of Bengal where they are not uncommon in the autumn, were as follows:—

Length, 12; wing, 9.7; bill, at front, 1.42; from gape, 1.92; height, at front, 0.23; tail, 5.5; the longest tail feather exceeds the shortest by 2.2; tarsus, 0.8; mid toe and claw, 1.15; the mid toe claw is less curved than in *fuliginosa*, but has the inner edge similarly dilated.

993.—*Anous stolidus*, Lin. (O.)

Blyth notices the receipt of a specimen from the Andamans. We did not obtain it there.

Whether the common noddy of the Bay of Bengal is really identical with the *stolidus* of Linnæus is perhaps still some-

what doubtful; but that it is identical with *leucoceps* of Swainson, figured as *stolidus* by Gould (B. of Aust. VII, pl. 34) is clear.

Dr. Jerdon's description does not correspond over well with birds obtained from the Andamans, whereas the adults there procured, of which there were several specimens in Colonel Tytler's collection, are accurately portrayed in Gould's figure and in the following brief description by the same writer:—

"Upper and under surface chocolate brown; crown of the head pale grey, gradually blending with the brown of the upper surface; primaries and tail brownish black; a spot of black immediately before and above the anterior angle of the eye; irides brown; bill black; legs and feet dull brownish red; webs dusky; claws black."

Birds from the Bay of Bengal are perhaps more of a hair brown than a chocolate brown; the tails are scarcely darker than the rest of the body, and the primaries are only deep hair brown; the eyelashes are white. In not quite adult birds only the forehead and the sides of the crown are greyish white.

In a younger stage still the forehead, crown, occiput, and lores are brown, mottled with pale brown; the chin and throat are mottled with greyish white; centre of the abdomen white; flanks, vent feathers and lower tail coverts are greyish white; wing lining pale French grey; edge of the wing, white; the rest of the plumage darker brown than in the adult; most of the tertiaries are tipped with yellowish white, and most of the scapulars and many of the feathers of the back and coverts excessively narrowly tipped with dingy white; feet, *dingy* olive; the bills of the adults are stouter and longer than those of the young ones, and the males appear to be slightly larger than the females. The dimensions of a fine adult male were as follows:—

Length, 15; wing, 11·5; tail, 6·5; bill, at front, 1·7; height, at front, 0·3; tarsus, 0·95; mid toe and claw, 1·6. A young male, with the same length of wing, had the bill only 1·45 at front with a height of 0·25. These birds frequently alight on the rigging of vessels between Ceylon and the Sandheads, and are, as is well known, so sluggish that they can be caught with the hand when thus perched.

994.—*Anous senex*, Leach. (O.)

We did not obtain specimens at the Andamans, but I have examined specimens from the Bay of Bengal, and I know of one specimen at any rate having been shot at Port Blair.

I do not think Dr. Jerdon's description is quite sufficiently full; an apparently adult male, caught in the Bay of Bengal, had the forehead, crown, and occiput white. Lores, cheeks, ear-coverts, and nape a sort of mouse brown; a blackish brown line ran round the greater portion of the eye. The whole of the rest of the plumage, above and below, was a rather deep hair brown, deepest on the quills and deepest of all on the outer web of the first primary, which was almost black. Bill black; irides brown; legs and feet dingy brownish orange or red.

Length, 11; wing, 8.5; bill, 1.6; tarsus, 0.75; mid toe and claw, 1.4.

This bird is clearly not identical, it seems to me, with *A. leucocapillus*, Gould, which has the bill 2 to 2.25. The feet brownish black, the lores black, and the whole plumage sooty black, and of which I have a fine specimen from the northern portion of the Indian Ocean and which must be included in our Indian Avifauna.

996.—*Phaeton rubricauda*, Bodd. (O.)

Blyth mentions the receipt of a specimen of this species which he calls *æthereus* from the Nicobars. We neither obtained nor saw this species, but it occurs I know in the Bay of Bengal, although despite what Blyth says I believe that it is less common in our Indian waters than either of the other two species.

I suppose this bird varies a good deal in plumage; a very fine male killed in the Bay of Bengal differs *toto calo* in measurements and description from those given in Dr. Jerdon.

Length, 33; tail, 17.5; wing, 13.8; bill, at front, 2.6; from gape, 3.3; height at front, 0.7; tarsus, 1.2; mid toe and claw, 2.1. This bird is nearly twice as bulky as *candidus*. Then the bill was pale yellow and the feet of the same type as in *candidus*, viz., legs, mid toe, and upper portion of front toes olive yellow, rest of foot and claws black. Possibly the colour of the bill may vary at different seasons.

The whole plumage was silky white without a shade of rosy, though the specimen was fresh. There was a broad black mark in front of and running through the eye, and extending about $\frac{1}{4}$ of an inch behind it. The primaries conspicuously black shafted on their upper surface. Some of the tertiaries black shafted and with conspicuous broad blackish grey central stripes. A few of the flank feathers with broad iron grey, or in some greyish black, central stripes. Tail feathers conspicuously black shafted; the narrow webs of the terminal 14.5 inches of the two elongated central tail feathers bright red.

996 *bis.*—*Phaeton æthereus*, *Lin.* (O.)

This species I am informed is often seen on the passage to and from the Andamans, especially in the monsoons, and in the neighbourhood of the Cocos. At Treis Mr. Davison and others of our party saw a *Phaeton* with a white tail over two feet in length which can have been no other than the present species. I think there is no doubt that the specimens I obtained on the Mekran Coast, STRAY FEATHERS, 1873, p. 268, belonged to this species, and I do not understand why authors generally seem to consider it confined to the Atlantic Ocean.

997.—*Phaeton flavirostris*, *Brandt.* (O.)

This is another species that we failed to meet with; but Colonel Tytler himself shot a fine specimen at Ross Island that for some days had constantly hovered about in the neighbourhood of his dove-cot apparently attracted by the white pigeons he had in it.

Mr. Gray identifies this species with his *candidus*, but he figures this latter with a red bill, whereas our *flavirostris* of the Bay of Bengal has the bill very pale yellow.

Dr. Jerdon describes the feet as dusky, but Mr. Gray correctly figures them. The tarsus, hind toe, first joint of mid toe, and nearly the first two joints of the lateral toes are olive yellow; the rest of the foot and claws, (except the tip and dilated edge of the mid claw which are yellowish horny,) black.

I would add to Dr. Jerdon's description that in Colonel Tytler's specimen the feathers of the flanks are very broadly centred greyish black; that several of the feathers of the rump and upper tail coverts have a narrow black bar towards the tip, mostly concealed by the overlapping of the preceding feathers, and all the feathers of the crown and occiput will be found to have a large blackish brown spot near the base completely concealed by the overlapping of the feathers. The entire under-surface of the wings, (except in the case of a few of the last tertiaries), is *white*. But on the upper surface the first four primaries have the outer webs, shaft and a narrow stripe on the inner web black, to within about 1.5 of their tips; the fifth and sixth have traces of the same, and the rest of the primaries have the upper surface of the basal halves of the shafts black. The tail feathers, especially the two elongated central ones, are conspicuously black shafted.

The male, a fine specimen shot on Ross Island by Colonel Tytler, measured—

Length, 30; tail, 18.25; wing, 10.75; bill, at front, 2.1; from gape, 2.8; height, at front, 0.6; tarsus, 0.9; mid toe and claw, 1.6. The first primary is the longest; the second 0.05 shorter; the third 0.55; and the fourth 1.2 shorter.

998.—*Sula fiber*, *Lin.* (O)

When out at sea about opposite Prepara on the 4th March, and again when near the Cocos, we saw each time a pair of dusky boobies chasing flying fish; one pair passed within a short distance of the vessel, and I am pretty confident that they belonged to this species.

1004.—*Pelecanus philippensis*, *Gm.* (O.)

We certainly saw nothing of any Pelicans either at the Andamans or Nicobars, nor did we hear of their ever occurring there. At the Andamans they certainly do not occur, but Blyth says that Captain Lewis brought him a specimen of the present species from the Nicobars. I therefore admit this species into our list, but I am bound to say that in the whole Nicobars I did not see a single place such as, according to my experience, *philippensis* affects. In regard to this and one or two other species recorded solely on Captain Lewis' authority, I think it necessary to point out that mistakes may possibly have occurred. Captain Lewis was not a Naturalist, though he kindly collected specimens from time to time for the museum, and he brought skins up from both the Burmese coast and the Nicobars, and it is not impossible that some of his specimens from the two localities may have got intermixed.

A. O. H.

[NOTE.—Some Subscribers at home write protesting against my "loading" my "pages with elaborate descriptions of birds, of which quite sufficient though possibly less, full, and accurate descriptions can be found in every ornithological library."

Now once for all be it understood that STRAY FEATHERS are designed primarily for the use of Indian Field Naturalists, whose ornithological libraries for the most part begin and end with Jerdon's Birds of India, and my "Rough Notes," and that, therefore, it is an unalterable principle of this periodical, that every species therein referred to, occurring, or likely to occur within our limits, and not included in either of these works, shall when mentioned for the first time, be as fully described as possible, anything in any ornithological libraries in the world to the contrary notwithstanding.—ED.]

Novelties.

Micronisus poliopsis, Sp. Nov.?

Very close to M. badius, Gmel., but larger, the adult males a paler and purer grey, wanting the nuchal rufescent collar and the central throat stripe and with cheeks and ear-coverts unicolorous with the crown.

It appears to me impossible to avoid separating the Northern Pegu Shikrās under a distinct name. Whether they should rank as a distinct species, or only as a marked sub-species or permanent race, is a different question, and one in regard to which opinions will necessarily greatly differ.

I have only been able to examine six adults and three young birds, but both young and old differ in certain points from every specimen of the enormous series of *badius* which our museum contains from all parts of India.

In the first place, sex for sex, the Pegu birds are decidedly larger; in five males, four adults and one young, the wings vary from 7·3 to 7·9; in four females, two adults and two young, the wings vary from 8·3 to 9·1. These dimensions considerably exceed those of true *badius*, which may be taken at—females 7·8 to 8·6, and male 6·8 to 7·5—the great majority falling greatly within the maxima given.

In the next place, none of the young birds have more than four bands upon the central tail feathers; whereas every young banded-tailed *badius* that I possess has five or six bars on the central tail feathers; again the bars in the Pegu birds are much broader. In the adults the males are a paler and purer blue grey than in *badius*; they entirely want the nuchal rufescent collar; they have no central throat stripe, not even a trace of one in any one of the four; and the cheeks and ear-coverts, which in *badius* are always more or less brown, are in this race unicolorous with the crown. The adult females are greyer and paler than those of *badius*, and in them too the ear-coverts are concolorous with the crown; but one of them, which is, however, perhaps not fully adult, shows traces of a central throat stripe.

In both sexes the barring of the lower surfaces seems on the whole broader and more strongly marked than in any specimens of true *badius*.

As regards the adult males, a child would separate them from those of *badius*, but I am not so sure about the females and young; and what rather perplexes me is that I have a female from the Tipperah hills, which seems intermediate between the two races. The birds are true *Micronisi*, both as to legs and feet and bill. The third quill is the longest, and the first four are conspicuously emarginate on the inner webs, and a trace of this on the fifth, and the third to the fifth conspicuously emarginate on the outer webs. The birds do certainly differ very markedly from *badius*, and, if admitted to be distinct, may stand as above.

Since this was in type, I have received a letter from Mr. R. Bowdler Sharpe, concurring in the propriety of defining this well-marked eastern race of *M. badius*.

Propasser ambiguus, *Sp. Nov.*?

MALE.—Wing, 3.0; lores, chin, throat, cheeks, and supercilium, crimson; breast, abdomen, vent, lower and upper tail-coverts, very pale, rosy, all but the latter with very narrow brown shaft stripes; top and back of the head, and back, dark brown; feathers narrowly and inconspicuously margined pale brown.

FEMALE.—Above and below precisely like the female of *rhodochlamys*, but the pale margins of quills and coverts slightly more rufous, and bill about half the size, and tarsi about half the thickness.

I RECEIVED from Mr. Wilson, better known as "Mountaineer," a pair of Rose-finches, which appear to me to be distinct from any yet described, and which the above brief diagnosis sufficiently, I think, characterizes.

The Rose-finch group is fairly represented in my museum, and I have carefully compared these specimens with the following species:—*Carpodacus rubicilla*, *C. erythrinus*, *Propasser thura*, *P. rhodochlamys*, *P. rhodochrous*, *P. Edwardsii*, Verreaux (= *saturatus*, Blanford), *Procarduelis nipalensis* and *Procarduelis rubescens*. I have no specimens, and indeed have never seen any of either *rhodopeplus*, Vigors, or *pulcherrimus*, Hodgson, but I have the original descriptions of both, and Hodgson's figures of the one and Bonaparte's of the other. It cannot be *rhodopeplus*, which is considerably larger (wing 3.25 to 3.35 according to different authors), which has the eye-streak, chin, throat, breast, and

abdomen of the same tint. The upper parts much tinged with rosy, and the coverts conspicuously tipped with rosy; whereas in the present species the eye-streak, chin and throat are crimson, contrasting strongly with the very pale rose color of the rest of the lower parts. There is no tinge of rufous whatsoever on the back of the present species, and no rosy tippings to the coverts; then the female of *rhodopeplus* is rufescent, much as in *rhodochrous*, whereas in the present species she is just the same color above and below as the female of *rhodochlamys*.

Then as to *pulcherrimus*, this has the forehead, superciliary streak, cheeks, throat and upper parts, with the rump, silvery crimson, being almost silvery white about the head, whereas in the present species the superciliary streak, cheeks, and throat are a bright crimson, not a bit silvery, but indeed much the same color as the chin and throat of *Carpodacus erythrinus*.

The bill is that of a true *Propasser*, and does not accord with that of the sub-group, to which *githagineus*, *sinaiticus*, *obsoletus* and *sanguineus*, belong, with none of which moreover does it agree in coloration.

There remains *Davidianus*, M. Edward, N. Arch: du Mus: i. t. 23, and *mongolicus*, Swinh., P. Z. S., 1870, p. 447. The former work is not accessible to me. The latter is clearly distinct, and I quote the original description, as the bird is likely to occur within our limits.

"*Male*.—Upper parts sandy grey, browner on the crown and back; feathers of the crown, back, and scapulars with brown centres; wing feathers blackish brown; greater coverts broadly margined with rose color; the primary quills more narrowly and tipped with creamy white; the brown of each feather paling near the white; secondaries broadly margined with cream, and tipped similar to the primaries; tail deep brown, whitish on edges of inner webs, and broadly edged on outer with cream color; sides of neck, throat, breast and flanks light sandy brown; rest of under parts cream white; rose tinges the sides of the head, forehead, throat, cheeks, breast, flanks, and rump, brightest on the last.

"Length about 5·3; wing, 3·63; first quill, ·05, the longest; tail, 2·3, forked; centrals, ·3, shorter than outermost; upper tail-coverts extend to ·65 from the tip of the tail; bill, ·34 in length, ·2 in breadth, ·29 in depth; tarsi, ·66; middle toe, ·52; its claw, ·24; hind toe, ·28; its claw, 26."

Unless, therefore, my birds should happen to be *Davidianus*, which from the dimensions appears unlikely, they would seem

to be undescribed, and as they are certainly new to our Avifauna, and so many ornithologists are now collecting in the Himalayas, I have thought it best to describe them at the risk of their not proving new.

The following are the dimensions taken from the dry skin :—

Male.—Length, 5·75; wing, 3·0; tail, from vent, 2·25; tarsus, 0·82; mid toe and claw, 0·75; bill, at front, 0·39.

Female.—Length, 5·5; wing, 2·9; tail, from vent, 2·2; tarsus, 0·75; mid toe and claw, 0·7; bill, at front, 0·38.

The wings are perhaps imperfect, but the 2nd, 3rd, and 4th quills appear to be sub-equal and longest, and the first only 0·15 shorter.

The tail only slightly forked, almost even.

The upper mandible of the bill *appears* to have been a moderately dark brown; the lower yellowish horny; the legs and feet pale, yellowish, or fleshy brown.

In the male the forehead, crown, occiput, back and scapulars are a dark hair brown, most of the feathers narrowly, and inconspicuously, margined with pale-brown; a broad line from the nostrils over the eyes, the lores, cheeks, chin and throat, dull dark crimson; the feathers dusky at their bases; the ear-coverts and sides of the neck like the back, but more broadly margined with very pale brown; the wings, tail, and upper tail-coverts hair brown; the feathers with an excessively narrow pale brown margin, and the median coverts rather more broadly tipped with pale brownish pink: the rump pale rose color; breast, abdomen, vent, and lower tail-coverts pale rose color, paling towards the lower tail-coverts, each feather dusky at the base and with brown shafts or narrow brown shaft stripes.

The female has the wings and tail hair brown; the primaries, their greater coverts, and rectrices narrowly margined; and the secondaries, tertiaries, and all the greater coverts, except those of the primaries, more broadly margined; and the median coverts tipped, with a pale somewhat rufescent brown. The whole of the rest of the bird brownish white, paler on the lower surface, most albescent on the chin, darker and more olivaceous on the upper surface, each feather with a dark brown shaft stripe.

Both above and below the female is much less rufescent than that of *rhodochrous*, *saturatus*, &c., the general tone of coloring is more that of the female of *rhodochlamys* or *Pyrrhospinza punicea*.

Notes.

MR. W. T. BLANFORD furnishes us in the *Ibis* for January 1874 with many valuable identifications. He has kindly sent me a copy of his paper direct, the *Ibis* itself has not yet reached me. He says:—

"*Crateropus salvadorii*, De F. 1865 = *Malacocercus* HUTTONI,* Blyth, 1847, = *Chatorhea caudata* (partim), Jerdon. It is a true *Crateropus*, as are also *Chatorhea* (or *Malacocercus*) *caudata*, Dum., and *C. gularis*, Blyth, unless, indeed, the group containing *Crateropus chalybeus*, Bp., *C. acaciae*, Rüpp., &c., be removed from the genus (as is done by Gray in his Hand-list), in which case they would form a subgeneric section. *Crateropus Huttoni* is a well-marked species, fairly distinguishable by both its size and colour from *C. caudatus*. There is a specimen of the former from Candahar in the British Museum which agrees with skins obtained by Major St. John near Shiráz, the locality of De Filippi's species.

Melizophilus striatus, Brooks (P. A. S. B., April 1872, p. 66), is not a *Melizophilus*. It has ten tail-feathers only, and is an aberrant *Drymæca*, and identical with *D. INQUIETA*, Rüpp. Rüppell's figure in the Atlas is so bad that I do not wonder at the bird not being recognized. The species, however, is very well described by v. Heuglin in 'The *Ibis*' for 1869, p. 129. The affinities of the bird are shown not only by the number of its tail-feathers, but also by its nest, which is domed, as in other species of *Drymæca* (see *Ibis*, 1872, p. 180).

It appears to me that this bird has far better claims to form the type of a separate genus or subgenus than *D. gracilis*, the type of *Burnesia*; and I think we should follow Sundevall in using for it the term *Scotocerca*, as he has lately proposed in his 'Methodi Naturalis Avium disponendarum Tentamen' (p. 7).

By the kindness of Mr. Tristram I have been enabled to examine his types of *Drymæca eremita* and *D. striaticeps*. The former is certainly identical with *D. inquieta*; and I much doubt if the latter be more than a variety. It is rather paler in color both above and below; the striæ on the throat and upper breast are very faint, indeed scarcely to be recognized; and the abdomen and flanks are nearly white or only pale buff. But all these characters are variable in *D. inquieta*, and Mr. Hume describes a specimen from Sind without striæ on the chin and throat ('STRAY FEATHERS,' i., p. 201).

* The oldest specific name is given in larger type in every case.

The eastern race of the Orphean Warbler, *Sylvia JERDONI*, Blyth (1847), is identical with *S. orphea*, var. *helena*, Hempr. & Ehr. (1828); and I am inclined to suspect that the type of *S. crassirostris*, Rüpp. (1826), is merely an individual variety, in which case Rüppell's name would have priority. The bird in the Frankfort museum, however, has a decidedly thicker bill. The eastern race is rather larger than *S. orphea* from Western Europe, and has a longer bill, the two races passing into each other and breeding together where they meet in the Levant, as such closely allied forms generally do.

Sylvia NANA, H. & E., has been shown to be identical with *S. delicatula*, Hartl. (by Finsch and Hartlaub and by v. Heugelin), and with *S. doriae*, De Filippi (by Salvadori). Another synonym, I feel satisfied, is *Salicaria aralensis*, Eversmann (Journ. f. Ornith., 1853, p. 286).

The various forms described as *Salicaria elaeica*, Lindermayer, *Curruca pallida*, Hempr. & Ehr., *Sylvia CALIGATA*, Licht., *Sylvia rama*, Sykes, and *Jerdonia agricolensis*, Hume, all, I believe, belong to one species, varying much in size and slightly in structure, and belonging to the genus *Hypolais*. The western form, *H. PALLIDA*, H. & E., = *elaeica*, Lindermayer, has a rather broader bill, and is a somewhat larger form than *H. CALIGATA*, Licht., = *rama*, Sykes, whilst *H. agricolensis*, Hume, is a still smaller race; but all pass, I think, into each other so thoroughly that I cannot distinguish the different forms. The type specimen of *Sylvia caligata* has, I believe, the bill distorted or altered.

Acrocephalus brunescens, Jerdon, is identical with *Curruca STENTOREA*, H. & E.

I quite agree with Mr. Hume ('STRAY FEATHERS,' i., p. 189) that *Ruticilla phænicuroides*, Moore, is identical with *R. RUFIVENTRIS*, Vieill.; but *R. erythroprocta*, Gould, which Mr. Hume also unites with *R. rufiventris*, appears to be distinct, as in the former the black color comes lower down the breast, and all the under wing-coverts are black, whilst in *R. rufiventris* they are chiefly red. *R. semirufa*, H. & E., is a small race of *R. rufiventris*.

I believe that *R. rufogularis*, Moore, is probably the same as *R. ERYTHRONOTA*, Eversm. Unfortunately the type specimen of the former is inaccessible at present, being amongst the collection formerly belonging to the East India Company; and I have been unable hitherto to see Eversmann's description of *R. erythronota*, there not being a copy of the work in which it is described (Addenda ad Pall. Zoog. Rosso-As., Fasc. ii.) in the

British Museum, the Zoological Society's library, or in any private library to which I have access.

Saxicola Kingi, Hume, is apparently identical with *S. CHRYSOPYGIA*, De Filippi.

I agree with Mr. Hume in considering *Lanius arenarius*, Blyth, with the same as *L. isabellinus*, H. & E.

Emberiza cerrutii, De Filippi (1865, Viaggio in Persia, p. 13, note) is *E. HUTTONI*, Blyth (1849). *E. shah* (Bon. Consp. Gen. Av., i., p. 465), to which Gray, in his Hand-list, refers *E. cerrutii* appears to me to be the Persian form of *E. hortulana*.

The pale Eagle-owl from Kúlú, noticed by Mr. Hume in 'STRAY FEATHERS' (vol. i., p. 315), and for which, if considered distinct, he proposes the name of *Bubo himachalana*, is very probably the same as *B. sibiricus*, Eversmann, figured in Gray's 'Genera of Birds' (pl. xiii.) under the name of *B. cinereus*. It may probably be separable as a distinct race from *B. maximus*, and appears to have a wide range in Asia. I have a specimen shot by Major St. John near Shiráz, in Persia. Its occurrence in the Himalayas is mentioned by Selater, P. Z. S. 1860, p. 99, and again in the Appendix to Jerdon's 'Birds of India' (vol. ii., p. 870).

I HAVE recently been favored by Mr. Frederick Field, of Shahpoor in the Punjaub, with a specimen of *Pterocles senegallus*, Lin. I have already introduced this species into our Avifauna, (*vide* STRAY FEATHERS, 1873, p. 221,) having found it common in Sindh, but the present specimen was obtained much further north. It was shot on the 4th December 1873 at Hadali in the "Thali" of the Shahpoor district to the north of the Jhelum.

Mr. Field adds:—"For the first time, in the plains, I have seen *Myiophonus Temminckii*. There is one now (17th December) about the gardens in this station (Shahpoor). I have seen it several times." This species, during the cold weather, strays down into the plains to considerable distances from the hills. It may be met with here and there as a straggler in winter throughout Northern Behar, and Northern Oude, and Northern Rohilcund. It is plentiful in the Dhoon, not very rare in Saharunpoor and the sub-Himalayan plains districts westwards of the Jumna. It is common enough at Attock, and I have seen it often in the salt range, which bounds the northern portion of the Shahpoor district.

Writing to me recently Mr. J. H. Gurney says:—"There are certainly two spotted eagles of different species which have hitherto been confounded under the name of *Navia*, both being European.

The large bird (which Brooks is quite right in saying is the *Navia* of Brisson) is, I think, identical with the Indian *A. vittata* of Hodgson.

The smaller bird is excessively close to, and possibly identical with, the Indian *A. hastata*."

REFERRING to my remarks (STRAY FEATHERS, 1873, p. 197, *et seq.*) as to difficulty of making more than one species out of our Indian white-throats, Mr. Brooks remarks as follows:—

"I have been shooting white-throats here the last two days, and I find the Dinapore bird accords perfectly with the true *C. garrula*, and I agree with you that a line separating this bird from *C. affinis* cannot be drawn. Size is no criterion, for I have an English bird as large nearly as the largest *affinis* I have, and larger than most of my N. W. specimens. The *only* difference to be observed is the superior amount of white on the tail of the generality of N. W. birds. But some have a large amount of white in the outer tail feathers and a spot of white on the penultimate one, while others have no white on the penultimate feathers.

"Others again have any amount of grey patches on the white, and hardly any two have their tails alike. As the range of size between the smallest *C. garrula* I got here, and the largest *C. affinis* I got in the N. W. is less, decidedly, than between different specimens of *Phylloscopus tristis* obtained in the same place, I have no hesitation in concluding that *C. affinis*, Blyth, is a spurious species, and properly only a local or occasional variety.

"Jerdon's type of *C. affinis* in the Indian museum, or the types which he sent to Blyth, and from which the latter described this species, I have carefully examined, and in length of wing, tail, and tarsus they accorded perfectly with my N. W. examples. Your six-inch birds must have been abnormal monsters, but note that the wing you give is only 2.75, or equal to that of a good-sized English bird. *Vide* Macgillivray's dimensions. So also Jerdon's total length of six inches is supported by a wing of only 2½. I fancy the neck of the six-inch bird must have been dislocated or its tail may have come loose."

THE ACHEEN *Otocompsa*, described in STRAY FEATHERS, Vol. I., p. 456, and for which, if new, I proposed Davison's name *personata*, is I find *Ixos analis*, Horsf. I said at the time that I doubted whether it should not be placed as an *Ixos*, but taking the bird as a whole, I am still inclined to think that it is quite as near *Otocompsa*.

Letters to the Editor.

SIR,

THROUGH the courtesy of Herr Von Pelzeln, I have been enabled to examine the specimens of Nicobar birds brought to Europe by the Novara Expedition, and which are now preserved in the Naturalien Kabinet at Vienna.

I have put together the following notes upon them, and allied or identical species from other localities, as a contribution to our knowledge of the Avifauna of the islands.

Micronisus soloensis.

Nicobars, (Car Nicobar) wing, 7".5 ; tail, 5".0 ; tarsi, 1".7.
Java, " 7".3 ; " 4".8 ; " 1".7.
Celebes, " 7".3 ; " 4".6 ; " 1".65.

Ninox hirsuta.

The Nicobar specimen of this bird was lost. Herr Pelzel is of opinion that the following are only local varieties or races. *East India* (? from the peninsula) :—

Wing, 7".1 ; tail, 4".12 ; tarsi, 1".

A small bird resembling in coloration my specimen from the Nicobars, *vide* STRAY FEATHERS, Vol. I., p. 54.

Deccan. Wing, 8".5 ; tail, 4".8 ; tarsi, 1".

Looks like a small* example of *N. scutellatus*, but except that it is less rufous than most of the others. I can see no good reason for separating it.

Japan (?) Wing, 8".4 ; tail, 4".4 ; tarsi, 1".1.

A very rufous individual resembling my Andaman specimen.

Malacca (?) Wing, 7".5 ; tail, 4".2 ; tarsi, 1".

" 7".55 ; " 4".3 ; " 1.

* I don't understand what is meant by this remark, because *scutellatus*, Raffles, is much smaller than *hirsutus*, and has a total length of only 10 inches.—(*Vide supra*, p. 152.) ED., STRAY FEATHERS.

Resembling the last closely, but less rufous.

Singapore. Wing, 7·9; tail, 4·3·

Similar to the last.

Celebes. Wing, 9"; tail, 5".

This bird, I should think, ought to be separated* as *scutellatus*, but with regard to the others, slight differences in the amount of rufous coloration and in the size are the only points which can be mentioned as serving to distinguish them.

Nectarinia pectoralis.

Nicobar, identical with Javan specimens.

Nectarinia (Æthopyga) mysticalis.

According to my recollection the Nicobar *Æthopyga* seemed very like this species. Subsequently I saw Mr. Hume's description of it, in which he points out how it differs. For the sake of comparison I give the following measurements:—

Java ♂. Wing, 1"·92; tail, 2"; bill, at front, ·6".

Borneo. " 1"·9 " 1"·7 " ·55".

The female has no trace of the brick red dusting on the breast which we found in the Nicobar birds.

Collocalia fuciphaga.?†

Camorta and Java specimens are identical.

Lalage (Erucivora) orientalis.

Nicobars. Wings, 3"·1; tail, 2·6; tarsi, ·75; bill, at front, ·5.

Above.—Slatey; upper tail coverts lighter; lores whitish continued in a white superciliary streak; wings brown-edged and partially tipped with white; tail inky brown; four outer feathers on each side tipped white; outer pair for half the external margin also white.

Underneath.—Chin, throat, abdomen and under tail-coverts glistening white; breast and flanks white, barred with ashy.‡

Gracula javana, Cabanis.

Java. Wing, 7"·1; tail, 3"·35; tarsi, 1"·45; bill, at front, 1.

This is a specimen of the true Javan bird which I had been particularly anxious to see in connection with all that has been written on the subject of the races of black myna.

* How can that possibly be when it has a wing 9 inches long. ED., STRAY FEATHERS.
† *Rectius linchi*; I have already pointed out, STRAY FEATHERS, 1873, p. 294, that *fuciphaga* is a different bird altogether. ED., STRAY FEATHERS.
‡ This is a young bird. For full description, *vide ante*, p. 203. ED., STRAY FEATHERS.

Compared with the Nicobar and East Indian specimens it appears to be a much larger and stouter bird, especially so as regards the bill and claws. The bare space is detached from the lappets, while in the Nicobar and Andaman bird, which I believe to be *intermedia*, it is not so.*

Ardea jugularis, Forster.

Differs from concolor only in its longer bill and tarsi. Both the slatey blue and snow white specimens of *A. concolor* in the Novara collection are females.—J. BALL.

CALCUTTA, 10th December 1873.

SIR,

During December 1873, I killed, with a driving whip at Jubbulpoor, Central Provinces, a specimen of the Spotted-grey Creeper "*Salpornis spilonota*," see Jerdon's 'Birds of India,' Edition of 1862, p. 382.

The bird was on the large limb of a peepul tree in front of the Commissioner's house; when I noticed it the little bird got out of sight round the side of the bough furthest from me, as a squirrel would do.—R. P. LEMESURIER.

BOMBAY, 16th January 1874.

SIR,

870.—*Gallinago stenura*.—Mr. G. F. L. Marshall, in No. 5 of STRAY FEATHERS, correctly states this bird to be larger than *Scelopacinus* in opposition to the opinion expressed by Jerdon. This fact I had satisfactorily proved years ago before Jerdon's work came out; I find, from looking over an old diary, that I have recorded the weights of some scores of each species; the average weight of the former is 4 ozs. 3 drachms, and of the latter only 3 ozs. 3 drachms. The heaviest of *stenura* was 4 ozs. 9 drachms, of *scolopacinus* 3 ozs. 13 drachms. *Stenura*, according to my experience, does not frequent the same ground as the common species; grass land interspersed with rushes is its favorite retreat. Its flights too, as Mr. M. says, are more laboured than in the other species; it can at once be distinguished on the wing from this circumstance alone.

* It is so in some of our specimens. As regards the name, *javanensis*, Osbeck, surely has priority. As regards dimensions, some of our Andaman and Nicobar specimens exceed those given by Mr. Ball of the Javan bird. ED., STRAY FEATHERS.

972.—*Mergus castor*.—Referring to your remarks in the above No. of STRAY FEATHERS on this species, I may add here, for your information, that the only specimen I had until lately of this bird (a fine male) was shot by my friend Mr. Robert Campbell, C.E., at a large lake seven miles from Barrakur on the Grand Trunk Road five years ago; he afterwards told me (on my asking him if it was possible to obtain any more) that had he known that I valued the bird, he could have shot any number, as there were a great many, some hundreds on the lake.—J. C. PARKER.

SIR,

I was informed yesterday of a vulture's nest a few miles from here, so rode there this morning. The nest was placed on a low prickly bush, about *three* feet from the ground. The bush was growing on the side of a steep hill, the slope being at about an angle of 45 degrees. The nest was rather a large one, neatly lined with straw, and the egg was slightly set. Both birds were present, one on the nest, and the other on a rock about 20 yards off. They were unmistakably *Otogyps calvus*. I did not shoot them, though within 15 yards of them, as there could be no doubt what they were. The choice of situation for the nest seems strange, as within half a mile there were plenty of large trees, banyan, peepul, and tamarind. On the 22nd of this month I saw another nest of this vulture on the very top of the highest tree of a small group, a banyan. The egg was not laid, but both birds were constantly flying about the nest. Within 100 yards of this nest, on a very high peepul tree, there was a nest on which the villagers said the white-backed vulture had bred a month or so ago. The birds were still flying about, but the nest was empty.—JAMES DAVIDSON.

GOTEKINDEE, SATTARA DISTRICT; }
29th January 1874.

STRAY FEATHERS.

Vol. II.]

JUNE, 1874.

[No. 4.

Additional Note on the Birds of the Sambhur Lake and its

DR. SCLATER'S conscientious accuracy must really earn the admiration of every impartial ornithologist. I have given some illustrations of this already (*vide* pp. 451, *et seq.*) let me adduce a further example. In the *Ibis* this moment received, p. 185, Dr. Sclater says that Mr. Gould believes that *Suya superciliaris*, Hume, is *Rhopophilus pekinensis*, Swinhoe, and he, Dr. S, adds:—"We may remark that there is another *Suya superciliaris* of Anderson (P. Z. S., 1871, p. 212,) so that Mr. Hume's name would not stand in any case." Will my readers believe that there is no such bird as *Suya superciliaris*, Hume? I described the bird as *albosuperciliaris*, so that this charge of Dr. Sclater's of having described a new bird by a name already appropriated is purely imaginary.—A. O. H., Ed., S. F.

RAPTORES	...	10	15	2	27	10
INSESSORES.—						
Fissirostres	...	12	1	2	15	9
Scansores	...	5	4	4	13	4
Tenuirostres	...	1	3	...	4	1
Dentirostres	...	22	41	7	70	22
Conirostres	...	13	12	3	28	11
GEMITORES	...	4	3	1	8	3
RASORES	...	4	5	...	9	4
GRALLATOIRES	...	12	31	11	54	6
NATATOIRES	...	2	18	4	24	1
TOTAL	...	85	133	34	252	71

The ten additions to the first list are as follows :—

33.—Pseudaetus Bonellii, Temm.

I obtained one specimen of Bonelli's Hawk-eagle at Sambhur.

301.—Stoparola melanops, Vigors.

A male of this species was obtained in November 1873.

835.—Turnix Dussumieri, Temm.

A number of specimens of this species, described by Jerdon under the name of *T. Sykesi*, were obtained about the setting in of the rains.

860.—Strepsilas interpres, L.

During September three specimens of this rare species were obtained at the lake. Jerdon says that it frequents the sea-coast, and gives an instance of its having been procured 200 miles inland. Sambhur is situated, in a straight line, over 400 miles from the sea-coast at the Gulf of Kutch, but doubtless the birds only occurred at the lake as migrants *en route* from Yarkand and Central Asia, where Mr. Hume records them as probably breeding to the sea coast.

846.—Cirrepidesmus Geoffroyi, Wagl.

Several specimens were shot about the middle of August. They all showed some signs of summer plumage. Other specimens shot in the first week of September showed less signs.

844.—Squatarola helvetica, L.

A specimen of this bird in full breeding plumage was shot on the 25th of September.

890.—Lobipes hyperboreus, L.

Specimens of this rare bird were obtained on the 22nd and 25th of September. Mr. Hume had only previously obtained one specimen shot in the Kurrachee Harbour, and he is of opinion that it can only occur at Sambhur as a bird of passage.

895.—Totanus stagnalis, Bechst.

Shot during the latter half of September. The specimens showed more or less signs of summer plumage.

962.—Dafila acuta, L.

I shot a Pin-tail Duck on the 18th January 1874.

987.—*Sterna javanica*, Horsf.

A male and female were shot last October.

With regard to a few of the birds mentioned in my former notes I have to add the following remarks :—

836.—*Otis Edwardsi*, Gray.

Two of these birds were observed on the lake edge about the middle of February last, and one was shot.

839.—*Sypheotides auritus*, Lath.

A female of this species was shot at the beginning of last rains. On dissection the eggs were found to be about half an inch in diameter.

882.—*Tringa subarquata*, Gould.

Specimens of this species in full breeding plumage were shot in the first week of August.

897.—*Totanus calidris*, L.

Some of this species had returned to Sambhur so early as the 25th July.

898.—*Himantopus intermedius*, Blyth.

Nestlings in down of this species were obtained on the 5th September 1873. This shows that the bird breeds here as well as at the Sooltanpoor Salt Works, where Mr. Hume discovered it breeding in such vast numbers.

899.—*Recurvirostra avocetta*, L.

During the past cold season this appeared in large flocks about the lake. I have seen some hundreds in one flock.

944 *bis.*—*Phoenicopterus minor*, Geoffr. St. Hil.

Since the setting in of the last rainy season this species has been very plentiful at the lake, and judging from the vast numbers which are to be seen in all directions, I feel convinced that this year they are more numerous than *P. roseus*. This seems strange, considering that during the first two years of my residence at Sambhur not a single specimen was observed.

The oldest inhabitants inform me that although they have noticed more or less of the small flamingoes, which they state

visit the lake after every six or seven years, they have never seen them so numerous as at present. The natives have a theory to the effect that these birds only come to the lake when the rainfall is scant, but this theory, while it may apply to Rajputana during the present season, does not apply to the immediate neighbourhood of the lake. They also informed me that large flocks of this species reached the lake from a westerly direction during the month of September.

On the Sambhur side of the lake these birds rarely come near to the edge, they seem to prefer working for food along the exposed portions of the low mud walls which separate our salt pans from the lake water. Only at one place near the town of Goodha have I seen flocks working for food. This place was covered with a slushy slime-like soil—very difficult to walk in—on the surface, in the hollows of which existed a quantity of dark greenish microscopic vegetable matter. On this they seemed to feed eagerly, and a few birds which I shot discharged large quantities of this from their crops.

On the 17th December I saw a flock of—I should say—over five hundred birds closely packed together feeding at this favorite spot. As I approached they commenced to run towards the lake making a peculiar noise like the hissing of geese. As they rose I fired, and six fell to two barrels, but many others were wounded and escaped into the lake. In the evening of the same day I visited the feeding place, but although the birds were if anything more numerous, I only knocked over five. Again on the 23rd I visited this feeding place in the morning and in the evening, and with six shots nineteen birds were obtained.

On the 30th December after all the birds had been stuffed, I sent a native with my gun for a few more. What stratagem he resorted to, or how close he crept to the birds, I cannot tell, but with two barrels he secured fifteen splendid specimens. The above results show how very numerous *P. minor* at present is on the lake.

Of the 80 specimens now before me, 28 are males and 52 females. As will be seen from the following measurements, the dimensions of these birds are somewhat greater than those of the adult birds given at page 33, Vol. I. of STRAY FEATHERS:—

		Length.	Expanse.	Wing.	Tarsus.	Bill, from gape, straight.	Tail.
Male	Largest	35.0	55.1	13.9	8.9	3.7	4.7
"	Smallest	29.0	49.3	12.2	7.3	3.1	3.2
Female	Largest	33.3	53.4	13.3	8.6	3.3	4.6
"	Smallest	28.2	45.6	12.2	6.7	2.9	3.1

With regard to the males the palest and apparently the youngest bird is a faint rose color; the back nearly white; the breast quite unspotted, and faint indications of what is deep rose color round the upper and lower portions of the bill. The next two have the rose color somewhat deeper, with a few of the breast feathers tipped with cerise. The next five are all much deeper colored, and have indications of the cerise breast spots, while the remainder have the rose color increasing in intensity to a very deep rosy, and the markings round the bill are nearly as deep a cherry color as are the wing-coverts. With regard to the females the youngest bird is all but white. Some of the wing-coverts show the brownish black feathers of the very young birds described at page 401, Vol. I., STRAY FEATHERS, while the most of the wing-coverts, as well as the inner wing lining, are of a faint rose tint. The breast is spotless, the markings round the bill are very faint, and the legs and bill are of a deep leaden ash color. In these young birds the irides are pale yellow, while in the mature birds they are crimson.

The next bird has a somewhat deeper rose tint, and a few faint spots of pale cerise on the breast; the next three are more deeply colored with a few spots of cerise on the breast feathers. Fourteen others show a greater or lesser number of the cerise-tipped breast feathers, the fourteenth being the best marked, while the remainder are unspotted and increase in coloration like the males. So far as plumage goes I can distinguish no difference between the males and the females.

On all the adult birds the breadth of white or rose-colored tipping (as the case may be) on the cherry-colored wing-coverts varies very much. In some birds it is well defined, while in others it looks as if it was gradually disappearing.

In conclusion I have to remark that not a single specimen of the dusky ashy young bird, described at page 401, Vol. I., STRAY FEATHERS, has this season been obtained, nor have I observed any of these young birds amongst the numerous large flocks about the lake.

968.—*Aythya ferina*, L.

On the 21st January 1874, I observed a large flock of this species on a jheel near Sambhur.

975.—*Podiceps minor*, L.

Just after the rains fledglings of this species were observed in some of the tanks.

SAMBHUR LAKE, *January* 1874.

On the Plumage and Habits of *Syrnium Indranea*, Spkes.

By W. VINCENT LEGGE, ESQ., R.A.

MR. HUME's note on this Owl, contained in No. 6, Vol. I., STRAY FEATHERS, induces me to put into execution what I have several times thought of doing through the medium of this journal, viz., placing on record some account of the plumage, immature and adult, and habits in confinement of Ceylon examples of the species.

The Wood Owl inhabits the forest on the lower mountains of the central and southern provinces of Ceylon, and the primeval forests of the hilly country of the south and west of the island. My specimens, which I reared in two consecutive years, were brought to me from a spot within a few miles of Point de Galle, and came, I have no doubt, of the same parents. The bird affects, as a rule, damp forests with lofty trees, hut resorts for roosting and shelter to the scrubby undergrowth, from which I have flushed it on one or two occasions. They nidificate, the natives inform me, in holes in trees; my examples were taken from the trunk of a lofty Horra, *Dipterocarpus zeylanicus*, the rotten wood in the cavity which the old birds had selected, forming the nest. Just a word before speaking of my pets (now alas no more! killed by a fellow-tenant of the aviary, a noble, but fierce and tyrannical *Limnaetus cristatellus*) about the supposed diabolical screams of the species. These, as far as I am aware, were first noticed in the Magazine and Annals of Natural History for 1853, by Edgar Layard, and his ideas, formed entirely from native information (sometimes the most erroneous, as we all know) have been propagated by subsequent ornithologists in Ceylon. It is my conviction, however,—I may be in error,—that no European has ever yet received ocular testimony by shooting the bird in the act of making these hideous notes, sufficient to enable him to affirm that *Syrnium indranea* is the author of them. My own experience in Ceylon is that natives at different times and in different places have given me the most contradictory answers concerning the delinquent; some that it was a large bird, some that it was a small one, and so forth, and whenever I have mooted the subject among my sportsman friends, I have been met with the most conflicting testimony concerning it, one gentleman positively asserting that he had seen and watched the bird in the act of making its hideous sounds night after night, and that it was a *white one*! But the usual valuable testimony, shooting the bird

in the act and handling it, was wanting. "My dear fellow, "why *ever* didn't you shoot it?" "Oh! couldn't do that; the natives wouldn't have it shot for anything; so superstitious "you know!"

The oldest of my two birds was fully adult, well into his second year when he was killed, and though I had opportunity of watching him under every possible circumstance—in excitement, in anger, in pleasure, alone at nights, under the influence of hunger, through his first breeding time, &c., he never gave the slightest sign of any capability even of making any loud and dismal moan-like notes. The nearest approach to it was one night when he appeared very hungry and gave vent to a low guttural sound that could neither be called a moan nor a groan.

I received my first bird on the 13th of May 1872; he was then about two months old as near as I can judge, was very tame being carried about on a stick without string or other fastening, and had been fed for a fortnight previous on the inevitable *rice and curry*! The consequent effect of this was that his digestion had become impaired, and he at once vomited all the meat given him. I was therefore obliged to coax his stomach and bring it round to something more natural to it, by mixing chopped meat with hard boiled egg, and then tried what became afterwards his favourite food—lizards, *Calotes*, which I cut up likewise into small pieces. After having been fed in this manner for a day or two he would not look at rice and curry. Fish was a favourite article of diet with him afterwards; he used to treat them in the same manner as birds and lizards; swallow them whole. At the above time his plumage was in the downy stage, giving him, in combination with his stumpy figure and round head, the most ludicrous appearance; at a little distance he reminded one of a huge bundle of greyish white down. His dimensions at this age were about those of the *Ninox hirsuta*, but his frame was somewhat stouter. The iris was hazel; the pupil in a strong light being blue; the bill and cere light leaden blue; extremities of toes pale bluish; claws dusky. Head, hind neck, and throat clothed with downy feathers, whitish at the tips, and dark at the base behind the eye and across the nape; feathers of the back not so fluffy as the above, light brown with buff bars; scapulars and lesser wing-coverts greyish buff, barred with light brown, the bar edged with a yellowish hue. Interscapulars grey, barred with brown; the greater wing-coverts barred whitish and brown, the latter predominating, and each of the feathers with a deep

terminal white band. Primaries sepia brown, barred grey; secondaries lighter brown with mottled light bars; tertials barred whitish, with darker edges to the bars than the ground color of the feathers; rectrices sepia brown, barred and broadly tipped with buffy white; feathers of the under surface as downy as those of the head, the predominating hue being greyish white, the lower parts indistinctly barred with dark grey; tibial and tarsal plumes greyish white, obsoletely barred; loreal plumes blackish; and facial disc uniform golden brown.

After the lapse of a few weeks the tips of the feathers of the interscapular region, next the scapulars and those of the lower part of the sides of the neck, just above the point of the closed wing, began to darken, and a V shaped mark, having its apex about the middle of the back, was formed; this was the origin of the deep sepia brown back of the adult stage. On the 15th of June the first indication of the mature dress was perceived in the appearance on the tarsus of buff feathers barred with dark brown, the first plumage falling out to give place to them. In a short time the ground of the tail feathers deepened to black, and the adult feathers began to assert themselves elsewhere on the throat and parts of the breast. The tarsus and tibia took about three weeks in changing, and by this time the whole of the interscapular region had become very deep sepia brown; the downy feathers along the ulna commenced to fall out, and the deep brown edge to develope itself, while the wing-coverts kept pace with the rest, the whole wing rapidly becoming dark. I would here remark that, as far as I could ascertain from close observation, the shorter feathers of the first plumage,—those of the head, under surface, edge of wing and the tibial and tarsal plumes,—were newly acquired by moult, while the quills, rectrices, greater wing-coverts, and scapulars *changed colour* only.

To continue the change of plumage; by the 31st July the whole of the under-surface was fully clothed with new feathers, the lesser wing-coverts were fully grown, the back had assumed the adult appearance, the chin had become deep brown, the "ruff" extending round under it by degrees. The fascial disc had not altered by that time, but as the bird grew older it darkened into the normal yellow-rufous colour, and I would add that no trace of brown has ever existed in it or in that of the second bird I procured, nor have I distinguished this feature in any other of the Ceylonese examples I have examined. The feathers of the head were the last to change, that part becoming brown about the middle of September, but it was

not until the 30th November, when the bird was about eight months old, that the last immature feather disappeared from just above the right eye. When the dark brown of the forehead and vertex were fully acquired, the white mark just above the base of the bill became noticeable, but previous to that time it was not distinguishable from the rest of the surrounding parts.

When fully adult the bill was pale blue with bluish white tips, and a dusky blue streak along the ridge; cere dusky bluish; bare portion of the toes bluish, at the sides bluish grey; foot beneath fleshy; claws bluish white at their bases, darkening into brown at the tips; iris sepia brown. The measurements taken after the bird was killed (it was a female) were as follows:—Length, 18 inches; wing, $13\frac{1}{4}$; extent, $43\frac{1}{2}$; tail, $7\frac{1}{2}$; tarsus, $2\frac{1}{2}$; mid toe, from base, $1\frac{3}{4}$; claw, straight, 0.9; bill from gape to tip, straight, $1\frac{1}{2}$.

It would be purposeless to take up room with a description in full of the adult plumage, but I will remark that after the first moult the wings and tail were darker than those of the first year, inasmuch as the light barrings instead of being ochreous were dark greyish. The new quills made their appearance in April, and by the middle of the following month the first new primary was full grown, and I noticed about this time that the feathers of the under-surface were much more fulvous or ochreous when first acquired than they were afterwards, the hue becoming greyish with time.

I will now comment on the habits of the bird, which to a naturalist were most interesting. When young its powers of vision at nights did not seem so perfect as I should have expected. Being exceedingly tame and unwilling to use its wings, I kept it in a box in the corner of a somewhat rude barrack-room, which I was occupying myself for the time being. In the bottom of this I placed some straw for it to rest on, but unlike diurnal Raptors* it persisted in perching all its time, taking up its abode on the edge of the box. When tired it would lower the body until its breast rested on the wood, and in this position, with its head stretched out, it would remain for half an hour at a time. At sunset it became somewhat lively, snapping its bill loudly when approached, and displayed at such times as the light decreased and objects became more perceptible to its vision, the singular habit of revolving or rotating and

* The reversible hind toe enabled him to hold on to anything, however small, and perch with ease when quite young. A young *Limnæetus cristatellus* which I reared evinced the greatest objection to perching, always overbalancing itself when it tried it; it passed all its time, until three months old, in a recumbent position in its bed of straw.

then darting out its head in the most grotesque manner towards anything which particularly attracted its attention. At night it became again listless, and remained so until towards morning when it uttered its ordinary note which, when grown up and living in the aviary, it always made use of when hungry. It was a low *screech*, resembling somewhat the grating of a sharp instrument along the teeth of a comb. At this hour he commenced regularly every morning a peregrination round the room, flying from one object to another until he got back to his original starting place. Before leaving the edge of its box, however, it would revolve its head first in one direction and then in the other, and hinge it forward towards the object it intended to perch on, until it had ascertained its exact position and whereabouts, and then it would fly off to it.* When placed in the aviary at three months old, it invariably chose the lightest parts to perch in, appearing rather to covet than shun the light, and was able instantly to spy any food, such as a lizard or bird held up to the bars, even of the opposite side of the apartment, and flying across would seize it greedily, pushing its head between the bamboos and dragging it from me with a *tita-tita-tita*, a note which it usually uttered in such occasions, or when annoyed or teased in any way. It showed great avidity at all times, often chosing and taking away the food of a young crested Eagle, which at that time dwelt in harmony with it. It would deliberately sidle up to the Eagle, and poking its head down would seize the meat, grasped between the bird's talons and the perch; his majesty astounded at such audacity would stretch up his head, raise his crest, and lift his foot to strike his pursuer, when the latter would quietly walk off with the coveted morsel.

When given anything of no great size to eat, such as a *Calotes* or small bird, it invariably seized it in its foot, grasping it with the outer toe to the rear, and holding it up after the manner of a Parrot, nibbled at various parts with a view of tasting it, after which it would suddenly jerk it into its mouth, head foremost, and swallow it without any exertion whatever. On the 16th June, when only three months old, it swallowed entire a large *Calotes* lizard, but this feat, I consider, was outdone by its companion which I reared the following year, and which

* Whether this singular movement was essential in any way to its sight, or whether it was performed under emotions of surprise in some instances and curiosity in others, I will not pretend to say, but I rather incline to the latter belief, and fancy it was analogous to the rocking from side to side motion of the little *Ephialites bakhamena*, or the twisting upside down of the head of *Limnæus cristatellus* when shown a tempting morsel of food or any object which highly excited its curiosity.

bolted at the age of six weeks a *Dicæum minimum* and *Cisticola schænicola* with as much cease as if they had been small pieces of meat. This peculiarity of holding its food in the foot was very interesting to witness, the bird at these times, under the influence of pleasurable emotions, presenting a highly grotesque appearance, opening and slowly shutting its large eyes, and tasting the dainty bit with every now and then an epicurean snap of its mandibles. This, by the way, is performed by pressing the under mandible against the tip of the upper, and then letting it go with a snap against the basal edges of the latter. He delighted in a good wash, and took his bath almost regularly every day, flying over to the "chattie" generally in the forenoon and squatting down in the water, he would throw it over him on all sides; his oblations took sometimes more than five minutes to perform, after which it was his custom to mount on a high perch and hang down his wings until he was dry, presenting the most ridiculous aspect imaginable. He remained sometimes more than an hour in this position, feathering and pluming himself until able to fly about. The process of feathering was performed in general with the eyes shut, and it was interesting to watch the manner in which he would seize one feather after another without ocular assistance, leading them out from base to tip, and "working" them with a quick movement of the under mandible. With a view of keeping the bird as much as possible in a state of nature, and likewise in order to put to the test his unnatural habit of chosing glaring perches, I caused a dark apartment to be constructed at the end of the aviary with a small entrance just sufficient for him to pass through; at first he did not seem willing to patronize his new lodging; but after some little time, having found his way in and out of it once or twice, his natural habit seemed to force itself on him, and he resorted to the dark corner throughout the whole day, sallying forth regularly at dusk and entering it at daybreak. At this period he was not a year old, and singularly enough, though he had lived in friendship hitherto with the Eagle, this bird now took the greatest dislike to him.

After his departure into the dark corner the enmity became mutual, his Owlship frequently chasing his quondam friend about the aviary, and hemming him into a corner would thrust out his head and utter a low growl. It is noteworthy that at this time the Eagle was in his first plumage, and appeared to be of a cowardly disposition; after his moult, however, he developed into a bold tyrant, and turned the tables on the poor Owls killing them both (through the neglect of a coolie in leaving the door in the partition open) within the space of three months.

The second Owl I received on the 2nd April last year; he was much younger than the first bird at the time, and was much whiter on the feathers of the head and under-surface. At this early stage the whitish fluffy head, and particularly the point of the forehead contrasts strongly with the ochreous disc and black ruff, giving the bird a grotesque aspect. It did not seem to acquire the revolving motion of the head until somewhat older; but it used, when approached, to lift up its face and execute a sort of balancing from side to side motion, which I can only liken to that of the heads of those toys* which are moved by a weight suspended in the body. I omitted to notice above the capability which this species has, when alarmed or angered, or in any way excited by the appearance of a strange animal, of erecting the dorsal and pectoral feathers, projecting them out after the manner of Porcupine's quills. The appearance presented under such circumstances by my two birds, ruffled up into the form of a shapeless mass of feathers, rotating their heads and snapping their bills was ludicrous in the extreme.

On two species of *Batrachostomus*.

I HAVE two species of *Batrachostomus* which appear to me to be as yet unnamed.

The first is from the neighbourhood of Darjeeling (and is the same, I think, as that of which Mr. Blyth obtained some fragments, and which he identified with his *affinis* from Malacca, but which it greatly exceeds in size), and the other from Ceylon.

Now it may be as well to premise that neither of these are apparently any stage of *Otothrix Hodgsoni*. The adult of this species is tolerably figured (the drawing is beautiful, but the coloration is hardly truthful) P. Z. S., 1859, pl. 152, and both adult and young (a nestling) are beautifully figured in one of Mr. Hodgson's drawings now before me. Mr. Hodgson obtained the adult female, young, and nest below Darjeeling, towards the Great Runjeet at an elevation of between three and four thousand feet, on the 20th May 1856, and besides the evidence of his drawing, which shows that the young closely resembles the female, he notes "young like adult but duller hues." *Otothrix* is distinguished by its much smaller bill moreover, so that I think we may perhaps dismiss the idea of even our Darjeeling bird having any connection with *Otothrix*.

* Notably the little Chinese figures so common in the East.

Hodgsoni. At the same time it must be noted that *Otothrix Hodgsoni* has the tarsus bare; Hodgson specially notes "tarsi less than mid toe, nearly nude and covered in front with large unbroken scales," and this is the fact. Now in our Darjeeling birds the tarsus is bare as in *Otothrix*; on the other hand, the bill is considerably larger than in that species, and the upper mandible everywhere distinctly overlaps the lower mandible.

As regards size, our Darjeeling birds, which I have provisionally to give them "a local habitation and a name" christened "*castaneus*," are perhaps somewhat larger as a whole than *Otothrix Hodgsoni* (as will be seen from the subjoined dimensions), and although their bills project more than twice as much beyond the frontal feathers they are considerably narrower at the gape.

<i>Otothrix Hodgsoni</i> .		<i>Batrachostomus. castaneus</i> .			
		(1)	(2)	(3)	(4)
Length	9.5	10	10	9.5	8.75
Bill to gape	1.12	1.12	1.1	1.1	1.1
" to brow	0.25	0.6	0.6	0.57	0.6
" width at gape	1.25	1.05	1.07	1.1	1.07
Wing	5.12	5.25	5.5	5.2	5.25
Tail	5.25	5.5	5.5	5.4	4.75
Tarsus	0.62	0.61	0.6	0.62	0.63
Mid toe and nail	0.87	0.8	0.87	0.88	0.88
Hind toe and nail	0.37	0.36	0.38	0.4	0.4

I may note that the dimensions of the *Otothrix Hodgsoni* are those of Mr. Hodgson, taken in the flesh from the very female which served, I believe, as type to Mr. Gray when he characterised the genus and species. P. Z. S., 1859, p. 101.

Of the four specimens of *castaneus*, all measured, I regret to say, in the dried skin, three are adults in the chestnut plumage (one lent me by Mr. Mandelli) and the fourth is a young bird in a rufous brown, black, and buff stage, *not very dissimilar* to that of *Otothrix Hodgsoni* as figured by Mr. Gray *loc. cit.*

Now despite the great difference in the shape and size of the bill, the somewhat larger size of the bird as a whole, and the total difference in the plumage of the adults which I shall describe at length further on, it has occurred to me, especially as the young *approaches Otothrix* in plumage, that my *castaneus* might possibly be the male of *Otothrix Hodgsoni*. Mr. Hodgson's bird was certainly an adult female by dissection and its young was similar, but the sex of my four specimens, all obtained not very far from where Mr. Hodgson got his, was unfortunately not recorded satisfactorily, though Mr. William Masson who shot two of them for me noted one as a female with a note of interrogation after it.

Analogy however is against there being a great difference in size and shape of bill, and in the plumage of the two sexes in birds of this family, and I have therefore (having had these birds by me for several years now without being able to secure further specimens or information in regard to the species) ventured to characterize it as distinct.

Castaneus adult so far as the general tone of coloring goes is closely connected with both *B. moniliger*, Layard (not Blyth, as Jerdon and Holdsworth give it) and *B. affinis*, Blyth. For comparison I reproduce Mr. Blyth's original descriptions of both species. Mr. Holdsworth I may note, in his paper on Ceylonese birds, P. Z. S., 1872, p. 420, says:—"Mr. Blyth tells me that Jerdon's description of this species was taken from a Ceylon specimen," but this is not quite correct. Blyth's description is from a Ceylon specimen, while Jerdon's is merely a slightly paraphrastic transcription of Mr. Blyth's.

The latter gentleman remarks (J. A. S., XVIII., p. 806.) "*B. moniliger*, Layard, a little smaller than *B. javanensis* (Horsfield, No. 404) which it greatly resembles at the first glance, but differs considerably in the details of its markings. Color of the upper parts, throat and breast, bright bay or rufous brown, the latter without spots except a torque of white spots margined above with black above the breast, and another separating the line of the breast from that of the abdomen; belly and lower tail coverts contrasting pale isabelline, with similar but smaller spots, and a slight dusky mottling over the flanks: coronal feathers long, the occipital tipped with white bordered above with black, forming a white nuchal ring almost or quite continuous with the torque below: over the eye a pale rufescent supercilium; and the lengthened and erect loreal plumes are tipped with black and whitish at the extreme tip: most of the wing-coverts are tipped with a large ovoid pure white spot bordered above with black; the tertiaries are pale, and delicately mottled with dusky, each having also a minute terminal black and white spot, and the primaries are black, having their outer webs broadly margined with the color of the back; the scapularies also have smaller terminal black and white spots, and the uppermost are pale like the tertiaries; tail mottled and obscurely banded, the bands terminating externally in a series of whitish spots, successively more developed and distinct on the outer feathers. In form the tail is somewhat peculiar, its lateral halves separating into two distinct lobes, whence the closed tail appears furcate. Length about 10 inches; of wing $4\frac{3}{4}$ inches; and tail

4½ inches; its outermost feather 2¼ inches less, penultimate 1 inch less, and ante-penultimate but ¼ inch less. The uniform rufous-brown of the throat and breast, crossed by the white torque, and bordered below by another, well distinguishes this species from *B. javanensis*; and the bright white spot on the wings (corresponding but not similar to those of the large *B. auritus*) distinguish it as readily from *B. affinis*. It remains to ascertain whether either *B. moniliger*, *B. affinis* or *B. auritus*, presents the state of plumage corresponding to that named *Podargus cornutus* by M. Temminck, who considers this to be identical with *B. javanensis*, while Mr. Gray regards them as separate species. The dark young specimen of presumed *B. affinis* from Darjeeling would seem to indicate from its considerable resemblance to *cornutus*, that it would afterwards have assumed that dress, in which case it would seem to follow that the two are different phases of the same bird irrespective of age, and perhaps sex. *B. moniliger* inhabits Ceylon, where Mr. Layard is informed that it is not uncommon at a particular altitude in the Kandyan country; and it is most probably the Coorg species seen by Mr. Jerdon, as noticed in XIV, 209."

Now our adult *castaneus* is nearly everywhere a bright chestnut bay, the white spots of the nuchal collar, and of the breast and abdominal bands are bordered with black below, and not above. The wing-coverts are entirely spotless, and all the median scapulars, that is to say, neither the shortest nor the longest, have more or less of one or both of the webs for the terminal half of the feathers pure white bordered externally with black. To which we may add that the wing varies from 5·2 to 5·5, against 4·75 in *moniliger*.

To resume the following is Blyth's description of the other species:—

(J. A. S., XVI., p. 1180). "*Batrachostomus affinis*, Nobis, N. S. Very similar to *B. javensis*, in the plumage figured by Dr. Horsfield, and which is considered to be the young dress of *Podargus auritus*, Tem,) but smaller, with no white spots on the wing, nor pale spot like bands on the tertiaries and caudal feathers; but the former are uniformly freckled over with dusky specks, and the latter present a series of obscure freckled bands, seen best at a little distance: throat and breast plain rufous, with a few white feathers having a subterminal dusky border on the foreneck, and sides of the breast only. Rest as in *B. javensis*, Juv. Length about 9 inches, of wing 4½ inches, and middle tail feathers the same. This is the small

Malayan species which I formerly considered might be *Podargus stellatus*, Gould, P. Z. S., 1837, p. 43, but it does not accord with the description of that, and its dimensions are rather superior."

Of *castaneus* I have given the dimensions above. The description of the adult is as follows:—The whole plumage may be said to be a rich chesnut bay; somewhat paler on the quills and tail, and fading to rufescent white on the chin, vent, and a frontal band which is continued as a broad supercilium over both eyes; the nuchal feathers have a white subterminal band, bounded by a narrow black line above and below, thus forming a demi-collar; almost all the scapulars have large pure white spots towards the tips, chiefly on the outer webs, more or less encircled by a black frame; the feathers at the base of the throat have similarly a broad white subterminal band with a blackish brown margin, and many of the feathers of the centre of the breast and upper abdomen have broad white spots near the tips, bounded *below* by a narrow black line; the wing-coverts are quite spotless, the outer webs of the quills are, as already remarked, a paler chesnut; the inner webs blackish brown; in the later secondaries and tertiaries, portions of the outer web near the shaft are more or less also freckled with blackish brown, while the inner webs are more or less margined and towards the bases show traces of imperfect bars, of a sort of pale salmon color; the under tail-coverts are buffy white, with traces of imperfect arrow-head brown bars towards the tips; the wing lining is rufous white, at times, more or less irregularly barred with darkish brown; the tail exhibits, eight or nine, moderately broad transverse bars of brown freckles; the shafts of the tail feathers are deep brown, for the basal three-fifths, pale rufescent brown beyond. The legs and feet appear to have been yellow; the bill pale yellowish horny, tinged reddish on the culmen and towards the tip of the upper mandible. The fourth, fifth and sixth quills are equal, or nearly so, and longest, in one specimen however the sixth is considerably shorter. Of the tail feathers the six central ones are nearly equal, the penultimate pair are an inch and a half shorter, and the exterior pair are fully three inches shorter.

The supposed young is more in the garb of *Otothrix Hodgsoni*. The feathers of the lores and those impending over the upper mandible are bright buffy white, tinged here and there rufous, and barred with black, and the bristle-like shafts of the latter are black. A broad pale creamy buff stripe extends along the front of the forehead and over both eyes. The whole top and

back of the head is black, mottled with bright buff, and the feathers narrowly tipped here and there with rufescent. The whole back, scapulars, and coverts are pale ferruginous, closely freckled with black; the elongated nuchal feathers have some white spots towards the tips; the scapulars have mostly black spots at the tip, and the median ones in addition large white patches just above these spots, chiefly on the outer webs, and the secondary greater coverts are tipped and freckled towards their tips with white. The primaries and secondaries are hair brown, banded on the outer webs of the first, freckled in bands on the outer web of the latter, with pale salmon buff. The inner webs of the quills exhibit towards their inner margins three or four pale rufescent or salmon colored spots or imperfect bars. The tail feathers exhibit nine or ten bars alternately pale creamy white, and pale rufous brown, margined and divided off one from the other by narrow irregular black bands, and the whole surface freckled over with black. The tertiaries are white or albescent with transverse irregular dark brown bars, and the interspaces more or less freckled with a rather paler brown. I note that the coverts about the shoulder of the wing are deep brown, tipped and margined with rufous, but not freckled or spotted in the same way that the other coverts are. The chin is pale dingy rufescent white, the breast and upper abdomen bright rufous buff, more or less fringed and freckled with black. A certain number of the feathers of the centre of the breast pure white to near the tips, beyond that black and beyond that again a rufous, or a mottled rufous and black fringe. The lower abdomen, vent, and lower tail-coverts creamy white with a black more or less triangular spot at the tip of each feather, much as in *Otothrix*, and with a bar of the same color on many feathers about one-third of the way up from the tip. There is not a trace of the regular banding on the breast, sides of the neck, and back, so conspicuous in Wolf's figure of *Hodgsoni*, nor is there the conspicuous white wing band; moreover the white of the abdomen does not extend higher up in our bird than the level of the tips of the greater coverts when the wing is closed, whereas in Wolf's figure it extends up as high as the carpal joint. Moreover in this young bird, as in the adult, the upper mandible closes regularly over the lower, whereas this is said not to be the case in *Otothrix*. It may still prove that my *castaneus* adult are the old males, *Otothrix Hodgsoni* of Gray, with its much smaller bill, the adult female (we know it was adult because Hodgson procured it together with its young), my young *castaneus*, somewhat approaching *Otothrix* in plum-

age, the young male, and Hodgson's young bird similar to *O. Hodgsoni*, but duller in its colors, the young female, but I confess that this hardly seems to me probable. In the meantime these birds are so rare and have had so little attention paid to them by Indian ornithologists that I cannot but hope that this notice, crude as it is, may do some good by bringing prominently to notice the difficulties that encompass the question.

The other bird from Ceylon answers to no species that I can find anywhere described. The bill is that of a true *Batrachostomus*, enormously large for the size of the bird, and the tarsi are feathered almost to the toes; the fifth quill is the longest, the fourth sub-equal, and the third only slightly shorter.

The dimensions are as follows:—Length, 7.75; wing, 4.3; tail, barely 4; bill from gape, 1.3; bill, width at gape, 1.2; bill from brow, 0.6; tarsus, 0.5; mid toe and claw, 0.75; hind toe and claw, 0.4.

The narial and frontal bristles are fulvous brown, at base tipped black; the aural are pale fulvous brown; the forehead is greyish, or brownish white, minutely freckled or powdered with darker brown; the whole of the rest of the top and the back of the head is a darkish hair brown, the feathers more or less minutely powdered with pale yellowish brown; some of the feathers of the front of the head above the frontal band, with narrow black tips, with a speck of buff at the extreme point of the tips; all the nuchal feathers tipped with a white band between two narrow black lines, forming a very regular and conspicuous demi-color; the back and the inner webs of the scapulars dark brown, the feathers powdered towards the tips with reddish buff; the outer webs of the scapulars, more of a silvery greyish ground, powdered over with brown; each scapular with a small velvet black spot at the tip, some of the feathers with a minute buff speck at the extreme tip; the coverts much like the back, but with a conspicuous white spot, more or less surrounded by a black line at the tips; the primaries hair brown, more or less blotched, and mottled on their outer webs, and freckled on their tips with pale dingy rufescent white; the tertiaries and the tips of the later secondaries much like the outer webs of the scapulars, a greyish white ground, powdered and freckled with greyish brown, and some few of them with tiny black spots at the tips; central tail feathers banded indistinctly and irregularly with a pale whitey brown, and pale hair brown, freckled and mottled all over both with a darker brown, and with here and there indistinct traces of a zigzag black line bounding the lighter band, which

is only at all conspicuous above the terminal one. There is a black spot with a buffy white apex at the extreme tips of the tail feathers. The lateral tail feathers are very similar, but are slightly more warmly tinted. The chin and throat is a dingy pale rufescent brown, most of the feathers of the sides of the throat with small blackish brown subterminal spots, beyond which the extreme tips are buffy. The tips of all the feathers of the base of the throat pure white, margined above with a black line, and forming a conspicuous gorget; below this the breast is dull brown, the feathers powdered towards the tips with rufous buff, and some of the lowermost with large white tips, bounded above with a black line as in the case of the feathers of the base of the throat above described. The abdomen, flanks, vent, and lower tail-coverts are a dingy rufescent white, most of the feathers more or less pure white towards the tips, and where pure white, exhibiting numerous black vermicellations. The wing lining is dingy, pale, rufescent brown. The bill is quite as long as in *Batrachostomus javensis*, but the point is less produced, the culmen is not so strongly carinated, and the sides are less bowed out than in that species, and of course it has the tarsus feathered, which *javensis* has not. I can find so little on record about this genus that it is quite possible that it may be an undescribed stage of plumage of *moniliger*, but looking to the dimensions, and especially those of the wings, I can hardly believe this to be the case, and certainly so far as plumage goes it differs about as widely from Blyth's description as it possibly could.

I owe the specimen I possess to Mr. Nevill. It is the same one, I believe, to which Mr. Holdsworth refers as being the only one that he has seen.

For the present, until I can learn something further about it and *moniliger*, it stands in my catalogue as *B. punctatus*.

A. O. H.

On the Ibisfauna of the Chutia (Chota) Nagpur Division,
S. W. Frontier of Bengal.

By V. BALL, M.A., GEOLOGICAL SURVEY OF INDIA.

Introduction.

BEFORE entering upon the special subject of this paper I propose, in accordance with the practice established in "STRAY FEATHERS," to attempt to convey to my readers some idea of the

physical features, natural productions, and general characteristics of the area in which the birds enumerated in the following list have been found.

The Chutia, or as it is more commonly called the *Chota Nagpúr* Division, notwithstanding its size and its proximity to Calcutta, is singularly little known out of the circle composed of the resident officials and those whose business it is to pay it visits during their annual tours of inspection. Hazaribagh as a military station forms the sole exception to the rule that the principal towns, including Ranchi the capital, as they lead nowhere, are seldom visited by outsiders. I might quote the remarks of many who, on hearing the name of this portion of the country, have shown that their ideas of its position were of the most hazy character.

In short it would seem that nothing less than a war or famine would teach some people the geography of the country in which they live. How many in India could have given a clear account of the position of Tirhut before the recent events which have directed such special attention to it?

So much for the geographical knowledge possessed by the public in general, that of the physical features is even still less. Even in that most excellent work on the Highlands of Central India by the late Captain Forsyth, the hills and plateaus of Chota Nagpúr are spoken of in almost slighting terms and as if they were quite subordinate to his favorite Satpuras. But there are in Chota Nagpúr plateaus before which even the beautiful Pachmari should hide her diminished head. Little blame can attach to any one, however, for not having any idea of the physical features, as no map on a reduced scale, containing the hill shading of the excellent topographical maps of the western portion of the area, has as yet been issued.

My acquaintance with Chota Nagpúr commenced in 1864, since which time I have spent seven working seasons, and a part of an eighth exploring its geology. My early work was in the eastern frontier districts of Manbhum and Singhbhum; that of the last few seasons in the extreme west, to reach and return from which I have had to make long traverses across the intervening country. Thus I have had opportunities of seeing the greater part of the division, with the exception of that central-southern portion which includes the wild and sparingly-inhabited district of Sarunda.

In the first few years such of my time and attention as could be spared from my regular professional duty as a geologist was devoted principally to examining the flora;

but as a wandering life is most unsuited to the requirements of a rapidly-increasing collection of plants, I was compelled to replace botany by ornithology—a circumstance which I need not here mention, being chiefly instrumental in inducing me to take up that subject.

The Chota Nagpur Division or Province is bounded on the north by Rewa, Mirzapur, Shahabad, Gya and Monghyr; on the east by Burdwan, Bancura and Midnapur; on the south by the Orissa and Central Provinces, Native Tributary States of Mohurbunj, Keonjhar, Bamra, and Raigarh and the British district of Sambalpur; and lastly on the west by Belaspur and Rewa.

Politically Chota Nagpur consists of four British districts, namely, Hazaribagh, Lohardaga, Manbhum and Singhbhum, and of seven semi-independent *Gurjat* States, otherwise called Tributary Mehals; these are Sirguja, Jushpur, Udipur, Gangpur, Korea, Chang Bokar and Bonai. In these states the administration of justice is in the hands of the local rajas, who have magisterial powers conferred upon them for the purpose. They report to the Commissioner of the Division, who is also Superintendent of the Tributary Mehals, and before whom all the more serious cases are tried.

The British districts occupy the northern, central, and eastern portion of the Division, while the *Gurjat* States are situated in the more inaccessible hilly country of the south and west.

The total area of Chota Nagpur has not, so far as I know, been accurately determined, but by a rough measurement I make it to be between 44 and 45,000 square miles, or about the size of England without Wales, or more nearly say it is 12,000 square miles larger than Ireland.

In so considerable an extent of country one would naturally expect to find much variety of scenery and physical configuration, and such, on examination of the Division, there is found to be.

The eastern frontier districts rise somewhat gradually from the level of the alluvium of Burdwan and Midnapore to the maximum height of about 700 feet; close to the frontier ridges and outcrops of rock first become apparent, then a few isolated hills dot the plain. A little further west hills occur in clusters, until at Parisnath we meet the highest peak in the Division.

The summit of Parisnath is said to be 4,624 feet above the sea. As the resort of Jain pilgrims and the attempted site of a sanitarium, its name is familiar to most of the residents of Bengal.

Further west, spurs which lead up to the high-level plateaus of Ranchi and Hazaribagh break up the country into valleys.

These plateaus have a general average elevation throughout their highest central portion of about 2,000 feet. The former dies away to the south towards Singhbhum, Gangpur, and Sambalpur, and the latter to the north towards Palamow and the valley of the Sone.

Towards the west the Ranchi plateau is separated from Central Sirguja by a steppe or barrier of hills which rises from 1,000 to 1,600 feet higher. This barrier is connected with a considerable extent of high-level country which forms remarkable plateaus locally known as *Páts*; of these the Mailau and the Main *Páts* are the principal. Their general elevation is about 3,600 feet above the sea. Being capped with laterite, and having a very inconsiderable deposit of surface soil, they generally present the appearance of open plains with a few scattered bushes, thus contrasting strangely with the densely jungle-clad character of their flanks.

Still further west the country becomes wilder and more broken, until the vicinity of Umerkantak is reached. Umerkantak is to the natives from the geographical—as Benares is from the religious—point of view, the navel or central point of India.

The above enumerated plateaus and hill ranges break the division up into a number of very distinct rain-basins or catchment areas as follows:—In the north-west the tributaries of the Sone, of which the principal are the Koel, Kunhur, Rer and Banas, drain a large area of country. The highlands of Burwa, the Main Pat and Chang Bokar, form the watershed which separates their sources from those of the rivers which make their way southwards to the Mahanadi and Brahmini.

The course of the Koel is a natural one through the subdivision of Palamow to the low valley of the Sone, which it joins a few miles south of Rotas. By natural I mean that the river in taking that course has had few obstructions to overcome, little work to do in establishing its outlet in that direction. It is not so with the Kunhur and Rer. No one entering Sirguja from the east can fail to notice the remarkable gorges through which these rivers penetrate the strong barrier of hills of metamorphic rocks on the north.

To suppose that these gorges have been formed either by a process of battering by the river against these huge walls, or by one of those convenient 'convulsions of nature' which are often

invoked to account for all sorts of natural phenomena, are what, at first sight, might occur as satisfactory explanations. If even the first be not an absolute physical impossibility, a little examination of the country shows that they are neither of them the true explanation, while at the same time it reveals what has been the *modus operandi*. Throwing the imagination back to the distant period when the last flow of volcanic material or trap spread over the sandstones which filled the Sirguja valleys to a level with the *Main Pât*, the Pilka and other hills which now furnish indices of the former thickness of the deposit, we can conceive that a vast lake or lakes were formed in which the singular laterite formation which now rests on the trap was in all probability deposited. The rivers flowing from these lakes had then a natural fall northwards, which enabled them to cut down the hard ridges of metamorphic rocks *from above*. As these cuttings progressed, lateral streams were busily at work in the softer sandstones, cutting them up and carrying the materials to the main streams; so reducing and rescooping the valleys to their original form, but leaving here and there a patch of sandstone sufficient to enable the geologist to read and interpret the past history.

The ridges of metamorphic rock, forming the barrier, once more stand out in relief, as we must suppose them to have done before the deposition of the sandstone; but they are now cut across by channels, which there is no reason for supposing existed originally, or were formed in any other way than by those agents which we see in operation at the present day.

The next rain-basin, in an easterly direction, is one which feeds the Mohur, the Mohanee and other rivers whose waters find their way to the Ganges through the plains of Patna.

On the north-east of the area lies the rain-basin of the Damuda and of its principal tributary the Barakar. These rivers take their rise in the highlands of Hazaribagh, in their course traversing that district and a portion of Manbhum.

A few years ago a project was set on foot to store the head waters of these rivers in some large enclosed valleys, with the view of checking the inundations which occur from time to time in the Burdwan district, and keeping up a constant supply of water for a canal which was to connect Ranigunj with the Hugli. Having seen much of that part of the country I am inclined to express a doubt as to the success of either branch of this project, at least with reservoirs of only the proposed number and dimensions.

The rivers are fed by thousands of torrential streams, which, when there is no rain, completely dry up, and in the hot weather it is no uncommon sight to see the water in the Damuda, just above its junction with the Barakar, reduced to a narrow stream that one can jump across without wetting the feet. Supposing, however, that a sufficient number of these tributaries could be dammed up so as to produce an appreciable effect in the reduction of the extent of country periodically inundated, it is very doubtful whether, in dry weather, these could send down a sufficient supply of water to keep a long canal in constant operation.

The next distinct rain-basin to be enumerated is that of the Dalkissur, which occupies a small area in the central portion of Manbhum. Just outside our limits it passes the station of Bancura, and in the alluvial plains beyond is joined by the Selye and Rupnarain, ultimately debouching into the Hugli.

The rain-basin of the Kossai occupies nearly all the southern portion of Manbhum through which it runs for a distance of about 100 miles. At Midnapur it has assumed the proportions of a good sized river, but even there I believe the supply of water falls very short in the hot weather, and to such an extent as to seriously interfere with the usefulness of the irrigation system established in connection with it. The Kossai rises in the Jhulda hills, and meets the sea at the mouth of the Hugli.

The Subanrika carries off the waters of the south-east corner of the Division. Rising close to the station of Ranchi, after some winding about it settles down to a steady south-east direction, and traverses 150 miles of for the most very picturesque country. I have traversed its bed step by step throughout that distance, and would certainly assign to this—the Golden-sanded River—the first rank for beauty among the rivers of Chota Nagpur. The locally famous waterfall, known as the Hundru Ghag, and said to be upwards of 300 feet high, is alone an object calculated to excite admiration and interest.

The principal tributaries of the Subanrika are the Korkai, which collects the waters of the Singhbhum basin, and the Karkari.

To the west and south-west of the Subanrika rain-basin lies that of the Brahmini; its principal affluents are the Sunk and Koel. The river in fact, after the junction of these two, becoming the Brahmini.

The Koel takes its rise close to the station of Ranchi and not far from the sources of the Subanrika, while the Sunk rises near the sources of the (Sone) Koel in Barwa.

These two rivers, and their continuation the Brahmini, traverse a wild inhospitable area of jungle of the natural productions in which but little is yet known.

The last rain-basin to be mentioned is that of the Mahanadi, the feeders of which drain the south-west corner of the Division. The principal of these feeders are the Eeb, Mand, and Gej. Below the junction of the Eeb with the Mahanadi occur sands in which gold and diamonds have been found. The occurrence of the former is so general that it need not call for any special remark; but the observed fact in reference to the diamonds is of especial interest when it is known that rocks belonging to the same general formation as that to which most of the known diamond strata are referred in India were discovered by Mr. Medlicott in that vicinity. The search for diamonds has not been carried on with activity for many years. But there are stories of large stones having been found formerly in the Mahanadi. Mr. Blochmann tells me that some old Mahomedan histories represent their having been found also in the Sunk. About 100 years ago a gentleman was deputed by the Government to make special enquiries regarding the occurrence of diamonds in the Mahanadi. The country was then in such a disturbed state that most of his time was taken up in repelling attacks of hostile natives, and during the remainder he suffered much from fever, losing several of his companions and followers who succumbed to the disease. His narrative of a journey to the diamond mines at Sambalpur in the Province of Orissa, undertaken in 1766, is printed in the Asiatic Annual Register for 1799. It does not appear that he was very successful in reference to the objects of his deputation.* In the Journal of the Asiatic Society there is a paper by Colonel Ousely on the washings for gold and diamonds in the Mahanadi at Sambalpur.

Having above pointed out the more prominent physical features of the Division, I shall now endeavor to give a sketch of the geological structure. My remarks on this subject here must necessarily be very brief. Those interested in the geology will naturally refer to the accounts published in the Memoirs and Records of the Geological Survey.

Metamorphic rocks occur as the basal formation throughout. They consist of gneiss—which is sometimes excessively granitic or syenitic and without a trace of foliation—hornblendic and mica-schists and quartzites.

* The object of this deputation was to establish a regular trade in diamonds, Lord Clive wishing to employ them as a convenient means of remitting money to England.

Whether the successive layers of different mineral composition are coincident with original beds of deposit, or are the result of a superinduced structure—a sort of foliation on a large scale—has not been finally agreed upon. If, however, these layers do correspond with the original bedding, as seems to me to be probable, then the thickness of the whole series must be very considerable, but from the difficulty of ascertaining either the base or summit of the succession it is impossible to make any conclusive measurement.

These rocks are in some localities much traversed by veins of quartz and granite, and in places by systems of trap dykes. A remarkable instance of the latter may be seen in the central part of Singhbhum where there are several series of intersecting dykes.

Except in Sirguja and the lower part of Manbhum all the loftiest plateaus and most of the hills are formed of these metamorphic rocks.

Resting upon these, the oldest primary rocks, is a perfectly distinct series of metamorphosed beds, which seem to have been subjected to a less amount of the metamorphosing influences, and are accordingly spoken of as the sub-metamorphics. The series consists of quartzites, micaceous and magnesian schists, trappoid rocks, slates and limestones. No variety of gneiss is found in it.

This series, within our limits, is most strongly developed in Manbhum and Singhbhum, whence it stretches westwards into Gangpur. It is found also in Sirguja. Some of the rocks show little sign of metamorphism, and on the whole in this case it is impossible to believe that the layers showing different mineral composition do not correspond with the original bedding.

The alternations in mineral composition of the rocks of this series make a very visible impress on the physical features. The tougher varieties, schists or quartzites, stand out in relief, while the softer argillaceous slates are worn down into hollows.

These rocks are generally much richer in ores of the metals than are those belonging to the preceding series. Among these ores those of iron, copper and lead may be enumerated; while native gold is found in the river sands throughout, and according to my experiments in much greater quantity than it occurs in areas occupied by the metamorphic rocks.

The magnesian schists and potstones are largely used in the manufacture of plates, bowls, and images for temples.

these mestones are not of much use, as they generally contain ferruginous minerals, such as tremolite or serpentine.

The copper ores above-mentioned occur in a remarkable deposit, which is traceable in the northern part of Singhbhum for a distance of eighty miles. Two attempts to work this copper by European enterprise completely failed. Chiefly, I am inclined to believe, in consequence of injudicious management. At any rate it is apparent that the deposit has not by any means been fully opened out, and that the possibility of a profitable exploitation has not been fully tested.

By the ancients (Jains)* mines were opened up at the outcrop all along the eighty miles—wherever the ore appears. The European companies put down a few shafts and drove several adits into the hills, but no great depth was attained anywhere.

The next series of rocks in the ascending scale is that known from the place where it was first discriminated as the Talchir. It underlies the coal measures; but the chief point of interest connected with it is that the original supposition of the boulder beds which it contains being of glacial origin has, by the discovery of lines of glaciation on some of the boulders, been placed beyond a doubt.

The occurrence of huge boulders resting in a bed of silt, in some cases at a considerable distance from the source from which their mineral characters show them to have been derived, thus finds a complete and satisfactory explanation.

The fact of the establishment of evidence of a glacial period once having existed in these latitudes is one of almost cosmical importance, and it comes rather within the range of the astronomer than of the geologist to determine what can have been the conditions at that time which would have been consistent with the existence of glaciers.

Of course could we see our way to believing that the Peninsula was once some 12,000 to 15,000 feet higher above the level of the sea than it is at present, that in itself would be explanation sufficient, but it seems probable that the cause was not a mere local one.

Rocks of the Talchir series occur underlying the coal measures in the Damuda valley, and also on the higher level of the Hazaribagh plateau. In Sirguja and the neighbouring districts they cover large areas, whence they stretch southwards and westwards by more or less detached exposures towards the plains of Chatisgurh.

* NOTE.—See on the ancient copper miners of Singhbhum. P. A. S. B., June 1869, p. 170, and on the copper deposits of Dhalbhum and Singhbhum. Records of the Geological Survey of India, 1870, p. 86.

In these western districts there are some ancient valleys, the gneiss which are now filled with boulder beds; are as the boulders consist to a considerable extent of indurated sandstones or quartzites of apparently Vindhyan age, and resembling those seen near the Sone, the conclusion that these were channels through which the glaciers entered from the north, seems a just one to draw.

Overlying the Talchirs the next formation is known as the Damuda, of which there are three sub-divisions or groups. The lowest of these is the Barakar—so called from its having been first discriminated in the vicinity of the river of that name. In this group, which has a very wide distribution throughout India, and is characterised by certain fossil plants, occur the largest coal seams known in the country, and indeed there are occasionally seams found in it, which for their size, if not their quality, stand almost unrivalled in the world. Except in some of the Damuda valley coal fields most of the coal found in India belongs to this group.

Above the Barakar group there is found one consisting of carbonaceous and ironstone shales. This, like the one which follows, shows its greatest development in the Raniganj field.

The ironstones are possibly destined to play an important part when the mineral resources of India come to be developed.

The Raniganj group consists of sandstones, shales and coal, and exhibits its greatest development in the Raniganj coal field. Towards the west it gradually dies out and disappears.

In the Raniganj coal field this group contains the finest coal seams which are worked in that area.

Resting upon these is a series of beds known as the Panchet from a well-known hill which is formed of these rocks.

The lower group of this series contains certain fossil remains of reptilian and batrachian animals which serve to point its affinities to the Triassic period of Europe.

The conglomerates and sandstones of the upper group form several well marked hills, of which Beherinath, Panchet, Lugu, and Mûdi are the principal and best known. The last mentioned, which is situated in the Karanpûra valley in Hazaribagh, is the site of a not very successful tea garden—the requisite amount of moisture for the free growth of tea being absent.

In the extreme west there is a considerable thickness of sandstones resting on the Damuda Series, but the relations of these to the Upper Panchets is still uncertain, probably they are somewhat younger.

these this region too we find plateaus with a base of these sand-faces covered by basaltic trap, and capped, in some cases, by several hundred feet of laterite.

This trap belongs, it is considered, to the age of the great Dekan flows, the nearest point of which at Umerkantak is indeed not very far distant. No fossils have as yet been found in the beds of shale, which occur between the successive flows of this trap; but if the identification, by mineralogical and other more general considerations be correct, then these rocks belong to the upper cretaceous period.

Some of the flows of this trap have a columnar structure, which give a very marked character to the scenery of the ravines which are cut down through the sides of the plateaus.

I have above mentioned the laterite; it not only caps the plateaus and hills of Western Chota Nagpur, but is also found along the eastern frontier stretching thence southwards into Midnapur.

The origin of this remarkable formation is still unsettled. No theory yet proposed has been able to account for the sources from whence the iron, which is its most characteristic constituent, has been derived, and no fossils, from which the conditions under which it was deposited could be determined, have been discovered in it.

Of the alluvium and other recent deposits but little need be said here. On the east the boundaries of the rocks, where they dip under the alluvial plains of Bengal, nearly coincide with the limits of the Division.

Within our limits the deposits of alluvium are, for the most part, due to the locally adjacent rivers. The alluvium of the Damuda valley, and in a less degree that of some of the other rivers, abounds in kankar or *gutin*, which is the well-known source of the only lime available in many parts of India.

The interdependence between the geology of a country and its Fauna is much more real than is apparent to mere casual observation. The connection is mainly, though not exclusively, established through the medium of the Flora. Certain soils, the result of the disintegration of certain rocks, are favorable to the growth of particular plants, which in some cases support special forms of animal life.

The tracing out of these cycles is the pleasing duty of the naturalist. But all such generalisations are dependent upon the accurate determination of species.

Those who scoff at Specialists, and they are not a few, ¹com- that it is these men who supply the reliable *data* from which ²are losophical naturalists like Dr. Darwin evolve the theories.

Accurate determination of species is as important for the naturalist who theorises on the origin of specific forms or the distribution of life on the globe, as a knowledge of the derivation of words is for the comparative philologist.

If the identification of the species, or the supposed derivation of the word be not sound, then all theories dependent on these *data*, these bricks so to speak of the theoretical edifice, must necessarily be unstable.

FLORA.—Having some years ago made a study of the flora of the Manbhum and Hazaribagh districts, and as with the exception of a slight change, which is observable in some of the higher and moister districts of the west, the same plants are found throughout the Division. I shall quote a few general remarks from my published observations* :—

“Dr. Hooker first drew attention to the park-like aspect which prevails in the drier and clearer portions of these districts. *Bassia*, the tamarind, the several species of *Ficus*, *Butea* and *Shorea*, representing, without any great stretch of the imagination being necessary, the Oaks, Pines, Sycamores, Maples and Poplars of temperate climes.

“It is only in the hills and some of the deeper valleys that one meets with anything like typical tropical jungle; even in these comparatively favorable localities there are no tree-ferns† nor palms, and but few mosses, orchids, or herbaceous ferns.

“Contrasting the flora in detail with that of the British Isles, one is struck by the absence of plants belonging to such common orders, as *Rosaceæ*,‡ *Cruciferae*, *Gerniaceæ*, *Violaceæ* and the rareness of species belonging to *Ranunculaceæ*, *Umbelliferae* and *Scrophularineæ*.

“On the other hand many of the pond weeds, *Chara*, *Nymphaea*, *Potamogeton*, *Alisma*, &c., as well as grasses, *Cyperus*, ferns—*Drosera*, *Arums*, *Oxalis*, Mistletoe, some of the smaller *Labiatae*, and both herbaceous and arboreal forms of *Leguminosae*, together with a *Salix* vividly recall their European congeners. Lichens might be added to this list. It is interesting to observe that

* J. A. S. B., Vol. XXXVIII, 1869, Pt. II, p 112.

† Further examination of the western parts may reveal, in some of the valleys, the presence of tree-ferns. I recently found that several species were known to occur in the vicinity of Pachmari.

‡ Long after this was written I found a species of Rose on the banks of the Mahan in Sirguja and a small Geranium among the alpine plants of Parimath.

these are seldom to be found, except on the northern or sheltered faces of the trees and rocks upon which they grow.

"Throughout the jungles, both of the plains and hills, the deep glossy green of the Sai, *Shorea robusta*, Roxb., gives a marked character to the foliage. In the early part of the year the white floral leaves of *Combretum Roxburghii* and other species produce a pleasing contrast in the sea of green which meets the eye in every direction. At the commencement of the hot weather the greater number of the trees lose their leaves, which, in some species, are soon replaced, when lovely contrasts are produced by such varied hues as the deep purple of the young leaves of *Schliechera trejuga*, Willd., with an infinitude of shades of red, white, and green on the surrounding trees.

"While the trees remain leafless, the aspect of the jungle is black and wintry; this is intensified by the action of the jungle fires which scorch up all the herbage, so that there often is little shade to be found when most wanted from the hot sun of April.

"The inflorescence, as a general rule, is of a dull and subdued character. That of the Sai produces a peculiar hazy appearance over the green foliage. The most brilliant flowers are those of *Bombax malabaricum*, *Butea frondosa*, and *B. superba*; perhaps the most beautiful are the white and delicately-violet tinted blossoms of a species of *Bauhinia*."

Herbaceous plants are scarce in the jungle, possibly they are more abundant towards the end of the rains.

Gigantic scandent creepers are commonly met with on the hills, but they also occur in the older jungles in the flat country. The principal species are *Bauhinia Vahlii* and *Butea superba*.

Parasites and epiphytes are represented by two species of Dodder belonging to the genera, *Cuscuta* and *Cassytha*, two of *Loranthus*, two of *Viscum*, and a few orchids.

It is often to be observed that some species of tree occurs in such abundance throughout a limited area as almost to exclude all other species; some circumstances which it is impossible to detect giving it pre-eminence in the struggle for life.

Modification in the character of the vegetation, and the occurrence of certain species, can, however, in two instances at least, be traced to its prime causes, viz. the vicinity of hills or rivers.

"The influence which clearing and cultivation exercise upon the flora is marked and irradicable, and though deserted village lands often relapse into jungle, such jungle always contains trees which, never occurring in the primitive forests,

proclaim by their presence the antecedents of that particular spot."

Lists of the species, characteristic of the different conditions of growth, will be found in my paper above alluded to. It seems to be unnecessary to dwell upon the subject further here.

FAUNA.—The Mammalian fauna of Chota Nagpur must be considered rich as it includes nearly all the animals known to exist in Central India. A brief enumeration of these will not be out of place in this general account of the characteristics of the Division, and will aid the reader in his conception of the conditions under which the special subject of this account—the birds—occur.

To proceed to details, we have amongst monkeys the Langúr, (*Presbytis entellus*), which is found in suitable localities throughout. The vicinity of large villages with corresponding mangroves being the favorite dwelling place. But isolated rocky hills, as at Rugonathpur and Jhalda in Manbhum, not unfrequently contain colonies. Sometimes, however, these monkeys are met with in heavy forest far removed from human habitations.

The Brown Bengal Monkey, *Inuus rhesus*, Desm., though not common, occurs in most of the heavy jungle, especially in the vicinity of the large rivers where they traverse forest.

Of Bats, besides the Large Flying Fox (*Pteropus Edwardsii*), I have collected some half dozen species, but have not the names before me at present.

Among insectivorous animals I only know for certain of the occurrence of the Common Musk Shrew (*Sorex caeruleus*), but others of this genus may occur too. The Tree Shrew (*Tupaia Ellioti*,) very possibly occurs, as I obtained it in the Satpura hills, and it has also been found in the Karakpúr hills as well as at Vizagapatam where it was first discovered. The sides of a triangle joining these three points would include Chota Nagpur.

In the order CARNIVORA we have first the Indian Black or Sloth Bear (*Prochleilus labiatus*), which is very common in some parts. It lives chiefly on fruits, roots, and white ants. It affords amusing sport to those resident in the district. Were this the place I might tell many anecdotes illustrative of its habits and occasional ferocity.

The Indian Badger or Ratel (*Mellivora Indica*) is not uncommon in the rocky districts, but is seldom seen. When captured by the natives it is readily tamed, but makes a most uninteresting pet.

The Common Indian Otter (*Lutra nair*) occurs in many of the larger rivers, especially those of the western districts where it may often be seen disporting itself in the pools.

The Tiger (*Felis tigris*) is spread throughout the district, but is nowhere very abundant. Very few, compared with the numbers annually killed in the Central Provinces, fall to the guns of European sportsmen. A good number are, however, killed by native Shikaris, and the skins brought in for the Government reward. As the result of many beats at which I have been present, and many months wanderings in the most likely covers—the bush grown beds and sides of the rivers—I have seen but one Tiger myself in Chota Nagpur. The number that have seen me is, I have no doubt, very much larger.

The Leopard (*Felis pardus*) is perhaps somewhat more abundant, often I believe its ravages are attributed wrongfully to the Tiger.

Of the smaller animals of the cat tribe, the Common Jungle Cat (*Felis chaus*) is the only one of the occurrence of which I can be certain.

The Lynx (*Felis caracal*) I have once seen. It seems to be extremely rare.

The Hyæna (*H. striata*) is very common in some parts of the Division; it lives chiefly in caves, but sometimes forms a lair for itself in bushes by the sides of rivers.

The Large Civet Cat (*Viverra zibetha*) is not uncommon, I believe, at least a Civet which I take to belong to this species may often be seen when the jungle is beaten for large game.

The Hill Tree Cat (*Paradoxurus Grayi*) occurs sparingly in the jungles. *P. musanga* also very possibly occurs, but I only identified the former species.

There are probably two or three species of *Herpestes* or Mungoos in Chota Nagpur, including *H. monticolus* which I obtained on the borders of Manbhum and Midnapur.

The Indian Wolf (*Canis pallipes*) occurs in some of the open parts of Manbhum. I do not remember observing it in any of the western parts of the Division. The Jackal (*Canis aureus*) is of course common, especially in the well populated parts. It is not often heard or seen in the wilder jungles.

The Wild Dog (*Cuon rutilans*) occurs probably in most of the heavy jungle, but does not often show itself. I once saw a party of five in pursuit of a Sambar. The belief that a small flock of these Dogs will attack and overcome a Tiger, is very prevalent amongst the native Shikaris. Details of instances in point have been recounted to me.

The Indian Fox (*Vulpes Bengalensis*) Shaw, is common in most parts. Both it and the Jackal by no means depend exclusively on animal food for their subsistence. Different kinds of peas (dhal) and millet are eaten by these carnivores.

With regard to the CETACEÆ it is possible that during the rains an occasional *Platanista* or Gangetic porpoise may force its way up some of the large rivers. I cannot say, however, that I remember having heard of any one observing a specimen, and I have never been in these districts myself during the rains.

Among the RODENTIA we have the Central-Indian Red Squirrel (*S. maximus*), which is tolerably common in some of the heavy jungles, but is by no means generally distributed. I have had several of these animals in captivity and found them to be most amusing pets. The two nearly allied species of Striped Squirrel (*S. palmarum*) and (*S. tristriatus*) also probably occur, one or both may be seen very universally throughout.

Next comes the Brown Flying Squirrel (*Pteromys petaurista*), which is not very abundant, but is well known to the inhabitants living in or near the southern jungles. Being nocturnal in its habits it probably often escapes notice. Of the MURINÆ—Rats and Mice—though I have collected several species, I am unable to give anything like a detailed enumeration.

In the next family, the HYSTRICIDÆ, we have at least one example in the Indian Porcupine. A specimen which I shot in Sirguja appeared to me to belong to that species (*H. leucura*) rather than to the one known as the Bengal Porcupine (*H. Bengalensis*) which however may possibly occur too.

The sole representative of the LEPORIDÆ that I am certain of is (*Lepus ruficaudatus*); but the Hispid Hare (*L. hispidus*) may possibly occur, as it has been recorded from the Rajmehal hills, where on one occasion, during a beat for large game, I saw it myself.

The next family includes the Elephant, *E. INDICUS*. In Chota Nagpur the Elephant inhabits the long range of hills which separates Manbhum from Singhbhum and runs down to the borders of Midnapur.

Again it is found on the borders of Singhbhum in the jungle which forms a part of the large hilly tree jungle of Mohurbunj, a tributary state outside our limits. It is also found in the extreme west in Korea and towards Matin and Uprora.

The Kedda operations of the last few years, conducted for the Government by Captains Johnstone and Hunter, and by the Regent of Sirguja and some of his relatives, on their own account, have tended to diminish the numbers very materially. Thus in 1871 nearly the whole of the herd of between 40 and 50 individuals, which existed in the first-mentioned range of hills, were captured by Captain Hunter.

In Mohurbunj 80 were captured in one season by Captain Johnstone.

In the west probably more than 100 have been captured or killed by the Rajas.

In the first instance, if not in all, the ryots have benefited much from the capture, the amount of damage annually done to the crops by these Elephants being very considerable. Of this I have myself been witness, and have heard many stories of the Elephants actually attacking granaries and pulling down the houses of the owners about their ears in order to get at the stores of grain.

The Rhinoceros does not, so far as I know, occur within our limits. But just outside to the south, in the vicinity of the Mahanadi, there are or were a few individuals according to Dr. Jerdon.

The Wild Bear (*Sus indicus*) occurs pretty generally throughout the Division, being abundant in the west. It keeps very much to the lighter jungle, only coming out into the cultivation during the night.

Among the Deer tribe, the noble Bara-singha (*Rucervus Duvaucelli*) is first to be mentioned. It is occasionally found in the eastern parts of the Division. In the western districts, Sirguja, &c., it is common. I have frequently met with it and shot several. The natives distinguish it from the Sambar by calling it *Maidani* Sambar, while the Sambar they call *Pahari* Sambar. The latter (*Rusa aristotelis*) is generally distributed throughout the jungles, being more particularly abundant in the west.

The Spotted Deer (*Axis maculatus*) occurs occasionally in open light jungle, and is also pretty generally spread throughout the forests.

I have no certain information as to the occurrence of the Hog Deer (*Axis porcinus*), not having shot it myself or seen any specimens.

The Barking Deer (*Cervulus aureus*) is common. The last of the tribe, the little Mouse Deer (*Meminna indica*) is found in some of the principal jungle tracts. I have never seen it myself, but at a large beat, which some friends of mine held a few years ago on the borders of Manbhum and Lohardugga, a number of these animals were run down and killed by the beaters. Colonel Tickell, who is quoted by Dr. Jerdon, gives an interesting account of its habits as observed by him in Singhbhum.

Among the *Antilopinae* the Nilgai (*Portax pictus*) occurs pretty generally, but is most common in the sparingly-inhabited western parts of the Division where it may often be seen in the

day time near the edges of the jungle. At night, like several of the Deer, it does much damage to cultivation.

The Four-horned Antelope (*Tetraceros quadricornis*) is, I should think, rather rare in Chota Nagpur, but undoubtedly occurs as I have seen skulls of specimens shot in the Division.

The Indian Antelope, so far as I know, is now only to be found in the extreme west of Lohardugga and in Sirguja. Formerly, according to Colonel Tickell, there were a few in the open parts of Singhbhum, but there are none to be seen there at present. In Sirguja I have never seen more than eight or ten together, but Colonel Dalton informed me that he had on one occasion seen a vast flock assembled near Burwa in Lohardugga.

The Indian Gazelle (*Gazella bennettii*) is not common, so far as my experience goes, but is occasionally seen.

The family of the BOVINÆ is represented by two examples:—First the Gaur (*Gavæus gaurus*) which occurs in the hills towards the south-east of Singhbhum and the north-west of Midnapur, and from thence throughout the hilly country westwards into Sirguja, where, on the Main Pat and other neighbouring plateaus, it is abundant.

On the Main Pat I once saw a herd of eight or nine individuals of all ages. Many stories might be told of the wonderful activity of this animal on rough ground. It has, for its enormous size, very small and neat hoofs, scarcely exceeding those of a large Sambar. The natives have sometimes assured me that there are two distinct races of Gaur, but it seems improbable that this is really the case. I am inclined to trace the idea either to some confusion of ideas regarding the Buffalo, or to the well known different seasonal and sexual colours of the Gaur.

The Wild Buffalo (*Bubalus arni*) occurs in the southern part of the Division towards the frontiers of Sambalpur, but only sparingly. In Gangpur I once came upon the footprints of what must have been a very large individual. The hoof from the apex of the cleft to the front measured 7 inches. Towards the Mahanadi in Sambalpur, where there are open marshy lands, the Buffalo is said to be tolerably abundant.

The last Mammal to be mentioned belongs to the order EDENTATA. It is the very extraordinary beast known as the Scaly Ant-eater (*Manis pentadactyla*) which lives in rocky hillocks in many parts of the Division.

Several live specimens have been forwarded to Calcutta from time to time from Chota Nagpur; but they have not sur-

vived confinement long. The late Colonel Tickell published an account of this animal as observed by him in Singhbhum.*

My remarks on the class of reptiles must necessarily be brief as beyond collecting and identifying a few species, principally of snakes, I have not paid much attention to the subject.

Among Chelonians I have collected *Geoemyda tricarinata*, *Emyda tricarinata*, and one or two species of *Emys*.

Of Saurians there are at least two belonging to the family of the *Agamidae*, viz. *Charasia dorsalis* and *Calotes versicolor*, and possibly several other species. Among *Lacertidae* there are three species of *Euprepes*.

One species of Cameleon is occasionally met with, and of Crocodiles there are certainly two—one being the Garial. The other inhabits rivers and seldom grows to a large size, I do not think I have ever seen one exceeding 8 feet in length.

Of *Ophidians* about twenty species could be enumerated. Some of these, which I did not obtain myself, were sent from Govindpur by Mr. H. V. Westmacott to the Indian Museum.

Several Frogs and Toads represent the class of *Batrachia*, one Tree Frog (*Polypedates*) at least occurring.

Of Fish I am unable to give any account whatever. As those which I have from time to time collected have not, so far as I know, been identified yet.

Of Insects too I have no material from which I might give a general sketch. The dryness of the jungles, while I have been in them, is unfavorable to the development of insect life, and I have often remarked the extreme apparent scarcity. No doubt, however, an entomologist, who devoted himself to the task, would discover much of interest in the less prominent families. Diurnal Lepidoptera are certainly limited to a few species, and I had never any reason for supposing the nocturnal Lepidoptera to be abundant.

Orthopterous insects occur in considerable abundance. They furnish, as has often been remarked, the staple food of a great number of birds in India.

The class ARACHNIDA is represented by numerous species of Spiders, one or two Scorpions and a *Telyphonus*. Several species of *Julus* and *Scolopendra* represent the MYRIAPODA.

The most prominent genera of the class, MOLLUSCA, which are found in the Division are *Unio*, *Helix*, *Paludina*, *Paludomus*, *Achatina*, *Planorbis*, *Lymnæa*? and *Cyclophorus*.

One or more species of *Telphusa* or Land Crabs represent the class of the CRUSTACEA.

* J. A. S. B., 1842, XI, p. 221.

Some of the less important classes are also represented.

This introduction has grown to such a length that I feel compelled to omit some remarks upon the manners and customs of the numerous tribes of aboriginal races that inhabit Chota Nagpur.

Were there space too, I should like to say something of the evidence afforded of the character of some of the ancient inhabitants by stone implements, Menhirs, Dolmens, long deserted copper mines, ruins, and curious old cave temples sculptured in the solid rock.*

I must now however pass to the subject to which all the other topics touched upon in this paper are subordinate—the Birds of the Division.

The following list of 294 birds which have been observed in Chota Nagpur is not published as a complete and exhaustive account. That many species occur which have not been enumerated is very probable; but this first step towards the determination of the Avifauna of a large natural as well as political section of the country will render the work of preparation of a final list comparatively easy.

I trust that one result of this publication may be that some of the local residents will take the subject up and assist in the work of ascertaining fully the characteristics of the Avifauna.

The only published accounts of the birds of any portion of Chota Nagpur are—First by the late Colonel Tickell, who resided for several years in Singhbhum, where he was Assistant to the Governor-General's Agent on the South-West Frontier. During that time he brought several new birds to notice and recorded the occurrence of others† which have not since been met with. Besides his own papers some notes on birds forwarded to the Museum by him from Chaibassa were published by Mr. Blyth.‡

Second by the late Captain Beavan, who was for two years in charge of the Revenue Survey of Manbhum, where he collected birds and subsequently published an account of them, together with notices of the birds he had collected in other parts of India.§

Captain Beavan did not describe any new species, neither have I met with any which I feel justified in distinguishing from previously known forms.

With regard to nidification Captain Beavan's are the only notices which are considered to be of value. Colonel Tickell's

* See on the stone monuments in the Singhbhum District. *Indian Antiquary*, Vol. I, and antiquities of the Ramguri Hill, District of Sirguja. l. c., Vol. II.

† List of birds collected in the jungles of Borabhum and Dholbhum. *J. A. S. B.*, Vol. II, 1833, p. 569.

‡ *J. A. S. B.*, XI, 1842, p. 456.

§ *Ibis*, N. S. I., 1865, p. 400; III, 1867, p. 430; IV, 1868, pp. 73, 165, 370.

notes on this subject appear to have been in a great measure founded on native testimony, and in many cases have not been supported by subsequent observers. As regards myself I have never had the leisure which is requisite for making trustworthy observations on this subject. Eggs have, indeed, been collected for me, but only to a very small extent by me.

The general facies of the Avifauna of Chota Nagpur corresponds with that of the more Central Provinces of India. On the east a slight infusion of species belonging to Lower Bengal and the Gangetic valley may be observed.

In the hilly portion of the Division there are some southern forms which were hitherto not known to occur so far north. Among these *Merops Swinhoei*,* *Yungipicus nanus*,* *Geocichla cyanotus*, *Myiophoneus Horsfieldii*, and *Machlolophus Jerdoni*, may be mentioned.

On the other hand several northern species, which were not known to occur in this part of the country, will be found enumerated in the following list. Among these the principal are—*Muscicapula superciljaris*, *Euspiza melanocephala*, *Syphaetides auritus*, and *Pterocles exustus*. *Mergus castor* though recorded by Colonel Tickell was not believed to be a regular visitant as it is now known to be.

Permanent residence throughout the year would be necessary in order to determine with certainty what birds remain all the year round. I am inclined to believe, from the lateness of the season when I have seen them, that *Cuculus canorus* and *Oreocincla dauma* both breed in the Division. I have not, however, actually taken their eggs.

In the class of the Raptores this list is, I feel confident, deficient. So far as I know the late Captain Beavan reserved, and before his lamented death did not publish, his notes upon his collection of birds belonging to that class.

Difficulties about carriage prevented me from collecting many of the larger birds, and identification in the field is often hazardous and not much to be depended on.

It will be noticed that several of the Falcons and Hawks, which must surely occur, are absent from the list. *Falco peregrinus* and *F. peregrinator* might, I feel confident, be inserted with perfect safety. Indeed the Peregrine is one of the species which is captured and trained by the Hos and other races. Still as I do not know of its having been scientifically identified, I think it better to notice it in this way rather than to give it a formal place in the list.

* Both these species occur at least as far north as the Dhoon.—Ed., S. F.

Accipiter virgatus probably occurs too, and other species might be added.

I am not quite satisfied as to the occurrence of all the species of the *Caprimulgidæ* which will be found enumerated; but the species are given by others whose authority I do not venture to dispute.

I do not anticipate many additions to other families until we come to the *Sylviadæ*; the list as regards them is, I feel certain, imperfect.

As regards the *Motacillinæ* and *Alaudinæ* some modification of the list will probably become necessary. Among the *Grallatores* and *Laridæ* additions will I expect be made hereafter.

It is by no means improbable that from 25 to 30 species may have to be added before the list of Chota Nagpur birds can be considered to be complete.

I have not given any of the names by which the birds enumerated are known locally to the natives. Both Colonel Tickell and Captain Beavan published lists. Some years ago* I took up the subject from a philological point of view, the result of my enquiries being that I found that the names are used very locally, and that branches of the same races of aborigines, having closely allied languages, do not, in many cases, use even similar names for wild animals, although the domesticated animals bear names which, if not absolutely identical, are clearly derived from the same root.

This being the case, and as I have nothing now to add to what has already been published, I do not think any good object would be attained by encumbering the following pages with names which are only current through very limited areas.

VULTURIDÆ.

1.—*Otogyps calvus*, Scop. (2.†)

The Black Vulture is not uncommon in Chota Nagpur, but I have rarely observed more than one pair at a time.

2.—*Gyps Bengalensis*, Gm. (5.)

1. There is, I believe, another species of *Gyps* in Chota Nagpur, but as I have never identified it, I cannot insert it in this list.

* J. A. S. B., Vol. XL., Pt. I, 1871, p. 103.

† The numbers in brackets are those of the "Birds of India."

3.—*Neophron ginginianus*, *Lin.* (6.)

The White Scavenger Vulture is common about villages, especially those of the untidy aborigines.

FALCONIDÆ.

4.—*Falco jugger*, *Gray* (11.)

The Laggar Falcon is not abundant in Chota Nagpur. I have seldom observed it, and only obtained one specimen which I shot in Sirguja in 1872.

Its measurements in inches are :—

♀ Wing 14.25; tail 8.3; tarsus 1.9.

5.—*Lithofalco chicquera*, *Daud* (16.)

The Turunti is of very rare occurrence in Chota Nagpur. I can only remember having once met with it. This was in Sirguja, where, on the 6th of March 1872, I met a pair and shot the female which I have still in my collection.

Measurements in inches :—

Wing 7.85; tarsus 1.5.

I only once observed it too in the Satpura hills.

6.—*Tinnunculus alaudarius*, *Briss.* (17.)

The Kestrel is tolerably abundant in most parts of Chota Nagpur.

7.—*Micronisus badius*, *Gmel.* (23.)

The Shikra has a somewhat local distribution in Chota Nagpur, but has been obtained in all the principal districts of the Division. At the season of the jungle fires, numbers of these birds assemble to hunt the grasshoppers and other orthopterous insects which are compelled to take flight before the advancing flames.

8.—*Accipiter nisus*, *Lin.* *Falco nisosimilis*, *Tickell.* (24.)

The European Sparrow-Hawk was obtained by Colonel Tickell at Marcha in Borabhum, where it frequents topes and cultivation. It must be rare as I never obtained a specimen.

So far as I know, *A. virgatus* does not occur in Chota Nagpur. At one time I was under the impression that it did, owing to my having supposed a bird which afterwards turned out to be only in one of the forms of plumage of *M. badius* to be

referable to that species. I mention this as I am aware that others have made the same mistake. The length of the central toe* and the barrings on the tail feathers will always serve to distinguish the two species whatever the resemblance may be in the under-plumage.

9.—*Aquila hastata*, Less. (30.)

I have one specimen of the Long-legged Eagle from Sirguja. It was shot on the 25th of December 1872 in one of the open grassy plains. As to its identification I have no doubt, as I possess specimen of this species which was given me by Mr. Brookes.

Sirguja sex? Wing 18·; Tail 9·3; Tarsus 4; Bill from gape 2·1
loc? ♀ „ 18·8 „ 10·5 „ 3·8 „ „ „ 2·3

10 *bis*.—*Spizaetus Lathamii*, Latham apud Tickell (35.)

The small size of this Hawk-Eagle seems to justify its separation from *S. cirrhatus* with which it has been generally identified. Colonel Tickell's description in full runs as follows:—

“*Male*.—From head to tip of tail 18 inches; breadth of wings (extent?) 40 inches; eyes orange yellow; bill and cere bluish; top of head in front grey; sinciput pale orange brown; feathers streaked dark and produced into a long horizontal crest, the end feathers of which are black, tipped with white; face and auriculars ashy; back of neck and top of back pale rusty; feathers centred dark grey brown; whole of back, scapulars, primaries and part of tertials dark clouded rich brown; coverts of wings pale rusty, clouded gray, brown and blotched with white spots; some of the tertials the same; greater coverts reddish ash brown; tail dark greyish brown, barred broadly with dark brown and tipped obscurely white (as are the tertials.) Underparts white, streak of black down centre of throat; neck white, tinged rusty; broad bars of rusty on breast and belly, spots of the same on the thighs; legs clothed with short white feathers to the feet, which are of a horny color; exposed part of the tarsi reticulated; claws black and solid; the head is broad; eyes protruding; crest erectile; bill with scarcely any notch; legs short and stout; body muscular and compact.”

“This subject was killed at Sisda in Borabhum in dense bambu jungle occupying the interval between two ranges of hills. It was one of a pair; the other, probably the female, appeared larger and showed more white on the wing. They perched

* And the slenderness of the tarsé.—Ed., S. F.

high on the summits of tall decayed trees, and uttered wild plaintive screams (the only specimen seen)."

Mr. Hume (Rough Notes, I., p. 210) mentions having heard of a "small semi-crested Eagle the minature of *S. caligatus*," which he thinks may be the same as Tickell's bird; specimens of this bird are however wanting. He also suggests the possibility of *S. nanus*, Wallace, being the same species.

S. nanus is described* from a single imperfect specimen from Borneo; its measurements are:—

"Total length 19 inches; wing 11 inches; the tip 2 inches; tail 8·5 inches; tarsus 2·625 inches; middle toe 1·375 inches; inner toe ·86 inches. The middle toe is feathered nearly to the first joint."

I have given the description above in full, in the hope that it may enable some of the residents in Chota Nagpur to hunt up specimens of this bird.

11.—*Limnæetus Kienierii*, De Sparre. *Spizaetus albugularis*, Tickell (37.)

The Rufous-bellied Hawk-Eagle was obtained by Colonel Tickell near Chaibassa, but does not appear to have been observed since. Mr. Blyth, J. A. S. B., XI., 458, gives a full description of Colonel Tickell's specimen.

At page 310 of Vol. I of this Journal, Mr. Hume has given the fullest account yet published of this species.

Circaetus gallicus, Gmel. (38.)

As the common Serpent-Eagle very probably occurs, though it has not yet been recorded in Chota Nagpur, I think it not altogether out of place to give the following note upon a specimen which I recently shot in the Satpuras:—

Male.—Head white; above feathers tipped earthy brown with the shafts black; beneath white; bristly portion of the shafts of the feathers from chin to breast black or dark brown. A few terminal earthy-fawn colored spots on the breast. In other respects resembles specimen described in "Rough Notes."

Measurements in inches:—

♂ Wing 19·9; tail 10·7; tarsus 3·8; bill from gape 2·4.

12.—*Spilornis cheela*, Daud (39.)

The Crested Serpent-Eagle is tolerably common throughout the wooded parts of Chota Nagpur.

* Ibis, IV, N. S., 1868, p. 14.

Measurements in inches of specimens in my collection:—

Sirguja	♂	Wing	18·4	Tail	10·5	Tarsus	4·2	Bill from gape	1·85
Bugola (near Calcutta)	P.	„	16·4	„	10·4	„	3·5	„	1·8
N. W. Himalayas		„	18·	„	10·6	„	4·	„	2·5

13.—*Cuncuma leucogaster*, *Gmel.* (43.)

The Grey-backed Sea Eagle is by no means rare in Chota Nagpur, being found in the vicinity of all the larger rivers. It is extremely wary and difficult of approach, generally taking flight when it first sees danger. The only specimen I obtained is now in the Museum of the Royal Dublin Society together with some other birds of my early collections. In Dr. Dobson's collection from the Andamans which I described, there were several specimens. I have seen it in almost all the islands of the Nicobar, Andaman and Coco groups.

The insular bird seems, when on the wing, to be somewhat larger than continental specimens. I have had no opportunity however of comparing them side by side.

14.—*Circus pallidus*, *Sykes.* *Swansonii*, *A. Smith.* *herbæcola*, *Tickell* (51.)

The Pale Harrier is found in all the open parts of Chota Nagpur.

Measurements of specimens in my collection in inches:—

Sirguja	♂	Wing	13·25	Tail	8·	Tarsus	2·5	Bill from gape	1·1
zy.	♂	„	13·8	„	9	„	2·6	„	1·15
	♀	„	15·	„	10	„	2·85	„	1·3

15.—*Circus cineraceus*, *Montague* (52.)

Montague's Harrier is not common in Chota Nagpur. I have only one specimen which I shot in Sirguja.

Measurements in inches:—

♂	Wing	15·5	tail	9·2	tarsus	2·3	mid-toe and claw	1·6
	bill from gape	1·2						

16.—*Circus melanoleucos*, *Gmel.* (53.)

The Pied Harrier is not very common, but has been observed in all parts of the Division.

17.—*Circus æruginosus*, *Lin.* (54.)

The Marsh Harrier is common in the cultivated parts of the Division.

18.—*Haliaster Indus*, *Bodd* (55.)

The Maroon-backed Kite is found near the larger rivers and jheels, but nowhere in great abundance.

19.—*Milvus govinda*, Sykes (56.)

The Common Pariah Kite is abundant in all parts of the Division, save in the very heavy jungle.

Jungle specimens are often intensely dark, much more so than any I have ever seen in Calcutta.

20 bis.—*Milvus major*, Hume ? *M. melanotis* (56.)

I had occasionally observed this large Kite before I obtained a specimen in Lohardugga in December 1870.

Its measurements in inches are :—

♂ Wing 20·8 ; tail 13 ; tarsus 2·4 ; bill from gape 1·9.

21.—*Pernis ptilorhynchus*, Temm. (57.)

The Crested Honey Buzzard occurs sparingly in Chota Nagpur. I have one specimen shot in Lohardugga.

Near the Ganges at the north-east corner of the Rajmehal hills this bird appeared to be common. The following are measurements of specimens in my collection :—

Lohardugga Wing 15·75 ; Tail 11 ; Tarsus 2·2 ; Bill from gape 2.
Raj. Hills " 16 " 10·3 " " " 1·8

I am not certain what Colonel Tickell's "Honey Buzzard" (J. A. S. B., II., p. 570) may be. It is certainly not this species.

22.—*Elanus melanopterus*, Daud (59.)

The Black-winged Kite is not common in Chota Nagpur. It seems more abundant in the western parts of the Division.

Recently I found it rather abundant in the Satpura hills.

STRIGIDÆ.

23.—*Strix indica*, Blyth (50.)

I give Blyth's name for the Indian Screech Owl on the authority of Dr. Jerdon (*Ibis*, 1871, p. 343). I have obtained this bird occasionally in Chota Nagpur, but it is not very common.

24.—*Glaux candida*, Tickell (61.)

First obtained by Colonel Tickell, who says of it :—"Frequents the long grass jungle and passes its life almost entirely on the ground, seldom perchir~ in the lowest trees."

25.—*Ascalaphia bengalensis*, Franklin (69.)

The Rock-horned Owl occurs in suitable localities throughout, but these are most abundant in Sirguja and other portions of Western Chota Nagpur.

I found this bird very common when geologising in the deep-cut rock channels of the rivers of Sirguja. I frequently flushed one from some ledge or hole in the rocks. Once disturbed it would keep well ahead of me, flying from point to point as I progressed, often too far long distances away from its perch.

I once saw an old bird endeavouring to defend two fully fledged young from the vigorous attacks of an Eagle which I took to be *Neopus malaiensis*, Reinw. The old birds flew off on my approach, so I did not witness the expected *denouement*.

Measurement of one in inches.

Sirguja ♀ Wing 14·8; tail 7·8; tarsus 2·9; mid toe 1·7; claw 1·2.

None of my Sirguja specimens are so large as Dr. Jerdon's measurements. A specimen from the N. W. Himalayas has the wing 15·75.

26.—*Urrua coromanda*, Lath. (70.)

Of the Dusky-horned Owl I have seen but one specimen in Chota Nagpur. This was a domesticated individual which was captured in Manbhum.

27.—*Ketupa Ceylonensis*, Gmel. (72.)

The Brown Fish Owl occurs in much the same localities as the Rock-horned Owl, but is not so abundant. It takes flight freely during the day time, but perhaps not quite so readily as the other. I have found its nest with one or two young in holes in the rocks in the beginning of April.

Measurements in inches :—

Sirguja ♂ Wing 16·2; Tail 7·7; Tarsus 3; Bill from gape 2·1.
 ♂ " 16 " 8 " 2·9 " " " 2·

28.—*Scops pennata*, Hodg. (24.)

The Indian Scops Owl occurs, I believe, only sparingly in Chota Nagpur. I only obtained two specimens which I shot in Gangpur.

Measurements in inches :—

Wing 6·25; tail 3; tarsus 2·6.

29.—*Athene Brama* (76.)

The Spotted Owlet is very abundant in the mango and mhowa groves, and Sal (*Shorea robusta*) "rakhs" of the Division. Mr. Hume's *Heteroglaux Blewitti* should be looked for in Chota Nagpur.

30.—*Athene radiata*, Tickell (77.)

The Jungle Owlet is not uncommon, but by no means so abundant as the preceding species.

31.—*Ninox hirsuta*, Temm. (81.)

There appear to be no constant characters which would serve to distinguish the Indian Hawk-Owl (= *lugubris*, Tickell, *scutellatus*, Raffl. apud Jerdon) in all cases from *hirsuta*, Temm. At one time I supposed that the greater size and less amount of rufous coloration were the distinguishing characters of the Indian bird, but having seen a number of specimens from various localities, I have come to the conclusion that it is impossible to draw anything approaching to a hard and fast line separating the supposed species. In Chota Nagpur this bird is not common. I only obtained one specimen, which I shot near Ranchi, and have seldom heard it. Colonel Tickell also only obtained one specimen in Dhalbhum, from which he described it under the name *lugubris*.

HIRUNDINIDÆ.

32.—*Hirundo rustica*, L. (82.)

The Common Swallow is found in all the open parts of the Division. Captain Beavan remarks that they disappear from Maubhum by the end of February.

33.—*Uromitis flifera*, Steph. (84.)

The Wire-tailed Swallow is not unfrequently met with in Chota Nagpur, especially in the vicinity of some of the larger rivers.

34.—*Lillia daurica*, Lin. (85.)

The Red-rumped Swallow is sometimes seen in vast flocks and not unfrequently resting on freshly-ploughed land. Sometimes it is seen in company with *H. rustica*. I remember once seeing a very large number of swallows, in which both species could be readily distinguished, seated on the telegraph wires on the Grand Trunk Road.

I have on several occasions been much struck when watching flocks of these birds—which contained many thousands—to observe the peculiar spontaneous movements which suddenly actuate every individual.

The effect produced can only be compared to that which the abrupt rising of an eddy would have on a column of smoke which was gently traversing a hitherto tranquil atmosphere. 'Tis as though some invisible hand suddenly dashed them aside

from the thousand directions in which they were darting and circling.

35.—*Acanthylis sylvatica*, *Tickell* (95.)

The White-rumped Spine-tail was first obtained by Colonel Tickell in the neighbourhood of Chaibassa. I did not succeed in obtaining a specimen, and Captain Beavan makes no mention of it, so that it is probably somewhat rare.*

36.—*Cypselus melba*, *L.* (98.)

Colonel Tickell appears to have observed the Alpine Swift too in Singhbhum. He says :—"It resorts much to the tops of high rocks or wooded hills, the summits of which it flies round with great velocity. Flocks sometimes assemble of an evening near large ponds in the jungles, dashing into the water with loud screams like our Swift at home."

37.—*Cypselus affinis*, *Gray* (100.)

The Common Indian Swift was observed by Captain Beavan, who says :—"Rare in Manbhum, although seen in Purulia itself."

38.—*Cypselus palmarum*, *Gray & Hard* (102.)

The Palm Swift is only found in abundance where its favorite trees are common. I have sometimes observed a small colony settled in a single tree, where perhaps for many miles around not another tree or swift could be found.

39.—*Dendrochelidon coronata*, *Tickell* (104.)

The Indian-crested Swift is found in most parts of Chota Nagpur, but is nowhere very abundant.

It is extremely interesting to watch a flock of these fine Swifts flying about in the evening and calling to one another as they perform their graceful evolutions.

I have also obtained this bird in the Rajmehal hills and in the Satpura range.

Dr. Jerdon does not mention that the rufous of the ear-coverts, which serves to distinguish the male, is connected with the chin by a line of the same color.

The following are the dimensions of my specimens in inches :—

Sirguja	♂	Wing	6.05	Tail	3 + 2	Bill from gape	.8
Rajmehal hills	♂	"	6.1	"	3 + 1.9	" " "	.7
Sirguja	♀	"	6.15	"	3 + 2	" " "	.7
Satpuras	♀	"	6.35	"	3.16	" " "	.7

* Very abundant in certain localities, a little to the south in Raipoor and Sumbulpoor.—Ed., S. F.

CAPRIMULGIDÆ.

40.—*Caprimulgus indicus*, *Lath.* (107.)

I have two specimens of a Night-Jar from Sirguja and Lohardugga which seem to belong to this species. It does not appear to be common, and was not obtained by Captain Beavan in Manbhum.

41.—*Caprimulgus albonotatus*, *Tickell.* (109.)

I have never obtained a specimen of the Large Bengal Night-Jar, but I have both seen and heard what I believe to be it. It is inserted in this list on the authority of Colonel Tickell and Captain Beavan, both of whom obtained it. The former stated it to be extremely common in the jungles, but Captain Beavan says it appears to be very locally distributed.

42.—*Caprimulgus asiaticus*, *Lath.* (112.)

The Common Indian Night-Jar is, according to Captain Beavan, abundant in Manbhum. My only specimen I shot in the Rajmehal hills, and I certainly have no reason for supposing this species to occur generally throughout the Division.

43.—*Caprimugus monticolus*, *Frankl.* (114.)

Franklin's Night-Jar is the only species which I have found to be generally and abundantly distributed throughout the Division. I have specimens from Sirguja, Singhbhum, and Lohardugga. In Manbhum Captain Beavan considered that it replaced *asiaticus* in certain places.

I found this species to be common also in the Rajmehal hills and Satpuras.

The following are the measurements of my specimens in inches :—

Sirguja	Wing	8.15	Tail	5	Tarsus	.8	Bill from gape	1.2
Lohardugga	"	7.65	"	4.5	"	.8	" "	1.1
Singhbhum	"	7.8	"	4.45	"	.8	" "	1.05
Rajmehal hills	"	7.8	"	4.7	"	.8	" "	1.

TROGONIDÆ.

45.—*Harpactes fasciatus*, *Gm.* (115.)

Colonel Tickell obtained a solitary specimen of the Malabar Trogon near Dampura in Dhalbhum. He says :—" It frequents the thickest jungle at the bottom of ravines and dried rocky mals, flying from tree to tree with a querulous note like the

mewing of a cat. It pursues and catches insects on the wing like the *Muscicapæ*. The stomach of the present specimen was crammed full of them."

This bird does not appear to have been obtained or even seen by any subsequent observer in Chota Nagpur.

MEROPIDÆ.

46.—*Merops viridis*, *Lin.* (117.)

The Common Indian Bee-eater is one of the most abundant birds in Chota Nagpur. In general the rufous tinge of the head is well developed.

Captain Beavan says that it breeds in Manbhum at the beginning of April.

47.—*Merops philippensis*, *Lin.* (118.)

The Blue-tailed Bee-eater is very rare in Chota Nagpur. I have only met with it in the western parts of the Division, where I saw and obtained a few specimens in March and April.

48.—*Merops Swinhoei*, *Hume. nec quinticolor.* (119.)

I met with but one pair of the Chesnut-headed Bee-eater in Chota Nagpur. This was on the 13th of March in well-wooded hills near the village of Paharbulla in Sirguja. The male which I shot measures as follows:—

Wing 4.1; tail 3.3; bill at front 1.2.

CORACIADÆ.

49.—*Coracias indica*, *Lin.* (123.)

The Indian Roller is very common in Chota Nagpur, especially in the open cultivated portions. In the wilder hilly districts it is rarely met with. Breeds, according to Captain Beavan, in the station of Bancoorah in April.

HALCYONIDÆ.

50.—*Pelargopsis gural*, *Pears.* (127.)

The Brown-headed Kingfisher is met with occasionally in Chota Nagpur. It appeared to be most abundant in Sirguja.

In the Rajmehal hills and also in the Satpuras I met with a few couples.

On one occasion only have I seen this bird plunge into water. I have no Chota Nagpur specimens in my collection at

present. The following measurements are from specimens from other localities :—

Rajmehal hills,	Sex?	Wing	6.15	Tail	4.3	Tarsus	.75	Bill from gape	3.6
Calcutta	" ?	"	5.95	"	4.2	"	.7	"	3.7
Satpuras	♂	"	6.1	"	4.25	"	.75	"	3.55
Assam	♂	"	6.1	"	4.	"	.7	"	3.65

51.—*Halcyon smyrnensis*, *Lin.* (129.)

The White-breasted Kingfisher is common throughout Chota Nagpur. I have, as in the case of *P. gural*, seen it on one occasion dive for fish.

It is curious that neither of these birds are commonly seen feeding or capturing their prey.

In parts of the Division these birds are snared, and the flattened-out skins are disposed of to merchants who sell them to traders to Burmah, where these feathers, as pointed out by Dr. Jerdon, are in great demand for court dresses.

52.—*Alcedo bengalensis*, *Gm.* (134.)

The Common Indian Kingfisher occurs abundantly in the rivers of Chota Nagpur.

I have been informed that *Ceyx tridactyla*, Pallas, has been observed in the neighbourhood of the Koel river in Palamow, but further evidence of its occurrence is desirable.

A. asiatica does not occur in the Division so far as I know. In 1869 I shot a specimen in the Brahmini river in the Rajmehal hills, regarding which I have noted as follows :—

Sex not ascertained; the red ear-coverts are tipped blue; the rufous of the breast and abdomen is much more intense than in *bengalensis*; above there is no tinge of greenish, all the colors being essentially shades of blue. The brightness of the plumage attracted my notice before I shot the bird.

Wing 2.8; tail, 1.5; bill from gape 1.9.

53.—*Ceryle rudis*, *Lin.* (136.)

The Pied Kingfisher is found in the more open parts throughout the Division. As a rule it avoids the neighbourhood of heavy jungle.

BUCEROTIDÆ.

54.—*Hydrocissa coronata*, *Bodd.* (141.)

The Malabar Pied Hornbill affects certain localities in Chota Nagpur, where it may generally be found in a flock numbering from 6 to 10 individuals. I have shot it in Manbhum, Singh-

bhum, and Sirguja, and seen it in the fine jungles which border the ghât on the road from the Ranchi plateau to Purulia.

All the specimens in my collection and in the Indian Museum belong to this species, but I am by no means certain that *H. albirostris* does not occur too. Dr. Jerdon says that the latter is the species found in the Midnapore jungles in Rajmehal and Monghyr. Some of the first specimens which I obtained in Manbhum, and which I sent home, I identified—whether rightly or wrongly cannot now say—with *H. albirostris*; and moreover Captain Beavan seemed to be doubtful to which species his specimens should be referred.

There is really not much difficulty* in distinguishing the two species, as *coronata* has the three outer tail feathers on either side pure white, while *albirostris* has the four lateral tail feathers only tipped white.

I think it not improbable that the two species meet in the district of Manbhum.

The following is from Colonel Tickell's account of this bird; his specimens from Singbhum being undoubted *coronata*:—

"These birds were very common in all the more open and large timbered spaces in the jungles, frequenting in preference the peup trees, the berry of which forms their principal food. The young continue with the parents for many months after leaving the nest, hence these hornbills are generally met traversing the forest in flocks of eight or ten. They are shy and wary, and the voice loud, clanging and harsh. The horn is not developed till after the first year, the nestlings having the bill plain without any trace of excrescence. These birds are never met with in the high rocky lands, nor in the barren tracts of the Sal jungle, but abound in the rich meadows composing the valley of the Subanrika, where the country in many parts has the appearance of a well-cultured English park."

The following are the measurements of specimens in my collection:—

Sirguja ♂ Wing 11·25; Tail 12; Tarsus 2·2; Bill from gape 6·2.
 " ♀ ? " 12·5 " 12·8 " 2·3 " " " 6·2.

55.—*Meniceros* (*Ocyrceros*) *ginginianus*, *Shaw.* (144.)

The Common Grey Hornbill is met with occasionally on the borders of heavy jungle and in open parts of the country where mhowa trees abound.

* The casques are of utterly different shapes.—Ed., S. F.

I have shot it in Manbhum, Singhbhum and Hazaribagh, but do not remember seeing it in Sirguja.

It seemed more abundant in the Rajmehals. Recently in the Satpura hills I found it to be extremely common.

A female shot in the Rajmehal hills on the 14th April, and which was just about to lay, had in her stomach a quantity of grasshoppers in addition to some fruits of one of the species of *Ficus*.

I observe that the females have a brownish tinge on the upper plumage; the ridge of the casque too is not prolonged as in the males.

I have no specimens from Chota Nagpur by me at present, so give the measurements from birds obtained elsewhere.

Rajmehal hills ♂ Wing 8·8; Tail 12; Tarsus 1·7; Bill from gape 4·15.

" ♀ " 7·9 " 9·8 " 1·7 " " 3·5.

Satpura hills ♂ " 8·7 " 11 " 1·75 " " 3·8.

" ♀ " 7·85 " 11 " 1·7 " " 3·4.

The bill from gape in none of my specimens comes near five inches, which is the size given by Dr. Jerdon.

PSITTACIDÆ.

56.—*Palæornis eupatrius*, *Lin. vel sivalensis*, *Hutton. (174.)*

The so-called Alexandrine Paroquet is by no means universally distributed in Chota Nagpur, but occurs in most of the heavy jungle and forest.

In the Rajmehal hills it was much more common.

I have observed that this species and *purpureus* seem to replace one another, while *torquatus* is more universally distributed, ranging with both.

The following are measurements from specimens in my collection :—

Rajmehal hills ♂ Wing 8·65; Tail 11·6; Tarsus ·6; Bill from gape 1·1

Satpuras ♂ " 8·6 " 12 " ·6 " " 1·15

Singhbhum ♀ " 8·2 " 12·2 " ·6 " " 1·1

Chota Nagpur ♀ " 8·35 " 12 " ·6 " " 1·1

57.—*Palæornis torquatus*, *Bodd. (148.)*

The Rose-ringed Paroquet is tolerably common in all parts of the Division. It is very destructive to dhal, also to Sirguja (*Guizotia oleifera*, D.C.) and other oil-seed bearing crops. Captain Beavan obtained a nest with three eggs at Baramussia in Manbhum on the 1st March 1865. Both this and the preceding

species select the soft wood of the cotton tree, *Bombax malabaricum*, in which to carve out the holes for their nests.

58.—*Palæornis purpureus*, Müll. (149.)

The Rose-headed Paroquet is found in most parts of Chota Nagpur, but is at the same time somewhat local, and as mentioned above does not appear to trespass on the areas occupied by *eupatrius*, Lin. I have often been much surprised to see the way in which these birds can conceal themselves in trees. Of course the color of their plumage aids them materially, but that alone is not quite sufficient to account for the manner in which a large flock suddenly disappears in a small tree.

In the very hot weather Sal (*Shorea robusta*) trees are commonly chosen, and then one may approach within a few feet of the birds without being able to distinguish a single individual.

Captain Beavan has some very interesting remarks on the habits of this species. He procured the nest with eggs in March. He notices their pleasing warbling song, and that "when on the wing, the bird turns from side to side like a badly balanced arrow."

PICIDÆ.

59.—*Picus mahrattensis*, Lath. *P. aurocrissatus*, Tickell. (160.)

This bird, though not very common, is more abundant in Manbhum and Chota Nagpur generally than Captain Beavan seemed to think. I have obtained it in all parts of the Division. Captain Beavan found a pair on the Pulas tree (*Butea frondosa*), and I can remember that some of my specimens were obtained on the same tree which it seems to prefer, but is also found on the mhowa (*Bassia latifolia*) and doubtless upon others.

The following measurements are taken from specimens in my collection :—

Singhbhum	♂	Wing	4.1	Tail	2.5	Tarsus	.7	Bill from gape	1.
Hazaribagh	♂	"	4.05	"	2.5	"	.7	"	1.1
Sirguja	♂	"	4.05	"	2.65	"	.7	"	1.1
Rajmehal hills	♀	"	4.	"	...	"	.65	"	1.05
Barakar	♀	"	3.95	"	2.6	"	.7	"	1.1
Singhbhum	♀	"	4.	"	2.5	"	.7	"	1.1
Satpurus	♀	"	3.9	"	2.5	"	.6	"	1.

60.—*Yungipicus nanus*, Vig. Hardwickii, Jerd. (164.)

The Southern Pigmy Woodpecker. I have only obtained this species in Sirguja. I may have passed over it in the

eastern parts of the Division, but I certainly do not remember having seen it.

In the jungles of the Satpura range I found it somewhat sparingly.

The following measurements in inches are of specimens in my collection :—

Sirguja	♂	Wing	3·	Tail	1·8	Tarsus	·5	Bill from gape	·6
Satpura hills	♂	"	3·1	"	1·8	"	·5	"	·7
Sirguja	♀	"	3·075	"	1·75	"	·5	"	·65
Satpura hills	♀	"	3·05	"	1·6	"	·5	"	·7

61.—*Chrysocolaptes sultaneus*, *Hodgs.* *Picus guttacristatus*, *T.* (166.)

Under the above name Colonel Tickell described a female of the Golden-backed Woodpecker. In all probability it was this species,* as he says:—"Crest large, full, black with round white spots."

According to the same authority it is common, frequenting the largest timber, cotton trees, &c., noisy, agile.

Neither Captain Beavan nor I ever met with this species.

62.—*Chrysocolaptes festivus*, *Bodd.* (167.)

I cannot remember, and have no record of having seen the Black-backed Woodpecker, except upon one occasion in Chota Nagpur. This was in January in the Palamow sub-division, where I saw and shot three which were busily engaged in searching the branches of a cotton tree (*Bombax malabaricum*). They consisted of a male, female, and young male. The plumage of the latter resembles that of the female, save that the long feathers of the yellow crest are tipped with red.

Measurements in inches :—

Palamow	♂	Wing	6·3	Tail	4·	Tarsus	1·2	Bill from gape	2·2
"	Young ♂	"	5·6	"	3·	"	1·05	"	1·7
"	♀	"	6·1	"	3·8	"	1·1	"	2·

No one who examines this species can fail to observe the enormous size of the toes and claws.

Recently in the Satpuras I saw one of these birds feeding on the ground where jungle and grass had recently been burnt.

63.—*Gecinus striolatus*, *Blyth.* (171.)

The Small Green Woodpecker is rather rare in Chota Nagpur, and so far as my collections go confined to the western parts. In the Satpura hills it was, I think, more abundant.

* More probably *Delesserti*.—Ed., S. F.

Measurements in inches :—

Lohardugga	♂	Wing	5.05	Tail	3.8	Tarsus	.9	Bill from gape	1.65
Satpuras	♂	"	5.05	"	3.9	"	.95	"	1.7
Sirguja	♂	"	5.05	"	4.	"	.95	"	1.6
"	♀	"	4.95	"	3.5	"	.9	"	1.6

64.—*Micropternus phaiiceps*, Blyth. (178.)

The Bengal Rufous Woodpecker is recorded by Captain Beavan as seen in Manbhum. Mr. Blyth, in his list of Colonel Tickell's Singhbhum birds, gives *M. badius* by which name this species was at one time called; but that name properly belongs to the Sumatra species. Possibly Colonel Tickell's specimen may have been referable to *M. gularis*, Jerdon.

I have not met with this species in Chota Nagpur, but have shot it in the Rajmehal hills.

The measurements in inches of my specimen being :—
Rajmehal hills ♂ Wing 4.5; tail 2.7; tarsus .65; bill from gape 1.1.

65.—*Brachypternus aurantius*, Lin. (180.)

The Golden-backed Woodpecker is found occasionally in the forests of Chota Nagpur, but does not appear to be common. My specimens from various localities all seem to belong to this species rather than to the nearly allied *B. chrysonotus*, Less.

The following measurements in inches :—

Sirguja	♂	Wing	5.7	Tail	3.8	Tarsus	.9	Bill from gape	1.6
Calcutta	...	"	5.4	"	3.6	"	.9	"	1.5
Satpuras	...	"	5.65	"	3.8	"	.9	"	1.55
Sirguja	♀	"	5.9	"	3.7	"	.9	"	1.55
Calcutta	♀	"	5.7	"	3.8	"	.9	"	1.55
Satpuras	♀	"	5.4	"	3.65	"	.8	"	1.4

66.—*Yunx torquilla*, Lin. (183.)

The Common Wryneck was obtained in Manbhum by Captain Beavan. In Sirguja I saw it on several occasions, but only succeeded in obtaining one specimen.

It is certainly a rare bird in Chota Nagpur. Two specimens in my collection measure in inches :—

Sirguja	sex?	Wing	3.5	Tail	2.5	Tarsus	.57	Bill from gape	.9
Nagpur	♀	"	3.3	"	2.5	"	.7	"	.8

MEGALAIMIDÆ.

67.—*Megalaima caniceps*, Frankl. (193.)

The Common Green Barbet is often heard, but seldom seen in the jungles of Chota Nagpur. I have not got a single specimen.

from that part of the country in my collection. In the Rajmehal hills, and recently in the Satpuras, I have not unfrequently seen and shot it.

Captain Beavan recorded that "a pair shot in March at Beerachalee were feeding on the shoots and buds of the banyan (*Ficus indica*). Breeds towards the end of March. There is no nest as it simply uses the hollow of a tree. The egg is "elongated and white.

"Dimensions in inches:—

"♂ Length 10·5; Wing 4·62; Tail 3; Expanse 15·5; Tarsi ·88

"♀ " 10·12 " 4·75 " 2·75 " 1·5 " 1.

"Bill pinkish-brown; orbital skin orange yellow; eyelid "lighter yellow; legs dull yellow; claws greenish horn-color."

68.—*Xantholæma hæmacephala*, *Müll.* (197.)

The Crimson-breasted Barbet is very common in all parts of Chota Nagpur.

Captain Beavan gives some interesting notes of its habits and nidification.

CUCULIDÆ.

69.—*Cuculus canorus*, *Lin.* (199.)

The European Cuckoo. I am not quite certain whether birds which I have seen and heard in Sirguja and Lohardugga on several occasions* should be referred to this species. Mr. Blanford, I believe, shot *C. canorus*† on the Main Pât in Sirguja. The only specimen at present available is one shot by myself in Manbhum, and which is now in the Indian Museum. Its dimensions seem intermediate between those of this species and *C. micropterus*. In details of plumage, however, it corresponds with a European specimen received from the Oxford Museum.

Length 12·5; wing 8·1; tail 6·3.

70.—*Hierococcyx varius*, *Vig.* (205.)

The Common Hawk-Cuckoo is found in the jungly parts throughout Chota Nagpur. I have shot it in Manbhum, Singhbhum, and Sirguja. Outside our limits I have shot it too in Birbhum and the Rajmehal hills. In places where

* The last in May near the Station of Ranchi. Probably therefore this bird breeds in that part of the country.

† He has recently written to me to say that from the numbers he saw and heard in May about the Main Pât he concludes that the bird breeds there.

I had not seen it I heard it in the breeding season calling in the jungle.

Singhbhum	♂	Wing 7.35	Tail 6.5	Tarsus 1.	Bill from gape 1.3
Sirguja	?	" 7.8	" 7.1	" 1.	" " " 1.3
Birbhum	?	" 7.85	" 7.	" 1.	" " " 1.3
Rajmehar hills	♀	7.35	" 6.4	" .9	" " " 1.4

71.—*Ololygon passerinus*, Vahl. (208.)

The Indian Plaintive Cuckoo occurs but sparingly in Chota Nagpur. It was obtained by Captain Beavan in Manbhum in April, and by myself in Sirguja in the same month. My specimen is in the hepatic stage, having the upper parts rufous, barred with brown. Beneath white, narrowly barred with brown of a lighter hue than above.

Dimensions in inches are:—

Sirguja ♂ Wing 4.7; tail 4.; tarsus .7; bill from gape 1.

72.—*Coccytes Jacobinus*, Bodd. (212.)

The Pied-crested Cuckoo occurs, I believe, in Chota Nagpur, but very rarely. I saw one in the eastern part of Manbhum, and I have shot it in Birbhum not far outside our limits.

73.—*Eudynamys honorata*, Lin. (214.)

The Koel is tolerably common in the eastern parts of Chota Nagpur, but is seldom met with in the western, more jungly districts. However it is generally to be found where there are ancient mango groves.

74.—*Zanclostomus tristis*, Less. ? (215.)

On several occasions, when beating for large game, a bird has been flushed, which I believe must have been the large green-billed Malkoha, but I cannot be certain that it was not the smaller species.

75.—*Centrococcyx rufipennis*, Ill. (217.)

The Crow Pheasant is tolerably common throughout the Division. In reference to Singhbhum I have the following note:—"Circumstances which it is not easy to detect seem to influence the distribution of this bird. In some portions of this district I have been for weeks without seeing a single specimen. Suddenly then I come upon a tract in which I do not fail to hear or see several every day." These remarks might be extended to the whole of Chota Nagpur.

In confirmation of Dr. Jerdon's statement, made on the authority of a Shikari, that it pilfers eggs. I may mention that the stomach of one, which I shot in Manbhum in 1867, contained, in addition to grasshoppers, the shell of a white egg—apparently a dove's.

The following are measurements in inches of various specimens in my collection :—

Gangpur sex?	Wing	7·7	Tail	10·8	Tarsus	1·9	Bill from gape	1·8
Rajmehal hills ♂	♂	7·2	♂	10·5	♂	1·9	♂	1·6
Satpurus ♂	♂	7·8	♂	10·5	♂	1·9	♂	1·6
Calcutta ♂ yg.	♂	7·55	♂	9·5	♂	1·9	♂	1·6

76.—*Centrococcyx bengalensis*, Gm. (218.)

I insert the lesser Indian Coucal as it is included in Mr. Blyth's list of Colonel Tickell's birds, but the bird has not been recorded since.

Mr. Blyth's description appears to have been of a young bird.

77.—*Taccocua sirkee*, Gray. (220.)

The Bengal Sirkeer. Captain Beavan remarks that "Dr. Jerdon's descriptions of all the members of the genus are short and unsatisfactory;" with this I agree. At the same time the differences are so slight that I believe it almost impossible for any description to be so complete as to enable one to distinguish the species readily. The following six specimens, with the exception of the second, have no white tips on the central tail feathers; unfortunately three of these only are sexed, and they are females; while the only sexed male in my collection appears to answer to the description of *T. affinis*.

Dimensions in inches :—

Satpurus	♀	Wing	6	Tail	9·3	Tarsus	1·7	Bill from gape	1·5
"	♀	"	6·275	"	9·2	"	1·65	"	1·5
"	♀	"	5·7	"	6·5	"	1·5	"	1·4
Palamow sex?	♀	"	5·9	"	8·5	"	1·6	"	1·3
Sirguja	"	"	5·9	"	8·8	"	1·6	"	1·4
Rajmehal hills,	"	"	5·5	"	8·7	"	1·5	"	1·5

78.—*Taccocua affinis*, Blyth. (222.)

One of my specimens, a male from Palamow, corresponds with Dr. Jerdon's description of the Central Indian Sirkeer. Comparing it with the preceding, it has the plumage above darker and a less amount of rufous below, together with the brown tibial plumes, all of which are characteristic of *T. affinis*.

Dimensions in inches :—

Palamow ♂ Wing 6½; tail 9; tarsus 1½; bill from gape 1¼.

Captain Beavan seemed inclined to refer his Manbhum specimens to this species. It will require a larger series than I possess to settle the question whether there are really two species or not, *primâ facie* it is improbable that two distinct species exist together in Palamow as my specimens would seem to show.

In some parts of Chota Nagpur these birds are rather common. When flushed from the ground amongst grass and low bushes they generally fly to the nearest tree, through which they climb in the same way as the Crow Pheasant.

NECTARINIDÆ.

79.—*Æthopyga miles*, Hodg.? (225.)

The Red Honey-sucker obtained by Colonel Tickell in Borabhum, and named by him *Nectarinia seherivæ*, belongs probably to this species or to *Æ. Vigorsii*, Sykes, according to Dr. Jerdon.

That an *Æthopyga* does exist in Chota Nagpur I can bear witness, as I saw one closely on one occasion when travelling between Ranchi and Purulia. The exact locality was on the ghât east of Jona.

Colonel Tickell's description was as follows :—

“*Male*.—Length 4 inches; crown burnished copper with green reflections; neck, back, and breast a deep blood carmine color; a stripe on each side of the throat from the under mandible brilliant violet; lower part of back yellow; tail-coverts bright green; tail violet and green, blended with metallic lustre; quills dusky brown; belly and vent dusky; eyes, bill and legs dark. This rare and elegant subject was procured near Scheria in Borabhum, flitting about the low willow bushes in the dried bed of a stream. It has no song, but a shrill chirp.”

80.—*Leptocoma zeylonica*, Lin. (232.)

The Amethyst-rumped Honey-sucker was obtained by Colonel Tickell in Singhbhum and by Captain Beavan in Manbhum, where he found it to be tolerably common. It breeds in March and April. Captain Beavan gives a full account of the nidification which will be found quoted in full in Mr. Hume's work on that subject.

81.—*Arachnechthra asiatica*, Lin. (234.)

The Purple Honey-sucker is common throughout Chota Nagpur. It is nearly always to be found on the parasitical

species of *Loranthus* and on *Grislea tomentosa* when in flower.

82.—*Dicaeum minimum*, Tickell. (238.)

Tickell's Flowerpecker is found in Sal jungle in most parts of the Division, but is not very common anywhere.

83.—*Piprisoma agile*, Tickell. (240.)

The Thick-billed Flowerpecker is about equally distributed with the last species in Chota Nagpur, and occurs in similar localities.

Of the nidification of both these species Captain Beavan has given full accounts.

CERTHIADÆ.

84.—*Salpornis spilonota*, Frankl. (246.)

I first observed the Spotted Grey Creeper in 1868 near the Jhulda hills in Manbhum, but it was not until December 1871 that I succeeded in obtaining specimens. The first I shot in a mango grove at the village of Kamdera in Lohardugga; the second in Sirguja.

On both occasions I thought it was a *Sitta* which I was firing at.

Measurements in inches:—

Wing 3·35; tail 2·; tarsus ·6.

85.—*Sitta castaneoventris*, Frankl. (250.)

The Chesnut-bellied Nuthatch is rather rare in Chota Nagpur. The only specimen I obtained was shot in Sirguja. I have, however, observed the bird in other parts of the Division.

It was a specimen received from Colonel Tickell which first drew Mr. Blyth's attention to the distinctness of the Sikhim bird, which he accordingly separated as *S. cinnamomeoventris*.

86.—*Dendrophila frontalis*, Horsf. (253.)

The Velvet-fronted Blue Nuthatch is given in Mr. Blyth's list of Colonel Tickell's birds. I have never observed it myself.

UPUPIDÆ.

87.—*Upupa epops*, Lin. (254.)

The European Hoopoe is pretty generally distributed throughout the open parts of Chota Nagpur.

Its call *hōōp-hōōp* is a common sound on the borders of the jungles in April. The persistent monotony renders this call one of the most unpleasant made by any bird with which I am familiar.

The following is a description by Captain Beavan of a specimen from Manbhum:—"From tip of the bill to end of the tail 11 inches; from top of crest to end of tail 12 inches; wing 6 inches; tail 4 inches; bill at front 2.15 inches; tarsus .87 inch; from eye to top of crest 2.75 inches; bill dark horn color, fleshy at base; legs greenish brown."

LANIADÆ.

88.—*Collyrio lahtora*, Sykes. ? (256.)

I insert the Indian Grey-Shrike on the authority of Captain Beavan, who simply says of it:—"Rare in Manbhum." I myself never saw it, and am inclined to believe that it does not occur, and that Captain Beavan mistook one of the other species for it.

89.—*Collyrio tephronotus*, Vigors. (258.)

The Grey-backed Shrike is found in Chota Nagpur, but is not common. I have no specimen of it in my collection from that part of the country. The only specimens I have were obtained in the Rajmehal hills. In "Nests and Eggs," the Rajmehal hills is one of the localities given by Mr. Hume for the breeding of *C. caniceps*.

In the Satpuras the nearly allied *C. erythronotus* was common. I have never met with it in Chota Nagpur.

90.—*Collyrio nigriceps*, Frankl. (259.)

The Black-headed Shrike is tolerably common in some parts of Chota Nagpur, but is not generally distributed. In the Rajmehal hills it was, I think, more abundant. In the Satpuras I did not observe it.

91.—*Lanius vittatus*, Vigors. (260.)

The Bay-backed Shrike, according to Captain Beavan, is occasionally seen in Manbhum, but appears to be rare. I think this accords with my experience in the eastern parts of the district; but in the western, Hazaribagh, Palamow and Sirguja it is common.

In the Rajmehal hills I met with it too. In the Satpuras it was very abundant.

92.—*Lanius cristatus*, *Lin.* (261.)

The Brown Shrike has been obtained in Sirguja, Manbhum, and Singhbhum, and is, I think, tolerably common throughout.

93.—*Tephrodornis pondiceriana*, *Gm.* *Lanius griseus*, *Tickell.* (265.)

The Common Wood-Shrike has been obtained in Manbhum, Singhbhum, Lohardugga, Hazaribagh and Sirguja, being, I think, most abundant in the last mentioned district, where I have observed it throughout the cold and hot weathers.

Captain Beavan says that it appears to come to the Manbhum district for the purpose of breeding. He gives some details as to its nidification, which will be found in Mr. Hume's work on that subject.

Sirguja	sex ?	Wing	3.45	Tail	2.6	Tarsus	.75	Bill from	gape	.85
Hazaribagh	♂	"	3.3	"	2.5	"	.8	"	"	.9
Satpurus	♂	"	3.5	"	2.6	"	.8	"	"	.95
"	♀	"	3.4	"	2.6	"	.8	"	"	.9

94.—*Hemipus picatus*, *Sykes.* *Muscicapa** *tyranides*, *Tickell.* (267.)

So far as I know the Little Pied Shrike has only been obtained within our limits in the district of Singhbhum. First by Colonel Tickell who named it as above, and subsequently by myself. My specimen is now in the Indian Museum. It is even in Singhbhum, I believe, very rare.

95.—*Volvocivora melaschistos*, *Hodgson.*

Lanius silens, *Tickell.* (269.)

The Dark-grey Cuckoo Shrike is rather rare and excessively shy. Captain Beavan obtained it in Manbhum; Colonel Tickell in Singhbhum (where he found it common); and I in Manbhum and Lohardugga.

The measurements of my specimen in inches are:—

Manbhum	♀	Wing	4.5	Tail	4.1	Tarsus	.8	Bill at	front	.6
Lohardugga	"	"	4.5	"	4	"	.8	"	"	.6

V. Sykesii possibly occurs too in the eastern parts of the Division. I have it from Calcutta and the Rajmehal hills. In both these localities I have also obtained *V. melaschistos*.

The measurements of two of my specimens of *V. Sykesii* are in inches:—

Rajmehal hills	♂	Wing	4	Tail	3.3	Tarsus	.8	Bill at	front	.6
Calcutta	♀	"	3.8	"	3	"	.8	"	"	.6

* Tickell was so far quite right: it is a pure Flycatcher in its habits and not a bit of a Shrike.—Ed., S. F.

96.—*Graucalus macei*, Less. (270.)

According to Viscount Walden Manbhum specimens of this bird belong to Mr. Blyth's *G. Layardi*. At the same time he states:—"Of the specific distinction of the last-named species I am not yet quite satisfied, the question mainly turning upon whether the adult male (and female) always has the upper part of the abdominal region barred instead of pure white."

Mr. Hume, on page 204 of this volume, deals with the question at length and expresses his disbelief in the distinctness of *G. Layardi*.

The Large Cuckoo Shrike is pretty generally distributed throughout Chota Nagpur. Strange to say Captain Beavan does not however record it. It seems to be fondest of *mhowa* trees (*Bassia latifolia*). It readily flies from one tree to another in order to escape danger.

I have a good series of this bird from various localities. The measurements and other particulars regarding some of which are as follows:—

		Wing.	Tail.	Tarsus.	Bill from gape.	Breast	plumbeous ;
(a)	Hazaribagh ♂	6.6	4.6	1.	1.4	abdomen and thigh-cov-	erts striated, passing into
						albescent towards the	vent ; lores black.
(b)	Satpuras ♂	6.6	5.1	.95	1.35	Similar.	
(c)	Narsingpur ♂ ?	6.85	5.2	.95	1.3	Similar.	
(d)	Manbhum ♀	6.3	5.	1.	1.3	Chin, throat, breast,	abdomen and thigh-cov-
						erts striated, the ground	color being distinctly
						white ; lores concolorous	with the top the head.
(e)	Narsingpur ♀ ?	6.5	5.3	1.	1.3	Similar to d as regards	striation, but the ground
						color of throat and	breast is somewhat plum-
						beous, not pure white ;	lores dark slaty.
(f)	Lohardugga ♀	6.5	5.5	1.	1.3	Similar to d.	
(g)	Assam ♂	6.75	5.6	1.1	1.6	Throat, neck, and	upper breast plumbeous ;
						lower breast, abdomen,	flanks and thigh-coverts
						striated ; lores very dark	slaty.
(h)	Assam ♂	7.	5.8	1.1	1.55	Throat, neck, and	breast plumbeous, be-
						neath pure white ; lores	dark slaty.

These two Assam specimens are very much larger than any of the other birds ; but otherwise I see nothing to distinguish them.

97.—*Pericrocotus speciosus*, Lath. (271.)

The Large Minivet occurs pretty generally throughout the heavy jungle and forests of Chota Nagpur ; occasionally, too, it is met with in mango groves. Towards Gangpur and Raipur I found it more abundant than elsewhere. Captain Beavan found it " tolerably plentiful at Maknee in Manbhum in January 1868 in flocks nearly all composed of females or young males."

Colonel Tickell says :—" Rare, indiscriminately spread through the jungles, sometimes solitary, at others flying in small parties."

So far as my observation goes this bird constantly migrates from one part of the jungle to another, and small parties may be seen flying off to new feeding grounds at a considerable height above the trees. Often these parties consist exclusively of females, but the males are sure to be met with in the same tract of country.

P. andamanensis, Tytler, from the Andamans.* I was disposed to identify with this species, but Viscount Walden† and Mr. Hume consider it to be distinct. The difference consists in little else than the somewhat smaller size of the bird. In his remarks on this species Viscount Walden gives for comparison the following dimensions of a Manbhum specimen. ♂ Wing 4·6 ; tail 4·5. A perfect giant, the difference being greater between it and ordinary specimens of *speciosus* than between the latter and *andamanensis*.

Mr. Hume says that particularly fine specimens of *speciosus* have the wing from 4·1 to 4·2. I should add that he points out minor differences by which *andamanensis* is to be distinguished.

The following are measurements of specimens from various localities which are now in my possession :—

Sirguja	♂	Wing 4·15 ;	Tail 4 ;	Tarsus ·75 ;	Bill at front ·4
"	♂	" 4·	" 3·5	" ·7	" " " ·5
"	♂	" 4·	" 3·8	" ·7	" " " ·5
Sikkim	♂	" 3·9	" 4·	" ·7	" " " ·5
Pankabari	♂	" 4·	" 4·	" 7	" " " ·5
Sirguja	♂ juv	" 3·8	" 3·8	" ·7	" " " ·6
"	♀	" 4·05	" 3·8	" ·65	" " " ·5
"	♀	" 3·95	" 3·6	" ·65	" " " ·6

An Assam specimen (? *P. elegans*, M'Clell.) measures :—

♂ Wing 3·8 ; tail 3·7 ; tarsus 7 ; bill at front ·55.

* S. F., I., 1873, p. 66.

† Ibis, 3rd Series, III., 1873, p. 310. S. F., II., 1874, p. 208.

In details of coloration I must profess my inability to see any difference between it and one of my Sirguja specimens. The relative proportions of black and red on the central tail feathers are identical.

In this respect the Sirguja specimens vary much. One has the whole outer web red, another only a partial edging on the centre of the outer web.

98.—*Pericrocotus peregrinus*, *Lin.* (276.)

The Small Minivet is tolerably common throughout Chota Nagpur. In Sirguja and Lohardugga it is particularly abundant. It is found both in jungle and in mango groves. Parties of from a dozen to twenty are commonly met with.

99.—*Buchanga albirictus*, *Hodgs.* (278.)

The Common Drongo Shrike or King Crow is very abundant throughout Chota Nagpur. Dr. Jerdon seems to doubt that the King Crow actually strikes the birds which it appears to attack; on one occasion, however, I saw one actually carried on the back of a large Wood Owl (*Ascalaphia bengalensis*) which flew out of a tree where it was being tormented by these birds and Pies (*Dendrocitta rufa*.)

In illustration of the somewhat miscellaneous character of the food of these birds, I may mention that I remember one day in Calcutta opening a verandah *chick* (curtain) which had not been in use for some time, so disturbing a colony of bats that had made the inside coils their home; out they flew into the daylight, when they were immediately seen and hawked up by some King Crows who took them to neighbouring trees where they quietly devoured them.

It may possibly be for the purpose of picking up an odd bat that they are generally so late in going to roost. Termites are, however I believe, the chief attraction, and indeed it is doubtful whether they could capture a bat not dazed by sunlight.

Late as they are in going to roost, they are generally the first birds to be on the move in the morning. I have frequently heard them calling to one another long before dawn, when I have been travelling in the hot weather.

I rather think that I have seen in Manbhum specimens of *B. longicaudatus*, but the only locality where I have actually obtained that species in Bengal is in the Rajmehal hills. I have seen it in the cold weather on one occasion in Calcutta.

100.—*Dicrurus cærulescens*, Lin. (281.)

The White-bellied Drongo is pretty generally distributed throughout the jungly portion of Chota Nagpur, but is nowhere abundant. Except towards the breeding season it is generally found solitary.

In the Satpura jungles it appeared to be much more abundant than it is in Chota Nagpur.

101.—*Dissemurus malabaroides*, Lin. (284.)

The Large Racket-tailed Drongo or Bhimraj is very rare in Chota Nagpur, and is extremely shy and difficult to shoot. Captain Beavan observed it near the Cossye River in Manbhum, but did not manage to secure a specimen.

I have seen it in the Rajmehal hills. Recently during a three months' tour in the Satpura hills I only saw two individuals, one of which I secured. The measurements in inches are as follows :—

Wing 6·8; tail to end of outer feathers 15·2; tail to end of central feathers 6·5; frontal crest 2·3; tarsus 1.

102.—*Chibia hottentotta*, Lin. *Criniger splendens*, Tickell. (286.)

The Hair-crested Drongo, though observed by Captain Beavan in Manbhum, and by myself on the Main Pât in Sirguja, seems to have been collected by no one but Colonel Tickell within our limits. It is said to particularly affect the blossoms of the cotton tree (*Bombax*.)

103.—*Artamus fuscus*, Vieill. (287.)

The Ashy Swallow Shrike is rather rare in Chota Nagpur. My only specimen from the Division was found in Sirguja.

This bird also occurs in the Rajmehal hills, where it is, I think, less rare. I have recently met with it in the Satpuras.

MUSCICAPIDÆ.**104.—*Tchitrea paradisi*, Lin. (288.)**

The Paradise Flycatcher was obtained at Kashurgurh in Manbhum by Captain Beavan where he found a few specimens in April 1864. I have seen this bird on a few occasions in Sirguja and Lohardugga.

In the south-west of the Division towards the Tributary States of Raigur and Gangpur in April 1871, I found it abundant and in all phases of plumage.

In some respects my specimens seem intermediate between this species and *affinis*.

A male has the central tail feathers only black shafted to a little beyond the ordinary tail. A quarter of an inch at the tip is also black shafted, and on one of the feathers there is a black isolated portion of shaft about one inch long. The ordinary tail feathers are well margined with black. One of two full grown males obtained by Captain Beavan had the central tail feathers black shafted. The measurements in inches of my specimens were :—

Wing 3·6; tail 4·3 + 10; bill from gape 1·1.

In two chesnut specimens the inner webs of the quills are not dusky black, but only scarcely perceptibly darker.

The crest is about 1 inch long; the throat glossy black; breast ashy; belly and vent white.

Wing 3·45; Tail 4·1; Bill from gape 1
" 3·4 " 4·5 " " " 1.

I have seen this bird settle on the ground on two or three occasions, once close to some water, possibly to drink as the weather was very hot.

Captain Beavan was of opinion that it only came to Manbhum "when the new leaves come on to the trees at the end of March."

105.—*Myiagra azurea*, Bodd. (290.)

The Black-naped Blue Flycatcher is not very abundant in Chota Nagpur, but has been obtained in most parts of the Division. Captain Beavan says :—"In Manbhum it is seen frequently in suitable localities in January and February, but does not apparently make a lengthened stay."

106.—*Leucocirca fuscoventris*, Frankl. (291.)

The White-throated Fantail is not often seen in Chota Nagpur.

107.—*Leucocirca albofrontata*, Frankl. (292.)

The White-browed Fantail is not uncommon in the mango groves in Chota Nagpur. Its pleasing note and active evolutions on the wing often attract notice.

108.—*Myiastes cinereocapilla*, Vieill. (295.)

The Grey-headed Flycatcher is occasionally found in mango groves, but seems to prefer the neighbourhood of rivers with well-wooded banks. I have not found it abundant anywhere.

109.—*Alseonax latirostris*, Raffles. M. poonensis, Sykes. (297.)

This species is included in Mr. Blyth's list of Colonel Tickell's birds. I never obtained it myself.

110.—*Eumyias melanops*, Vigors. (301.)

The Verditer Flycatcher is not very common in any part of Chota Nagpur. I generally met with it near rivers in little frequented jungles.

111.—*Cyornis Tickellia*, Blyth. (305 & 306.)

Tickell's Blue Redbreast is now generally admitted to be only the female of *C. Jerdoni*. Recently in the Satpuras I made a point of collecting these birds where they were not uncommon. Two of the *Tickellia* plumage were certainly females. In half a dozen of the *Jerdoni* plumage those which were satisfactorily sexed by myself proved to be males.

It was first enumerated by Colonel Tickell under the name *Musci: hyacintha*, Temm. He speaks of it as "rare, silent, frequenting high trees."

The bird is certainly rare in Chota Nagpur. I obtained but two specimens, one in Singhbhum and one in Sirguja.

112.—*Muscicapula superciliaris*, Jerdon. (310.)

The White-browed Blue Flycatcher was obtained by Colonel Tickell in Singhbhum and by myself in Lohardugga. It is, I should say, of extreme rarity in Chota Nagpur. My specimen is exactly identical with examples from Simla.

Captain Beavan refers a Flycatcher which he obtained in Manbhum doubtfully to *M. sapphira*; it seems probable that it was this species which he met with.

113.—*Erythrosterina albicilla*, Pallas. *E. leucura*, Gmel. (323.)

The White-tailed Robin Flycatcher is common in Chota Nagpur.

114.—*Erythrosterina parva*,* Bechst. (323 bis.)

I shot several specimens of the Red-breasted Flycatcher in Singhbhum in January 1869.

Recently I found it not uncommon in the Satpuras.

115.—*Erythrosterina pusilla*, Blyth. (324.)

In February 1869, when in Singhbhum, I shot a specimen of the Rufous-backed Flycatcher which was feeding amongst the leaves of *Ficus indica*. Recently I had an opportunity of comparing my specimen, which is now in the Indian Museum,

* Or? *hyperythra*.

with Mr. Blyth's type. I find them to be absolutely identical. Measurements in inches:—

Length 4·2; wing 2·2; tail 1·55; bill at front ·35; tarsus ·6.

116.—*Erythrosterna maculata*, Tickell. (323.)

The Little Pied Flycatcher was first obtained by Colonel Tickell in Singbhum. It was met with in Manbhum by Captain Beavan, where I also have seen it. I have also observed it in Sirguja, but it is decidedly a rare bird, frequenting the vicinity of well-wooded streams, and sometimes seen in company with *Myiastes cinereocapilla*.

E. acornatus has, so far as I know, not been met with, though it has, I believe, been found in the Central Provinces.

MERULIDÆ.

117.—*Myiophoneus Horsfieldii*, Vig. (342.)

The Malabar Whistling Thrush has a much larger range throughout the Continent than was supposed by Dr. Jerdon. In the highlands of Sirguja I found it by no means rare. The perennial spring-fed streams, which take their rise in the layer of trap forming the top of the Main Pât and leap from step to step in their torrential channels down the steep sides of the plateau, are favorite resorts of this bird.

When examining the geology of the plateau in April 1872, I rarely came to one of the waterfalls over a layer of basaltic columns which characterise these streams, without hearing the whistle of this Thrush. I found it very wary and difficult to shoot, as it would, when first started, keep well in front, and then when least expected, return overhead to its favorite spot at the foot of a fall.

Recently, in the Satpuras, I again met with it in some of the rocky streams at the base of Pachmari, and also on Pachmari itself. I was told that in the hot weather the numbers on Pachmari steadily increase, and this I can easily understand as in March the rivers which it frequented below were rapidly drying up.

The following are measurements in inches of two specimens in my collection:—

Sirguja, April 1872	♂	Wing	6·1;	Tail	4·8;	Tarsus	1·8;	Bill from gape	1·5
Satpuras, March 1874	♂	"	6·6	"	4·8	"	1·8	"	1·5

118.—*Pitta coronata*, Gmel. (345.)

The first occasion upon which I met with the Yellow-breasted Ground Thrush is thus recorded in my note book. "To-day, when

passing through some Sal forest on the Suadi and Ranchi road in Gangpur, I heard a number of birds calling to one another with a peculiar short, but double flute-like note. It was some time before I saw what they were, as they were extremely wary; but by patiently waiting I got a shot at one which proved to be *P. coronata*. This is the first time I have met with this species in Chota Nagpur."

The note may be thus represented *whēēt pe-ñ*. The bird while uttering it puts his head back as far as he can, and jerks it forward again as he concludes with the *pe-ñ*—April 1871.

In May 1871 and again in April 1872 I was attracted by its call when passing up and down the ghâts on the south and east of the Ranchi plateau. In most cases I found it perched on trees. My acquaintance therefore with the habits of this bird does not support Dr. Jerdon's statements that it seldom alights on trees and is in general a most silent bird.

Unlike the last mentioned bird it does not seem to care for the vicinity of water. I always found it in sloping valleys with well-wooded surroundings.

The measurements in inches of one in my collection are:—

Wing 4.1; tail 1.4; tarsus 1.3; bill at front 1.4.

119.—*Cyanocinclla cyana*, *Lin.* (351.)

The Blue Rock Thrush is found near most of the large rivers in Chota Nagpur. I have shot it in Singhbhum, Sirguja, and Hazaribagh.

The following are measurements of specimens in my collection:—

Satpura	♂	Wing	4.55	Tail	3.2	Tarsus	1.1	Bill from gape	1.2
Cachar	♂	"	4.7	"	3.5	"	1.1	"	1.2
Hazaribagh	♀	"	4.75	"	3.45	"	1.05	"	1.2
Sirguja	♀	"	4.55	"	3.2	"	1.1	"	1.35

120.—*Geocichla cyanotus*, *J. and S.* (354.)

The White-winged Ground Thrush is rare in Chota Nagpur; so far as I can remember I only obtained it in Sirguja. Recently I shot one in the Satpura hills.

Sirguja	♂	Wing	4.35	Tail	2.8	Tarsus	1.2	Bill at front	.7
Satpuras	♀♀	"	4.65	"	3.2	"	1.2	"	.8

The Satpura specimen ♀♀ has a greenish tinge on the back.

121.—*Geocichla citrina*, *Lath.* *Turdus lividus*, *Tickell.* (355.)

I have no specimen of the Orange-headed Thrush from Chota Nagpur, and have no distinct recollection of having seen it

there, but by Captain Beavan it was obtained on two occasions in Manbhum, and also apparently by Colonel Tickell in Singhbhum.

In the Rajmehal hills and the neighbourhood of Calcutta it is not uncommon.

122.—*Geocichla unicolor*, Tickell. (356.)

The Dusky Ground-Thrush is not common in Chota Nagpur. It was obtained by Colonel Tickell in Singhbhum and by myself in Sirguja, so is very probably spread, though sparingly, throughout the jungly parts of the Division.

The following are measurements of specimens in my collection :—

Sirguja	♂	Wing 4·7;	Tail 3·4;	Tarsus 1·1;	Bill at front	·65
Rajmehal hills, sex ?	"	5·2	" 3·5	" 1·3	" "	·65

The Sirguja specimen has the non-ferruginous plumage of the female, but the throat and neck are unstreaked.

The Rajmehal specimen, apparently a female, is distinguished from the preceding by being a larger bird, and by having the throat and neck well streaked with brown. A specimen from Kotegurh corresponds in measurements with this last, except that the tarsus is somewhat shorter. The length in the Rajmehal specimen appears to be quite exceptional.

123.—*Oreocincla dauma*, Lath. (371.)

The Small-billed Mountain-Thrush was once obtained in Manbhum by Captain Beavan. In Sirguja and other parts of Western Chota Nagpur I met with it occasionally and shot three specimens. I also found it in the Rajmehal hills as late as April. It seems possible that it remains in these hills all the year.

I invariably found it on the banks of well-wooded streams. Its flight is low and irregular; but for its short wings it might often be taken to be a species of *Caprimulgus*.

The following are measurements in inches of specimens in my collection :—

Sirguja	♂	Wing 5·5;	Tail 4·;	Tarsus 1·25;	Bill from gape	1·3
"	♀	5·75	" 4·	" 1·25	" "	1·2

124.—*Pyctorhis sinensis*, Gm. (385.)

The Yellow-eyed Babbler is generally distributed throughout Chota Nagpur. It is particularly common in Palamow.

125.—*Mixornis rubicapilla*, Tickell. *Motacilla* apud Tickell. (395.)

The Yellow-breasted Wren-babbler was first found by Colonel Tickell in the jungles of Borabhum and Dhalbhum. It was

afterwards obtained by Captain Beavan on the banks of the Cossye.

The following are measurements of Captain Beavan's specimens which are now in the Indian Museum :—

♂ Length 5' ; Wing 2·3 ; Tail 2' ; Tarsus ·75 ; Bill at front 5
? " " 2·35 " 21 " ·7

126.—*Dumetia hyperythra*, Frankl. ? (397.)

The Rufous-bellied Babbler has been obtained in the Midnapur jungles, and doubtless extends into the districts to the west. Captain Beavan refers a bird obtained at Kesurgurh in Manbhumi to this species. It was apparently not obtained by Colonel Tickell. I also did not meet with it. Recently I found it common in the Satpura hills.

127.—*Pellorneum ruficeps*, Swains. *Motacilla dumeticola*, Tickell. (399.)

Colonel Tickell says that the Spotted Wren Babbler frequents the thickest foliage at the top of high trees, and is rarely seen. Captain Beavan, that it frequents low and tangled brushwood where it makes a tremendous chattering like the Babblers. I have obtained it in the Rajmehar hills, but seem to have missed it in Chota Nagpur. My observations on its habits correspond with those of Captain Beavan.

Length 6·625 ; wing 2·75 ; tarsus 1·125 (Beavan.)

***Pomatorhinus Horsfieldii*, Sykes. (404.)**

The Southern Scimitar Babbler should be looked for as it not improbably occurs. Two specimens are mentioned in Blyth's catalogue from Katák (Cuttack), and it has been obtained in Central India.

128.—*Malacocircus terricolor*, Hodg. (432.)

The Bengal Babbler is common in most parts of Chota Nagpur. Captain Beavan says it breeds in Manbhumi, "making a neat nest of sticks somewhat like that of *Turdus merula*, and laying four or five dark greenish-blue eggs. I have not obtained any of the other species of *Malacocircus* in Chota Nagpur.

The following are measurements in inches :—

Hazaribagh Wing 4' ; Tail 4·1 ; Tarsus 1·35 ; Bill from gape 1·05
Sirguja " 4·2 " 4·4 " 1·3 " " " 1·1

129.—*Chatarrhoea caudata*, Dumeril. (438.)

I have found the Striated Bush Babbler to be rather common in Western Hazaribagh and Palamow, but have not met with it in other parts. Captain Beavan did not obtain it in Manbhumi.

BRACHYPODIDÆ.

130.—*Ixos luteolus*, Less. *l. virescens*, Temm.
apud Tickell. (425.)

The White-browed Bush Bulbul was obtained just on our limits by Colonel Tickell. It does not appear to have been met with since. He says of it:—"Killed in woody and barren country at Bamireah near Midnapur, appeared shy, silent and solitary, and partakes of the nature of the Flycatchers and Thrushes. It flew and settled about the lower parts of bushes and thickets. Stomach contained berries and seeds."

131.—*Pycnonotus (Rubigula) flaviventris*,
Tickell. *Vanga* apud Tickell. (456.)

The Black-crested Yellow Bulbul is another bird obtained by Tickell, but by no one since in Chota Nagpur. He says:—"Frequented the beautiful hanging woods of Dampara in Dholbhum, where alone I met with them." I have shot it at Punkabari and in Rangoon, but have never seen it in Chota Nagpur.

132.—*Otocompsa emeria*, Shaw. (460.)

I have occasionally found the Red-whiskered Bulbul in the eastern parts of Manbhum, but it is decidedly rare even there, and I do not remember having seen it in any other parts of the Division.

133.—*Pycnonotus chrysorrhoides*, Lafr. P.
hæmorrhous Gm. apud Jerdon. (462.)

The Common Madras Bulbul is the species generally met with. I have, however, two specimens from Singhbhum which come very near to *pygmæus*; seemingly they are intermediate. Some of my Calcutta birds and one from Rangoon are thus too, not distinctly referable to either species. Rajmehal specimens appear to be *pygmæus*, while those from the Satpuras are *chrysorrhoides*.

134.—*Phyllornis Jerdoni*, Blyth. (463.)

The Common Green Bulbul occurs abundantly throughout the Division. I have observed that it is especially fond of the flowers of the parasitic *Loranthus* which grows on

many trees. So far as I could ascertain it both sips the nectar from the flowers and catches the insects attracted by the same.

Measurements in inches :—

Barakar	♂	Wing	3·5	Tail	2·8	Tarsus	·65	Bill from gape	·9
Singhbhum	♂	„	3·5	„	2·85	„	·8	„	·95
Hazaribagh	♀	„	3·4	„	2·9	„	·8	„	·9
Rajmehal hills	♀	„	3·4	„	2·9	„	·7	„	·95

135.—*Phyllornis aurifrons*, Temm. (465.)

The Gold-fronted Green Bulbul is less common than the previous species, but I have obtained it in all parts of the Division. Captain Beavan points out that the female has the golden forehead as well as the male, Dr. Jerdon having stated it to be absent. In my specimens there is little more than a trace of the golden, but still it seems to be always present. In the female also, the blue occurs only as a moustachial stripe on either side of the throat. The central part of the chin and throat is black, which passes off into the green without any trace of the yellow which margins the black ring surrounding the blue throat of the male.

Sirguja	♂	Wing	3·85	Tail	2·7	Tarsus	·65	Bill from gape	1
Narsingpur	♀	„	3·6	„	2·6	„	·7	„	·95

136.—*Ægithina tiphia*, Lin. (468.)

This bird is not uncommon in Chota Nagpur. I have often noted its tit-like habits which have already attracted the notice of several observers.

I have in my collection specimens from Singhbhum, Sirguja, Rajmehal hills, Hazaribagh, Calcutta, Satpura hills and Cutch. Among these there are four marked males, of which only one shows any sign of black on the back and that only in a few detached patches, but I have formerly, in Chota Nagpur, seen and shot specimens having the *zeylonica* type of plumage. That *zeylonica* does not exist as a distinct species has, I believe, been conclusively established by Mr. Hume. With that view my specimens and observations completely concur.

137.—*Oriolus kundoo*, Sykes. (470.)

The Indian Oriole occurs in Sirguja, and probably sparingly throughout the Division. Captain Beavan obtained it in Manbhum. Besides in Sirguja I have obtained it in the Rajmehal hills, so that probably it extends throughout the hilly country of Western Bengal. I recently shot a specimen in the Satpura hills, Central Provinces.

Measurement in inches :—

Sirguja... Wing 5·5; Tail 3·5; Tarsus ·9; Bill from gape 1·5

Satpuras ... „ 5·4 „ 3·5 „ ·8 „ „ „ 1·4

I have never seen *O. indicus* in any of the parts of the country which I have visited.

138.—*Oriolus melanocephalus*, *Lin.* (472.)

The Common Golden Oriole is very abundant throughout Chota Nagpur. My experience does not accord with Captain Beavan's, who says :—"Somehow one seldom or ever seems to come across a female, unless the sexes are of exactly the same color." Out of a large number I have fully as many females as males.

According to my specimens the Andaman race of this species is somewhat smaller; but Mr. Hume's approximate in size to that of ordinary continental examples.

SYLVIADÆ.

139.—*Copsychus saularis*, *Lin.* (475.)

The Magpie Robin occurs throughout Chota Nagpur. Though often seen during the day it seems to become most lively just before sunset and during our short Indian twilight.

It and perhaps *Buchanga albirictus* are the last species to disappear before the *Caprimulgidæ*, Owls, &c., begin to fly about.

140.—*Cercotrichas macrourus*, *Gm.* (476.)

The Shama is extremely rare in Chota Nagpur, I having met with it on only two occasions—once in Lohardugga and once in Gangpur; but never in Manbhum, where Captain Beavan was told that it breeds in April and May. I may add that it occurs sparingly too in the Rajmehal hills where I have seen it on two occasions.

141.—*Thamnobia cambaiensis*, *Lath.* *Motacilla fulicata*, *Tickell.* (480.)

The Brown-backed Indian Robin is very common in Chota Nagpur. With regard to its nidification I have the following note :—

25th April.—Found the nest of this bird with three eggs in a hole in a bank by the side of a much-frequented road. Eggs greenish white with olive brown spots. The nest consisted merely of a few pieces of grass, &c., lining the bottom of the hole.

142.—*Pratincola caprata*, Lin. *Motacilla sylvatica*, Tickell. (481)

The White-winged Black Robin cannot be very common in Chota Nagpur, as although I have seen it, I find I have not a single specimen in my collection from the Division. On the other hand I found it extremely abundant in the Satpura hills (Central Provinces). Colonel Tickell's description of the eggs, not of the nest, resembles that which I have given of the preceding species.

The last-mentioned writer, in his paper on Borabhum, &c., says the bird is rare and shy, while Captain Beavan does not appear to have met with it at all.

143.—*Pratincola indica*, Blyth. (483.)

The Indian Bush Chat is tolerably abundant in the more open parts of the Division. The next species, *P. leucura*, Blyth, may very possibly occur in Chota Nagpur, but I have not collected it.

Cercomela fusca, Blyth. (494.)

I think it highly probable that the Brown Rock-chat occurs in Chota Nagpur, as I found it somewhat common on the Kymores at Rotasgurih. Neither of the specimens which I obtained had the wing so long as Dr. Jerdon gives it 3.6. The measurements are:—

♂	Wing	3.3	;	Tail	2.7	;	Tarsus	1
?	"	3.5	"	"	2.75	"	"	1

144.—*Ruticilla rufiventris*, Vieill. (497.)

The Indian Redstart is common in Chota Nagpur; but is not absolutely abundant in any part of the Division.

Sirguja	♂	Wing	3.4	;	Tail	?	;	Tarsus	.95	;	Bill from gape	.7
Raj. hills	♀	"	3.35	"	2.4	"	.9	"	"	"	"	.65

145.—*Calliope camtschatkensis*, Gm. *Mot. calliope*, Pallas apud Tickell. (512.)

Of the Common Ruby-throat Colonel Tickell writes:—"Rare, solitary, silent. Haunts thickets and underwood; found at Dampara in Dholbhum." I have never seen this bird in Chota Nagpur; but once met it in the Satpura hills, and have frequently obtained it from the neighbourhood of Calcutta.

146.—*Cyanecula suecica*, Lin. (514.)

The Indian Blue-throat is included in Colonel Tickell's list, though he only speaks of one specimen from Bamirah near Midnapur. I have seen it in gardens on one or two occasions in Manbhum. It must be very rare in all parts of the Division.

147.—*Calamodyta dumetorum*, Blyth. (516.)

The Lesser Reed Warbler has only been obtained by me in Sirguja, I may very possibly, however, have passed it over in other parts of the Division. About Calcutta I have found it to be common.

148.—*Orthotomus longicauda*, Gm. (530.)

The Indian Tailor Bird occurs in the more open parts of the Division, but is not common, so far as my observation has gone, in any part of Chota Nagpur.

149.—*Prinia gracilis*, Franklin. (536.)

Franklin's Wren Warbler is common in most parts of Chota Nagpur. Captain Beavan gives an interesting account of its habits; its measurements are as follows:—

Length 4·625; wing 1·75; tail 2 inches.

150.—*Drymoipus longicauda*, Tickell. *Sylvia* apud Tickell. (544.)

The Long-tailed Wren Warbler was first described from specimens obtained by Colonel Tickell in Borabhum and Dalbhum. It seems to have escaped both Captain Beavan and myself.

151.—*Drymoipus neglectus*, Jerd. (546.)

It appears to have been this species which Colonel Tickell identified as *D. sylvaticus* (J. A. S. B., 1848, p. 301). I have no specimens of the bird myself from Chota Nagpur; but I have no doubt that it occurs, and likewise *D. inornatus** which I have from the Rajmehal hills.

152.—*Phyllopseuste rama*, Sykes. (553.)

Sykes' Warbler has, according to the Indian Museum Catalogue, been received from Manbhum and Singbhum. Captain Beavan does not mention it, and I have no specimens in my collection.

153.—*Phyllopseuste tristis*, Blyth. (554.)

The Brown Tree Warbler occurs, but is, I think, not common in Chota Nagpur, it has however been obtained in Manbhum,

* See Addenda.

Singhbhum, and Lohardugga. What other species occur is uncertain. Captain Beavan believed that he got *fuscatus*, *lugubris*, *nitidus* and *viridanus*,* but was not quite satisfied as to their identification. My own collection is very weak in these small birds; further specimens and more critical examination of the species is requisite, so I shall only insert one other about which there can be no doubt.

154.—Phyllopseuste affinis, Tickell. Motacilla apud Tickell. (561.)

Tickell's Tree Warbler was first obtained in Singhbhum. It has since been obtained in other parts of the Division.

155.—Reguloides proregulus, Pallas. (565.)

I have obtained the Crowned Tree Warbler in Palamow. I also found it in the Satpuras.

156.—Abrornis (Culicipeta) cantator, Tickell Motacilla apud Tickell. (570.)

The Lesser Black-browed Warbler is another of Colonel Tickell's species which has escaped subsequent collectors in the districts where it was first obtained.

157.—Sylvia Jerdoni, Blyth. (581.)

The Large Black-capped Warbler was once obtained by Captain Beavan at Kashurgurh in Manbhum. I did not meet with it in any part of Chota Nagpur, but observed it not unfrequently in the Narbadda valley at the foot of the Satpura hills.

158.—Motacilla madraspatana, Briss. (589.)

The Pied Wagtail occurs, I should say, in all the larger and many of the smaller rivers of Chota Nagpur. I find in 1869 I noted it as rather rare in Singhbhum, and Captain Beavan says he only met with it in the Cossye river, where however it was tolerably common. But on the whole I consider it to be one of the birds most commonly met with in the rivers of Chota Nagpur.

159.—Motacilla luzoniensis, Scop. (590.)

The White-faced Wagtail is common in Chota Nagpur. I have specimens from Singhbhum, Manbhum, and Hazaribagh.

* See Addenda.

160.—*Motacilla dukhunensis*, Sykes. (591.)

I have one specimen of what I take to be the Black-faced Wagtail from Chota Nagpur, and another from the Rajmehal hills. In the Satpuras the species met with were *M. luzoniensis* and *M. personata*.*

161.—*Calobates melanops*, Bechs. (592.)

The Grey and Yellow Wagtail is not uncommon in streams passing through jungle.

162.—*Budytes flava*, Lin. (593 bis.)

This appears to be the common species of Indian Field Wagtail which occurs in Chota Nagpur. It is found on grassy plains during the cold weather. *B. citreola* occurs also I believe, but I have no specimen by me at present.

163.—*Anthus arboreus* (agilis), Bechs. (596.)

Whether this or the next species of Tree Pipit is the more common in Chota Nagpur I cannot say, as it was some time before I was able to distinguish the species. I am indebted to Mr. Brooks for showing me how to do so.

Six birds recently obtained in the Satpuras belong to this species.

All my sexed specimens are unfortunately females. The measurements of two are:—

Chota Nagpur ♀	Wing 3·4;	Tail 2·6;	Tarsus 8;	Bill from gape	·65
Satpura hills ♀	„ 3·35	„ 2·5	„ ·8	„ „	„ ·7

164.—*Anthus maculatus*, Blyth. (597.)

Two specimens from Chota Nagpur. Measure in inches:—

Singhbhum	Wing 3·4;	Tail 2·4;	Tarsus ·85;	Bill from gape,	·7
Barakar	„ 3·4	„ 2·4	„ ·8	„ „	„ ·7

165.—*Corydalla Richardi*, Vieill. (599.)

The Large Marsh Pipit was obtained at Assensole (which is geographically, though not politically, within our limits) by Mr. Brooks (STRAY FEATHERS, Vol. I., p. 358). It also appears in the Indian Museum Catalogue from Singhbhum.

166.—*Corydalla rufula*, Vieill. (600.)

The Indian Titlark is very common in the open parts throughout Chota Nagpur. I have it also from Calcutta and the Satpuras. The wing in none of these exceeds 3·1. The hind claw averages about ·5.

* See Addenda.

167.—*Corydalla striolata*, *Blyth*. (601.)

The Large Tit Lark is perhaps not quite so abundant as the preceding species. But I think I have either obtained or seen it in all the districts of Chota Nagpur. I have it also from the Rajmehal hills and the Satpuras.

Satpura and Barakar specimens are distinguished from the others in having very faint, or no spotting on the breast. This is not sexual, as both sexes are represented in each of the forms of plumage.

Breast spotted.

Singhbhum ♂	Wing 3·5; Tail 2·5; Tarsus 1·1; Bill from gape ·8; Hind claw	·425
" " ♀	" 3·5 " 2·6 " 1·1 " " " ·75 " "	·425

Non or faintly spotted.

Satpuras * ♂	3·45 " 2·7 " ·95 " " " ·8 " "	·325
" " ♀	3·5 " 2·8 " 1 " " " ·75 " "	·275

AMPELIDÆ.

168.—*Zosterops palpebrosus*, *Temm*. (631.)

The White-eyed Tit occurs somewhat sparingly throughout Chota Nagpur. Captain Beavan appears to have only once met with it in Manbhum. I was recently amused in the Satpura hills to observe the pluck with which some of these attacked the vastly more powerful *Carpodacus erythrinus*, Pallas, who were attempting to eat the flowers of the mhowa (*Bassia latifolia*), thus disturbing a favorite hunting ground of the vigorous little Tit.

169.—*Parus cinereus* *Vieill*. (645.)

The Indian Grey Tit occurs sparingly throughout Chota Nagpur. Colonel Tickell records it from Chaibassa.

I recently found it very abundant in the jungles of the Satpura hills (Central Provinces). Measurements in inches:—

Satpuras ...	Wing 2·5; Tail 2·1; Tarsus ·7; Bill from gape ·5
" " "	" 2·4 " 1·9 " ·7 " " " ·5

170.—*Machlolophus Jerdoni*, *Blyth*. (648.)

The Southern Yellow Tit occurs also sparingly throughout Chota Nagpur. I have specimens from Singhbhum and Sirguja. In the Satpura hills it was common in January and February. *M. xanthogenys* does not occur in these jungles. Dr. Jerdon has not mentioned that the outer web of the outer pair of tail feathers is white.

Measurements in inches of specimens from the Satpuras:—

Wing 2·8; Tail 2·2; Tarsus ·7; Bill from gape ·5
" 2·6 " 1·9 " ·7 " " " ·5

* A specimen from Barakar closely resembles this individual, except that it is somewhat less fulvous underneath, and is slightly larger.

CORVIDÆ.

171.—*Corvus Levallantii*, Less. (660.)

The Indian Corby or Raven of some Europeans is spread throughout Chota Nagpur, but its distribution is somewhat capricious, and its presence or absence, in particular tracts, is not always easy to account for. The sportsman often finds this bird to be a most useful guide to the whereabouts of both living and dead game, more particularly the latter; but a tiger or bear cannot walk about in the day light without being made the subject of some loudly expressed remarks on the part of the Crows of the neighbourhood.

172.—*Corvus impudicus*, *Hodgs. C. Splendens*, Vieill apud Jerdon. (663.)

The Common Indian Crow is very common throughout. It is much more abundant, I think on the whole, than the preceding species. Although both species, especially in the neighbourhood of towns, are sometimes found together, I think, as a general rule, they occupy distinct tracts of country.

My jungle specimens are somewhat larger than the average Calcutta birds.

173.—*Vagabunda rufa*, Scop. (674.)

The Common Indian Magpie is found throughout the Division. Captain Beavan says it is rare in Manbhum; such however has not been my experience, but it is nowhere very abundant.

I have often been amused with watching the pertinacity of the attacks made by this bird upon the large Wood Owls. On one occasion while sitting concealed, awaiting the expected arrival of some bears, I had a good opportunity for observing closely the proceedings. The Owl kept up a sort of half chattering half hissing noise. Two Magpies, seated close by, accompanied him by bobbing up and down and uttering a curious convulsive sort of cry. When the Owl could bear it no longer he flew off to another tree, but was hotly pursued by the Pies who again resumed their no-doubt irritating antics.

STURNIDÆ.

174.—*Sturnopastor contra*, Lin. (633.)

The Pied Starling is tolerably common in all parts of the Division, save of course where there is very heavy jungle.

175.—*Acridotheres tristis*, *Lin.* (684.)

The Common Myna occurs throughout Chota Nagpur in great abundance.

176.—*Acridotheres ginginianus*, *Lath.* (685.)

The Bank Myna is rare in Chota Nagpur. I may, however, very possibly have not always discriminated it. The only district in which I have actually obtained it is Singhbhum.

177.—*Acridotheres fuscus*, *Wagler.* (686.)

The Cattle Myna, so far as my recollection goes, does not occur, or if it does only sparingly in the eastern parts of the Division. In Sirguja it appeared to be common.

178.—*Temenuchus pagodarum*, *Gm.* (687.)

All my collections from Chota Nagpur contained one or more specimens of the Black-headed Myna. From my observation I should say it is universally, though somewhat sparingly, spread throughout the Division. It appeared to be most abundant in Sirguja. It by no means confines itself to the open country, being often found in heavy jungle.

Measurements in inches :—

Sirguja Wing 4·2; tail 2·8; tarsus 1·1; bill from gape 1·

179.—*Temenuchus malabaricus*, *Gm.* (688.)

The Grey-headed Myna is very much less common than the preceding species in Chota Nagpur. I have obtained it only in Manbhum and Singhbhum. I observe that the under plumage in these jungle birds is of a deeper color than in Calcutta specimens.

Measurements in inches :—

Wing 3·95; tail 2·7; tarsus ·9; bill from gape 1·

180.—*Pastor roseus*, *Lin.* (690.)

The Rose-colored Starling may be looked for with certainty in February wherever there are cotton trees, *Bombax malabaricum*. Captain Beavan noticed large flocks of these birds roosting on the islands in the lake at Purulia as late as April. He doubted the possibility of their having time to reach Central Asia for purposes of nidification.

A Sirguja specimen measures in inches :—

Wing 5·35; tail 2·9; tarsus 1·2; bill from gape 1·2.

181.—*Eulabes religiosa*, *Lin.* ? (692.)

Captain Beavan writes in reference to the Southern Hill Myna :—"Caged specimens of this bird are frequently seen in Manbhum, which are said to be captured in the hilly country to the south of the district. Colonel Tickell does not, however, include it in his list of birds of Borabhum and Dalbhum."

Although I have been through a part of the hills in question, and also through a wide extent of hills stretching still further to the south and west, I have never met with this bird, and am therefore inclined to believe that its range must be pushed back still further towards Raipur where it is known to occur. I however include the bird here with a query, as native testimony is certainly in favor of its occurring in the jungles of Sarunda and Gangpur.

FRINGILLIDÆ.

182.—*Ploceus baya*, *Blyth.* (694.)

The Common Weaver Bird occurs throughout Chota Nagpur ; not unfrequently large flocks are met with in grain fields and upon grassy meadows. The well-known pendent nests, which often last for many months after they have been deserted, testify to the wideness of its distribution. I have not met with either of the other species, though *P. manyar* may very possibly occur.

183.—*Lonchura punctulata*, *Lath.* (699.)

The Spotted Munia occurs in all parts of Chota Nagpur, but sparingly. I have it too from the Rajmehal hills.

184.—*Trichogramoptila striata*, *Lin.* (701.)

I only obtained the White-backed Munia in Singhbhum. Captain Beavan obtained it in Manbhum, and gives the following dimensions :—

Length 4.75 ; Wing 2.1 ; Tail 1.75 ; Tarsus .5 ; Extent 6.5
 " 4.25 " 2.1 " 1.5 " .5 " 6.375

"The first, apparently the older bird, is slightly lineated with brown on the belly and flanks.

"The upper mandible is blue-black, the lower light leaden blue ; legs plumbeous.

"A nest of this species (like that of *M. malacca* described by Dr. Jerdon) containing only three eggs, was brought to me on April 3rd."

185.—*Munia malabarica*, *Lin.* (703.)

The Plain Brown Munia has only so far been obtained in Manbhum. I have, however, observed it in Sirguja and other parts, but I do not think it is common anywhere in the Division.

186.—*Estrilda amandava*, *Lin.* (704.)

The Red Wax-Bill was only once seen by Captain Beavan in Manbhum. I have observed it in all parts of the Division, most abundantly perhaps in Sirguja, where there is plenty of long grass, such as the species loves.

187.—*Pytelia formosa*, *Lath.* (705.)

The Green Wax-Bill occurs certainly in Sirguja, if not in other parts of the Division. I have recently found it to be by no means rare in the Satpura hills and the Nabadá valley.

188.—*Passer indicus*, *Jard. and Selby.* (706.)

The Indian House Sparrow is common throughout the Division.

189.—*Gymnoris flavicollis*, *Frankl.* (711.)

The Yellow-necked Sparrow occurs in Manbhum, Singhbhum, and Sirguja, being often found in the thickest jungles. I do not remember to have seen it anywhere so abundant in Chota Nagpur as it is in the Satpura hills, where I hardly passed a day without seeing numbers.

190.—*Carpodacus erythrinus*, *Pallas.* (738.)

The Common Rose Finch is not abundant in Chota Nagpur. I have, however, obtained it in both Singhbhum and Sirguja. In the former district as late as the end of April.

191.—*Mirafra assamica*, *M^c Clell.* (754.)

Captain Beavan says: "The Bengal Bush Lark is not uncommon in Manbhum." In my Singhbhum collection I got seven specimens of *M. affinis* against one of this species, and I noted that the former was the common species.

Captain Beavan remarks of this species:—"It flies, on first rising, somewhat like a Quail, then slowly with a peculiar soaring flight, showing the rounded wing before alighting—in this respect like *Pyrrhuloxia grisea*, as described by Dr. Jerdon. A specimen in the flesh, obtained March 1865, measured:—Length 6; wing 3.25; tail 2; extent 9.75; tarsus .1."

This species differs from *M. affinis* in having all the tail feathers margined with ferruginous, while the other has only the first two. Also in the generally ashy aspect of the upper plumage and the more uniformly ferruginous hue of the lower. The bill too is somewhat longer, and the hind claw measures .55," while in *affinis* it is only .3."

192.—*Mirafra affinis*, Jerd. (755.)

The Madras Bush Lark I found to be tolerably abundant in Singhbhum. This is an 'early bird;' for often in April, before dawn, I have heard him "begin his flight and singing startle the dull night."

During the vertical flights which this bird takes before perching on a tree or the ground, the ferruginous hue of the under plumage is made very apparent.

Measurements in inches :—

Singhbhum ♂ Wing 3.2; tail 1.9; tarsus .95; bill from gape .7.

193.—*Mirafra erythroptera*, Jerd. (756.)

The Red-winged Bush Lark occurs in Manbhum according to Captain Beavan. I did not obtain a specimen there, but I found it in Palamow.

Measurements in inches :—

Palamow ♂ Wing 3; Tail 2; Tarsus .8; Bill from gape .6; Hind claw .2
 " ♀ " 2.75 " 1.95 " .8 " " " ? " " .3

194.—*Mirafra cantillans*, Jerd. (757.)

According to Dr. Jerdon the Singing Bush Lark was obtained in Singhbhum by Colonel Tickell. There has possibly been some confusion in the identification of all these four species.

195.—*Ammomanes phænicura*, Frankl. (758.)

I found the Rufous-tailed Finch Lark to be abundant in Singhbhum and Palamow. Captain Beavan does not appear to have obtained it in Manbhum, neither did I; but it is probably, nevertheless, not uncommon there, and occurs, I have no doubt, in suitable localities throughout the Division.

Measurement in inches :—

Palamow Wing 4.1; Tail 2.3; Tarsus .85; Bill from gape .7; Hind claw .3
 Sirgoja " 4.2 " 2.3 " .85 " " " .75 " " .3

196.—*Pyrrhulauda grisea*, Scop. (760.)

The Black-bellied Finch Lark is very common in all the open parts of Chota Nagpur, and is most abundant on waste land with

gravelly soil. Its habits are so well known as not to require notice here.

197.—*Calandrella brachydactyla*, Temm. (761.)

The Short-toed Lark is, according to Captain Beavan, "common in Maubhum in the cold weather. Specimens killed at Kashurgurh have a large blackish patch on each side of the breast above."

I met with it in vast flocks in March and April on the grassy plains of Sirguja.

Measurements in inches :—

Sirguja, sex ? Wing 3·8 ; Tail 2·3 ; Tarsus ·75 ; Bill from gape ·65

" " " 3·75 " 2 " " ·75 " " " ·65

Alauda gulgula very possibly occurs, but neither Captain Beavan nor myself obtained it.*

TRERONIDÆ.

198.—*Crocopus phœnicopterus*, Lath. (772)
and *C. chlorigaster*, Blyth. (773.)

Most of my specimens of Green Pigeons belong to the latter species—if it be really a species distinct from *phœnicopterus*, which I am almost tempted to doubt ; as others, as well as myself, have been puzzled to separate them and have endeavored to account for the transitional forms by supposing that they are hybrids.

Some few of my specimens are nearer the type of *phœnicopterus* than of *chlorigaster*. I have, for example, one from Sirguja which no one could hesitate to consider to belong to the same species as a Sikhim bird also in my possession.

Dr. Jerdon gives *phœnicopterus* as the species found by Colonel Tickell in Chota Nagpur, and Captain Beavan accepted this identification in reference to his Maubhum specimens, though at the same time he points out his inability to distinguish them by the published descriptions.

199.—*Osmotreron bicincta*, Jerd. (774.)

The Orange-breasted Green Pigeon Captain Beavan found "in some abundance near Ambeekanuggur (Maubhum) in December 1864." Two of his specimens are now in the Indian Museum. I cannot account for my never having seen the bird. Indeed, until I saw Captain Beavan's paper, I had no idea that it occurred in any part of Chota Nagpur.

* See Addenda.

COLUMBIDÆ.

200.—*Carpophaga ænea*, Lin. *C. sylvatica*, Tickell. (780.)

The Imperial Pigeon occurs very locally in Chota Nagpur. I have met with a few pairs in the valleys intervening between the hills which separate Manbhum and Singhbhum, and in their continuation in the elephant forest in the north-west corner of Midnapore. I have also heard its deep sonorous coo in the forest on Parisnath hill. It may be thus represented wūh—wōōh. There is something almost weird about this sound when heard resounding through the valleys.

Colonel Tickell first described it as *sylvatica*, a distinct species, from specimens obtained in Singhbhum. Captain Beavan obtained it in Manbhum. Besides the localities I have mentioned I have shot it in the Rajmehal hills and the Andaman islands. I know of two or three groves in the Rajmehal hills where it might be regarded as a certain find.

In Sirguja and the highlands of Western Chota Nagpur I have not met with it. This supports Dr. Jerdon's opinion that it does not occur at as high an elevation as 2,000 feet.

Some of the specimens which I shot in the Rajmehal hills (19th December) had been feeding on the berries of the Bella (*Semecarpus anacardium*). I was much struck with the enormous extensibility of the lower mandible in this bird. This is of course to enable it to swallow the large fruits upon which it subsists. The description quoted by Dr. Jerdon from the *Bengal Sporting Review* of its conduct when captured, I found to be very accurate. It erects its feathers, which gives it the appearance of being double its natural size, and strikes out violently with its wings.

201.—*Alsocomus puniceus*, Tickell. (782.)

The Purple Wood Pigeon was first observed by Colonel Tickell in small parties of four or five along the banks of rivers shaded by large forest trees in Singhbhum.

It was obtained in Manbhum by Beavan in 1864, on the banks of the Cossye near Ambeekanuggur. While walking up the beds of the Mahan river and its tributaries in Sirguja I have on two or three occasions startled this bird in just such localities as Colonel Tickell describes; but found it very shy, and never succeeded in obtaining a specimen.

202.—Columba intermedia, Strick. (788.)

The Blue Rock-pigeon is very common in deep, rocky gorges which are cut by the rivers in Sirguja and Udupur. It occurs also in suitable localities throughout the Division.

I have occasionally seen white individuals in the flocks, as I remember also to have seen amongst flocks of *C. livia* which live in the rocks and caves on the coast of Waterford in Ireland.

Some of the races in Chota Nagpur, more particularly the Hos or Lurka Kols of Singhbhum, keep large flocks of Blue Pigeons which feed in the fields, returning to the villages to roost. These birds—I have not compared them very closely—do not appear to differ in any respect from the wild ones.

In these flocks too white individuals may occasionally be seen. These cases show the existence of that tendency to change which is so much developed in the domestic Pigeon.

203.—Turtur rupicolus, Pall. (793.)

The Rufous Turtle Dove is not common in all parts of Chota Nagpur. Captain Beavan obtained it in Manbhum. I found it most common in Sirguja. I first observed in the Rajmehal hills and afterwards confirmed the observation elsewhere, that unlike the other doves it does not generally travel in pairs.

204.—Turtur cambayensis, Gm. (794.)

The Little Brown Dove occurs throughout Chota Nagpur. Captain Beavan speaks of it as "common in Manbhum." I find that I have made no particular record of its occurrence.

205.—Turtur suratensis, Gm. (795.)

The Spotted Dove is found throughout Chota Nagpur, but is perhaps not so common as the preceding, certainly not as the following species.

206.—Turtur risorius, Lin. (796.)

The Common Ring Dove occurs throughout the Division.

207.—Turtur humilis, Temm. (797.)

The Red Turtle Dove is found throughout. I think I observed it to be more abundant in Sirguja than elsewhere.

GOURIDÆ.

208.—Chalcophaps indicus, Lin. (798.)

The Bronze-winged Dove is of extreme rarity in Chota Nagpur. I have only seen it once in a forest in the Tributary

State of Gangpur. I only once saw it too in the Rajmehal hills. It appears to have been obtained by Colonel Tickell in Singhbhum.

PTEROCLIDÆ.

209.—*Pterocles fasciatus*, Scop. (800.)

The Painted Sand-grouse I have only seen and obtained in the western parts of the Division, Sirguja and Palamow. It may occasionally be found further East, but I have not heard of it as yet out of the districts mentioned.

210.—*Pteroclorus exustus* Temm. (802.)

The Common Sand-grouse occurs, so far as I know, only in the portions of the Division mentioned in reference to the preceding species.

PHASIANIDÆ.

211.—*Pavo cristatus*, Lin. (803.)

The Peacock is abundant in all the hilly parts of Chota Nagpur. In the Orissa Tributary State of Mohurbanj, which lies to the south of Chota Nagpur, the Peacock is revered and preserved, and it may there be seen in great abundance, scarcely leaving the high roads as one passes along.

212.—*Gallus ferrugineus*, Gm. (812.)

The Red Jungle-fowl is abundant in parts of Chota Nagpur, but is not generally distributed. Considerable areas, abounding with apparently favorable localities, are often without any jungle-fowl. According to my observation it is most numerous in the neighbourhood of Hazaribagh, in certain parts of Manbhum, and in Gangpur. I have frequently heard them answering the crowing of the village cocks in the early morning. Some of the fighting cocks kept by the Kols have much the appearance of being derived from a wild stock. Jungle-fowl and Pea-fowl, like many other animals, including man, are very fond of the *mhowa* flowers (*Bassia latifolia*). Colonel Tickell obtained a hen in Singhbhum which had well-developed spurs.

213.—*Hepburnia spadiceus*, Gm. ? (814.)

I include this bird, though I have not myself shot it, neither have I any authentic evidence of its having been obtained; but I believe I have seen it, although in the brief view one obtains it is not easy to distinguish it from the next species. It appeared to be not uncommon in the Satpuras.

214.—Galloperdix lunulatus, Valenc. (815.)

This I should say is the more common species of Spur-fowl in Chota Nagpur. Beavan says, "tolerably abundant in Manbhum." A female which I shot on the 24th of March 1871 contained eggs in a forward condition. In its craw were *mbhova* blossoms and some kind of 'ticks.' There were two small conical spurs on one leg, one on the other.

TETRAONIDÆ.

215.—Francolinus vulgaris, Stephens. (818.)

So far as I know the 'Common' is the only species of Black Partridge found in Chota Nagpur. The Painted Partridge may occur in the west, but all the specimens I examined belonged to this species. I found this bird most abundant in the west where few 'Greys' are to be met with. It also occurs but rarely in Manbhum. Captain Beavan obtained it in that district.

216.—Ortygornis ponticeriana, Gmel. (822.)

The Grey Partridge occurs in most parts of Chota Nagpur, but is rare in the extreme west, where for months together I have neither seen nor heard it. It seemed to be very abundant however in Palamow. I have known it to perch on trees 20 feet high, and to call from its lofty position, puzzling me very much at first as to its whereabouts.

The Kyah (*O. gularis*, Temm.) does not, so far as I know, occur in Chota Nagpur, but I found it to be abundant in low jungle bordering jheels to the east and north-east of the Rajmehal hills. The way in which it runs through the jungle reminded me of the *Megapodius* of the Nicobars.

217.—Perdica cambayensis, Lath. (826.)

The Jungle Bush Quail is, according to Captain Beavan, "tolerably abundant in Manbhum." I have obtained it in several parts of the Division, and it is possibly the most common species, but of that I cannot be certain, as these birds in certain phases of their plumage are extremely difficult to discriminate. According to Dr. Jerdon it is this species which is figured as *C. argoondah*, Sykes, by Mr. Gould (Birds of Asia, XV., pl. 13.)

I have shot this species in the Satpura hills also.

218.—Perdica asiatica, Lath. (827.)

The Rock Bush Quail occurs too, I believe, in Chota Nagpur. I have one female specimen from Palamow which seems quite

distinct from the last species, and appears to be identical with this as figured by Mr. Gould. Dr. Jerdon treats *argoondah* as a synonym of this species.

219.—*Perdicula erythrorhyncha*, Sykes. (828.)

The Painted Bush Quail has a much wider range than was supposed by Dr. Jerdon. My friend, Mr. Blanford, writes me that he obtained it in Chanda and the Udipur country of Sironcha. I have shot it in Western Chota Nagpur—Sirguja. I also obtained it, recently, in the Satpura hills.

220.—*Coturnix communis*, Bonaterre. (829.)

The Large Grey Quail is found during the season in most of the cultivated areas and the grassy plains of Chota Nagpur. Its abundance varies much in different years.

221.—*Excalfactoria chinensis*, Lin. (831.)

The Blue-breasted Quail occurs in Chota Nagpur, but is not very common there.

TINAMIDÆ.

222.—*Turnix taigoor*, Sykes. (832.)

The Black-breasted Bustard Quail occurs in Chota Nagpur generally I believe. Captain Beavan found it not uncommon in Manbhum. He mentions that his specimens never attained the dimensions given by Dr. Jerdon, *i.e.* 5.75".

223.—*Turnix Dussumieri*, Tem. (835.)

The Button Quail is tolerably common in Chota Nagpur. Captain Beavan speaks of it as abundant in the vicinity of Parisnath.

As an instance of the close way in which this bird lies, I may mention that I saw one killed by a cooly who simply stooped down and knocked it on the head with my geological hammer which he was carrying in his hand. On another occasion an elephant, upon which I was riding, put one of his feet within a yard of where one of these birds lay partially concealed under a tuft of grass. It did not attempt to move off.

OTIDIDÆ.

224.—*Sypheotides aurita*, Lath. (839.)

In the month of January, when walking through some long grass in Sirguja near Jhilmilli, I flushed and afterwards shot

a female of the Lesser Floikin. This, so far as I could ascertain from enquiries, is the only case of this bird having been found in any part of Chota Nagpur. The natives did not appear to recognise the bird, so I fancy its occurrence must be quite exceptional. Dr. Jerdon, speaking of the northern migration of this bird after the cold weather, writes:—"As great part of the eastern portion of Central India from the Godavery to Midnapur and Chota Nagpur consists more or less of forest and jungle, the majority are drawn westwards into Malwah, Rajpootana and Guzerat." I was not, therefore, prepared to meet with it in that part of the country.

CURSORIDÆ.

225.—*Cursorius coromandelicus*, *Gm.* (840.)

I found the Indian Courier Plover to be common on the open plains of Sirguja, and have also obtained it on the Main Pât, a plateau of about 3,600 feet elevation, which is situated in the same district. I have never seen it in the eastern parts of the Division which seems singular as it is not rare in very similar country in Birbhum, north of Suri, outside our limits.

GLAREOLIDÆ.

226.—*Glareola lactea*, *Temm.* (843.)

The Small Swallow Plover was obtained by Captain Beavan, as also by myself in the Damuda river in Manbhum. I also found it rather abundant in the Sone, where that river bounds Chota Nagpur on the north.

CHARADRIDÆ.

227.—*Charadrius fulvus*, *Gm.* (845.)

The Golden Plover is of rare occurrence in Chota Nagpur.

228.—*Ægialitis curonica*, *Besch.* (849.)

I am not quite sure whether this bird should not stand as *Philippinus*, Lath*. The bird is common in the larger rivers of Chota Nagpur. In Manbhum Captain Beavan records its breeding in March. Two of my specimens measure respectively:—

Singhbhum	...	Wing 4.4 ;	Tail 2 ;	Tarsus 1.05 ;	Bill at front .5
Rajmehal hills	?	" 4.2 "	" 2.35 "	" .9 "	" " " .1

229.—*Lobivanellus indica*, *Bodd.* (855.)

The Red-wattled Lapwing is one of the most common birds in Chota Nagpur.

* I think this must stand as *fluvialis*, Bechst.—Ed., S. F.

230.—*Lobipluvia malabarica*, Bodd. (856.)

As compared with the preceding the Yellow-wattled Lapwing is of rare occurrence. I think I have met with it however in all parts of the Division which I have visited.

The Spur-winged Lapwing, *Hoplopterus ventralis*, I have never seen in Chota Nagpur.

231.—*Ædicnemus indicus*, Salvadori. *Æ crepitans*, Temm apud Jerdon. (859.)

Captain Beavan says that *S. bilobus* is rare, and this bird not uncommon in Manbhum. According to my experience this is by far the rarer bird of the two. I have seen it in Manbhum, Singbhum and Sirguja, but the occasions upon which I have met with it have been few and always in little frequented but light jungle.

GRUIDÆ.

232.—*Grus antigone*, Lin. (863.)

The Sarus Crane is rare in Manbhum according to Captain Beavan. The parts of the Division in which I have observed it to be most common are the open valleys of Sirguja. One which I shot towards the evening had only a single stalk of rice and a few pieces of green grass in its stomach, a singularly small amount of food for so large a bird. Do they feed principally at night?

233.—*Grus cinerea*, Bechst. (865.)

Large flocks of the Common Crane may often be seen high up in the air performing their very beautiful evolutions, and the "clanging of Cranes" is no uncommon sound in parts of the Division. I have most frequently seen them in the vicinity of the Damuda and Mahan rivers. I do not think I have ever seen the Demoiselle Crane, *Anthropoides virgo*, in Chota Nagpur.

SCOLOPACIDÆ.

234.—*Gallinago nemoricola*, Hodg. (868.)?

I flushed a specimen of what I believed to be the Wood Snipe on one occasion about the beginning of March at the foot of some hills in the southern part of Sirguja. It must be rare in the Division.

235.—*Galinago stenura*, Temm. (870.)

Captain Beavan says of the Pin-tail Snipe :—"A fine specimen killed by me at Ambeekanuggur in Manbhum was larger than stated by Dr. Jerdon. Its length was 13"·5 from the tip of the bill to the end of the middle toe, the bill was 2·75, and its weight was over four ounces."

I have obtained this bird in the vicinity of Calcutta, but never in Chota Nagpur.

236.—*Gallinago scolopacinus*, Bonap. (871.)

The Common Snipe occurs in suitable localities, but not in great abundance throughout the Division.

I have no personal knowledge of the occurrence of the Jack Snipe in Chota Nagpur.*

237.—*Rhynchæa bengalensis*, Lin. (873.)

The Painted Snipe is found throughout. I doubt if it ever leaves some parts. In April I have frequently flushed it from under the shelter of *Tamarix* bushes in the beds of rivers.

238.—*Tringa minuta*, Leisler. (884.)

The Little Stint is the only species of *Tringa* which I have collected in Chota Nagpur ; others not improbably occur.

239.—*Rhyacophilus glareola*, Lin. (891.)

The Spotted Sandpiper. In all the rivers of Chota Nagpur.

240.—*Helodromus ochropus*, Lin. (892.)

The Green Sandpiper. Same as the preceding.

241.—*Actitis hypoleucos*, Lin. (893.)

The Common Sandpiper. Same.

242.—*Totanus glottis*, Lin. (894.)

The Greenshanks is common in Chota Nagpur. I have not collected any other species of *Totanus* in the Division.

PARRIDÆ.

243.—*Metopodius indicus*, Lath. (900.)

The Bronze-winged Jacana is not common in Chota Nagpur, except where large jheels and tanks are numerous.

* See Addenda.

244.—*Hydophasianus chirurgus*, Scop. (901.)

The Pheasant-tailed Jacana is occasionally seen in jheels in Chota Nagpur.

245.—*Porphyrio poliocephalus*, Lath. (902.)

The Purple Coot. Same as preceding.

246.—*Fulica atra*, Lin. (903.)

The Bald Coot is rather common in tanks and jheels.

RALLIDÆ.

247.—*Gallinula chloropus*, Lin. (905.)

The Water Hen occurs where there are jheels and tanks.

242.—*Gallinula phœnicura*, Pennant. (906.)

The White-breasted Water Hen is met with occasionally. It often has its hiding places in the jungle on the banks of rivers.

CICONIDÆ.

249.—*Leptoptilos dubius*, Gm. (915.)

Single individuals of the Adjutant are occasionally to be seen in Manbhum, Singhbhum and Sirguja. I have once (in 1867) seen nests in trees in Manbhum belonging either to this or the next species.* The trees were growing in an open plain. The late Mr. Ormsby, who was with me in camp at that time, met with several breeding places. The fact that these birds breed in Manbhum has not hitherto been recorded. I have now to regret that I did not at the time know of the interest attaching to the subject.

On one occasion in Singhbhum I shot an Adjutant, and almost immediately after the head man of the village came to me to make a petition, which was that I would give him the stone which he was convinced would be found in the head of the bird; this stone being he said an antidote for snake poison. I promised him that he should have it if it could be found. I need perhaps scarcely add that the skull only contained brains.

250.—*Cranopelargus javanica*, Horsf. (916.)

I have shot the Hair-crested Stork in Manbhum and seen it in Sirguja. A specimen I sent home is now in the Museum of the Royal Dublin Society.

* Most probably the latter.

251.—Mycteria australis, Shaw. (917.)

Rare in Chota Nagpur. In two successive years and in the same month, March, I observed a single individual of this species in a river in Sirguja.

252.—Melanopelargus nigra, Lin. (918.)

The Black Stork occurs in Sirguja where I have seen several pairs. It seems to acknowledge its near relationship with *M. episcopus*, and mixed parties are sometimes to be seen standing by the river side.

It is much the more wary of the two, and invariably took to flight long before the other species began to move on account of my approach. I never succeeded in obtaining a specimen. During the season 1871-72, which I subsequently spent in Sirguja, I only saw one individual.

253.—Ciconia alba, Belon. (919.)

The Common White Stork occurs in several parts of the Division. I find, however, I have only recorded it in Manbhum and Sirguja. A specimen which I shot in Manbhum in February 1868 is now in the Indian Museum. Dr. Jerdon appears to have been quite unaware of its occurrence in this part of India.

254.—Melanopelargus episcopus, Bodd. (920.)

The White-necked Stork or Beefsteak Bird occurs abundantly in most parts of the Division.

On one occasion I observed a pair of these birds fly backwards and forwards through a rising swarm of winged Termites, upon which Rollers and King-crows were making great havoc. I fancied that I could see them catching the Termites while on the wing, but I am not quite sure,* although I was quite close to them, where I sat concealed awaiting the appearance of some bears at the entrance of their cave.

On another occasion I saw one of these birds busily engaged picking up the Termites as they came to the surface. Any that escaped him fell victims to some one of the birds in the miscellaneous crowd that circled above pouncing upon this favorite food. I recognised in this crowd *Milvus govinda*, *Micronisus badius*, *C. impudicus*, *C. Levillantii*, *Buchanga albirictus* and *B. carulesceus*, *Acridotheres tristis*, *Centrococeyx rufipennis* and *Myiagra azurea*.

I have observed that this bird has the habit, which I have also

* It was dusk at the time. I certainly saw the birds repeatedly open and close their bills.

remarked in domesticated specimens of *C. alba*, of putting its head back and clapping its bill.

ARDEIDÆ.

255.—*Ardea cinerea*, *Lin.* (923.)

The Blue Heron is not common but is found throughout. Is our Indian bird absolutely identical with the European? I have examined both, and my impression is that they differ in size, if in nothing else, the European bird being the larger. I have not, however, had an opportunity of comparing them side by side. I have observed too the fact recorded by Dr. Jerdon that the Indian birds are less gregarious in their habits.

256.—*Ardea purpurea*, *Lin.* (924.)

The Purple Heron is found throughout. It is a very wary bird, and is always the first to leave a jheel or tank on the approach of danger.

257.—*Herodias alba*, *Lin.* (925.)

Not very common, but I have no notes regarding it, and do not remember ever having shot it. Like other "Paddy birds" it enjoys a certain immunity in this respect.

258.—*Herodias intermedia*, *V. Hasselq.* (926.)

Common enough, as is also the next, I believe, in the well-watered parts in the east of the Division. Rare in the west.

259.—*Herodias garzetta*, *Lin.* (927.)

See remarks on last species.

260.—*Bubulous coromandus*, *Bodd.* (929.)

The Cattle Egret occurs in all parts of the Division. One which I shot early in the day on the 24th March 1867 contained in its stomach 60 whole grasshoppers and other orthopterous insects, besides which there was an equal bulk of semi-digested heads and legs, so that this bird had breakfasted on about 120 grasshoppers.

261.—*Ardeola leucoptera*, *Bodd.* (930.)

Common in all parts of the Division.

262.—*Butorides javanica*, Horsf. (931.)

The Little Green Heron is to be found in almost every river in Chota Nagpur.

263.—*Ardetta cinnamomea*, Gm. (933.)

On one occasion, (8th April 1871) when walking up the grass-grown bed of a stream in the Gurjat State of Udipur, I flushed the Chestnut Bittern.

I am not aware of any of the other species of *Ardetta* or even the Bittern (*Botaurus stellaris*) having been obtained in Chota Nagpur.

264.—*Nycticorax griseus*, Lin. (937.)

The Night Heron is tolerably common in all parts of the Division. Large numbers of them roost on the islands in the lakes in the civil stations of Ranchi and Purulia. Except on these islands I have never seen it roost in any other trees but tamarinds.

Dr. Jerdon writes that he has never seen this bird abroad during the day. The same has been my experience with the exception of one occasion—a very hot day in April—when, in the district of Singhbhum, I saw a large number of them in the bed of a river standing by the waters' edge, and perched about on neighbouring bushes. I shot several of them, which were on low bare trees close to my tent.

TANTALIDÆ.**265.—*Tantalus leucocephalus*, Gm. (938.)**

This bird, though common in many parts of India, is of rare occurrence in Chota Nagpur. I have very seldom seen it, and never had a chance of shooting it. I saw one specimen which was killed in the Koel river in Palamow.

266.—*Anastomus oscitans*, Bodd. (940.)

I have found the Shell Ibis to be pretty generally distributed in parties of from three to twelve throughout Chota Nagpur. Though preferring jheels and marshy ground it is not unfrequently to be seen in the beds of the larger rivers, sometimes even where they traverse hilly jungle country.

I am somewhat surprised to observe that Captain Beavan reports having seen this bird on only one occasion, and he therefore concludes "that its habitat is probably somewhat restricted."

In the Rajmehal hills I shot a specimen, in which the parts usually ashy-grey are pure white.

267.—Threskiornis melanocephalus, Lin. (941.)

The White Ibis is found in all parts of the Division, but in no great abundance anywhere.

In the adult bird the head and neck are nude and black. In the young the head and neck are more or less clothed with short *white* feathers, as pointed out by Dr. Jerdon; but there is a phase of plumage which he does not mention. In this the head* and neck are well clothed with black or very dark-ashy feathers. One in this phase, which I shot (7th April 1867), evidently a young bird, had only some of the quills tipped with black, and the bare skin of the wing bones was black, not blood-red as is the case in the adult.

This specimen contained twelve frogs in its stomach.

268.—Geronticus papillosus, Temm. (942.)

The Black Ibis is common in Chota Nagpur. It generally occurs in flocks of from four to about twenty individuals.

I have on more than one occasion seen this bird hotly pursued by Kites on account of food which it had picked up.

269.—Falcinellus igneus, Gm. (943.)

The Glossy Ibis must be of very rare occurrence in Chota Nagpur, as I only once saw a small flock of them on the wing. In the neighbourhood of the Ganges close to Rajmehal it appeared to be common.

I have not heard of the Flamingo being obtained in Chota Nagpur; but it may very possibly occasionally occur there.

ANSERIDÆ.

270.—Anser cinereus, Meyer. (945.)

The Grey Goose is a rare visitor to Chota Nagpur. I have only on a few occasions seen stragglers, never a flock.

271.—Eulabeia indicus, Gm. (949.)

I have only once seen and shot the Barred-headed Goose in Chota Nagpur, in the Damuda river, December 1872. It has been observed, I believe, in other parts of the Division, but must be of rare occurrence.

* There is a specimen of this phase in the Indian Museum, besides one in my collection.

272.—*Sarkidiornis melanotus*, Pennant. (950.)

I have found the Black-backed Goose to be very common in the western parts of the Division, more particularly in the neighbourhood of the Rer river and its tributaries in Sirguja. In the east—Manbhum—it is occasionally to be seen, but apparently only as a temporary visitor. As Dr. Jerdon observes it is not particularly wary; but I have on more than one occasion found flocks difficult to approach owing to the presence of one or two Braminy Ducks, who most effectually performed the duties of sentinels.

273.—*Nettapus coromandelicus*, Lin. (951.)

The Cotton Teal is found in all parts of Chota Nagpur where there are tanks or jheels.

274.—*Dendrocygna arcuata*, Horsf. (952.)

The Whistling Teal is found in all parts of the Division, not only where there are tanks or jheels, but also in many rivers. Those which frequent the latter as feeding places are generally very poor eating, but even the tank birds vary much in quality.

I have occasionally seen flocks of these birds perched on trees.

275.—*Casarca rutila*, Pallas. (954.)

The Braminy Duck is common in most of the large rivers of Chota Nagpur, especially so in the sandy reaches of the Damuda, Cossye, Subanrika, Rer, Mahan, &c. During the night it visits the neighbouring cultivation and gleans a considerable amount of fallen rice, &c. As noticed above it occasionally associates with flocks of *S. melanotus* doing duty as sentinel.

ANATIDÆ.

276.—*Spatula clypeata*, Lin. (957.)

The Shoveller is of rare occurrence in the Division. I have, however, met with it there, as also in the vicinity of the Rajmehal hills.

277.—*Anas pækilorhyncha*, Penn. (959.)

The Spotted-billed Duck is, according to Captain Beavan, "rare, in pairs." According to my experience it is of extreme rarity in all parts of the Division.

On one occasion I suddenly came upon a pair of these birds in a sheltered pool in the bed of the Gobri river in Sirguja and

shot both; but I have never either before or since met with the species.

The sexes, though alike in general plumage, differ in some particulars; the female is smaller and of lighter build than the male.

278.—*Rhodonessa caryophyllacea*, Lath. (960.)

I have never seen the Pink-headed Duck myself in any part of the Division; but I insert it on the authority of others who tell me it occurs in Manbhum.

I have shot it, however, near Sahibgunj on the Ganges, where it appears to be not uncommon in the proper season.

279.—*Chaulelasmus streperus*, Lin. (961.)

The Gadwall is found wherever there are plenty of tanks and jheels. I quite censure in Dr. Jerdon's opinion that it is one of the best Ducks for the table.

280.—*Dafila acuta*, Lin. (962.)

The Pintail Duck is found with the Gadwall and occasionally in the larger rivers. Captain Beavan did not observe it. I have seen some very large flocks in Manbhum.

281.—*Querquedula crecca*, Lin. (964.)

The Common Teal does not occur in any very great abundance, but is, I think, found in all parts of the Division. Small flocks are occasionally met with in the most unexpected places in pools of small streams.

282.—*Querquedula circia*, Lin. (965.)

The Blue-winged Teal is less common than the preceding. One year I observed that it did not make its appearance in Manbhum until after January.

283.—*Fuligula rufina*, Pallas. (967.)

The Red-crested Pochard is not rare in Manbhum and some other parts where tanks occur. Dr. Jerdon's descriptions of this and some of the other ducks (probably taken from old Museum specimens) are not quite accurate as regards the colors.

284.—*Aythya ferina*, Lin. (968.)

Mr. Wilcox, Superintendent of Police in Manbhum, has shot the Red-headed Pochard. He showed me a fragment of its skin and plumage. I never met with it myself.

285.—*Aythya nyroca*, Gould. (969.)

I have never observed the White-eyed Duck in great abundance; but have met with it frequently in the well-watered parts of the Division.

286.—*Fuligula cristata*, Ray. (971.)

The Tufted Duck occurs in large flocks, not uncommonly, in the well-watered parts of the Division.

MERGIDÆ.

287.—*Mergus castor*, Lin. (972.)

Colonel Tickell, as recorded by Dr. Jerdon, obtained the *merganser* at Chaibassa. Mr. Hume has obtained it from Raipur, which though outside is adjoining our limits. I have seen this bird in flocks of from a dozen to 30 individuals on several occasions in the Subanrika and Damuda rivers, and once in the Rer river in Sirguja. The only specimen I ever obtained, I believe, I sent home. I certainly have not got it in my collection at present, and I regret to say I have no remarks recorded regarding it. The *merganser* flies with extreme rapidity. In the Subanrika they may be seen in parties swimming against the stream, and all diving together apparently to catch fish. The sudden disappearance of the whole flock at the same moment gives the idea that they work in concert in hunting the fish which are coming down with the stream.

I do not know whether this bird has ever been compared with Himalayan specimens. I have a suspicion that it may be distinct. I have a description by me of a specimen obtained by Captain Money in Palamow which does not quite accord with Dr. Jerdon's account of *M. castor*. A specimen shot near Barakar, and Mr. Hume's from Raipur, are, however, said to belong to that species. See I., 423, and II., 336.

PODICIPIDÆ.

288.—*Podiceps philippensis*, Gm. (975.)

The Little Grebe occurs in all parts of the Division. Scarcely a tank is to be seen without one or two of them. Sometimes they appear to dive to the flash of a gun fired at them.

LARIDÆ.

289.—*Hydrochelidon indica*, Stephens. (984.)

I appear to have recorded in my notes the occurrence of this bird in Manbhum, but I cannot now remember the

circumstances of my having met with it. It is, I should say, of very rare occurrence there.

290.—*Pelodes Javanica*, *Horsf.* (987.)

The Black-bellied Tern occurs in all the principal rivers of Chota Nagpur.

I believe I have seen *S. seena*, Sykes, in some of the larger rivers, but I have no record of it that I can find.

I take this opportunity of recording that some specimens of *Rhyncops albicollis*, Sw., which I shot in the Ganges near Rajmehal, contained in their stomachs fish bones in addition to the oily fluid which was all Dr. Jerdon ever observed.

GRACULIDÆ.

291.—*Graculus carbo*, *Lin.* (1005.)

The Large Cormorant occurs occasionally in Chota Nagpur on the larger jheels and sometimes in the rivers, as in the Goingshatta in Sirguja; but I have not observed it to be abundant anywhere.

292.—*Graculus sinensis*, *Shaw.* (1006.)

The Lesser Cormorant is not very common, but I have observed it in several parts of the Division.

293.—*Microcarbo melanognathos*, *Horsf.* (1007.)

The Little Cormorant is very common in the rivers throughout the Division.

294.—*Plotus melanogaster*, *Gm.* (1008.)

The Snake Bird occurs singly or in pairs both in rivers and tanks throughout the Division.

ADDENDA.—Since the above was printed I have heard from Mr. Brooks that he has obtained the following birds at Assensole, which have not been included in the foregoing list. The probable occurrence of most of them was, however, duly noted by me:—

295.—*Gyps indicus*, Scop. 296.—*Aquila mogilnik*, Gmel.
297.—*Haliaetus leucoryphus*, Pall. 298.—*Poliornis teesa*, Frankl.
299.—*Drymoipus inornatus*, Sykes. 300.—*Phylloperseuste viridanus*, Blyth. 301.—*Motacilla personata*, Gould. 302.—*Alauda gulgula*, Frankl. 303.—*Gallinago gallinula*, Lin. 304.—*Sterna seena*, Sykes.

Novelties.

Macropygia assimilis, Sp. Nov.

THE Tenasserim Cuckoo-dove appears to me to be quite distinct from the Javan *ruficeps*, Temm., with which it has hitherto been identified. The back of the neck and interscapular region are dark brown, with scarcely any perceptible metallic gloss. The breast is conspicuously mottled with dark brown, the chin and throat are pale rufescent white.

The following are the dimensions and a description of a specimen killed in the Tenasserim hills north-east of Moulmein :—

Length, 12 ; wing, 5·7 ; tail, from vent, 6 ; tarsus, 0·83 ; bill, at front, 0·57 ; bill, from gape, 0·8.

The entire cap chestnut, paling on the forehead, a little mottled here and there with dark hair brown owing to the basal portions of the feathers showing through ; chin and throat rufescent white, palest on a broad line along the middle ; entire lower surface dingy rusty chestnut, conspicuously mottled, more or less in longitudinal rows of spots, with dark-brown on the breast, with a more or less olivaceous tinge on the centre of the abdomen, and becoming brighter and purer chestnut on the tibial plumes and lower tail-coverts ; axillaries, a large portion of the inner webs of the quills, and entire wing lining (except the tips of the primary lower greater coverts which are hair brown) bright, pure, chestnut.

Sides and back of the neck hair brown, the feathers with a very narrow terminal freckled albescent or buffy fringe ; interscapular region deep hair brown ; rump the same, but all the feathers suffused towards their tips with a deep ruddy tinge ; upper tail-coverts like the rump, but most of them with a well marked though narrow rusty chestnut tipping ; scapulars like the back, but the outer ones, except the longest, very narrowly tipped with chestnut ; wings hair brown ; coverts and primaries very deep brown, in places almost black ; lesser coverts broadly, median coverts moderately, greater coverts narrowly, tipped with a rich ruddy chestnut. First primary *very* narrowly edged on the outer web with pale rufous ; second to fourth primaries similarly margined at the sinuations ; secondaries narrowly tipped with ferruginous chestnut, and with a trace of the same along the margins of parts

of the outer webs; the four central tail feathers a warm, rich, hair brown, with a trace of a faint ruddy glow in some lights; the two exterior pairs bright chestnut, with a broad conspicuous transverse, somewhat oblique blackish brown band across both webs, (which band by the way on the lower surface appears a slatey grey) and a little brown towards their bases; rest of the tail feathers intermediate; the chestnut diminishing, and the black changing to brown and extending over a larger and larger surface as the feathers approach the two central pairs.

Megalaima incognita, Sp. Nov.

Green; lores and a very narrow frontal band, a small patch on nape, and two small pectoral patches, dark crimson; chin, throat, cheeks, ear-coverts, forehead, stripe over eye tinged with turquoise blue; length eight and three quarter inches; wing three and three quarters.

THE above diagnosis will suffice, I believe, to distinguish this pretty new species from all known members of the family.

My specimens were obtained by Davison in the interior of Tenasserim, about 25 miles north of Yea, and again at Karope between Moulmein and Tavoy.

Nothing was noted as to either habits or voice to separate them from our other common and closely allied Barbets, *M. asiatica* and *Franklini*. In the same forests we obtained *M. mysticophanos*, Temm., not hitherto recorded from so far north, conspicuously differing from the present species in its larger size, huge and sharply pointed bill, and far richer and brighter coloring.

A male of the present species measured in the flesh:—

Length, 8.75; expanse, 12.75; tail, from vent, 2.62; wing, 3.75; tarsus, 1.0; bill, at front, 0.93.

The sexes are alike.

As in *M. oorti*, Müll., a narrow ring of tiny bright yellow feathers surrounds the eye. The lores and an excessively narrow band from the lores to the culmen are deep crimson. There is a patch of this same color, but rather lighter and brighter in tint on the nape, and two similar but smaller patches one on either side of the breast at the base of the neck.

There is a narrow black superciliary stripe continued backwards over the ear-coverts, and a rather broader black band

from the gape continued under the ear-coverts and involving a portion of these; the rest of the plumage is grass green, brighter below, much darker above; the whole of the chin, throat and cheeks, the forehead, a narrow stripe over the black supercilium, the feathers immediately under the eye, and the basal portion of the ear-coverts, tinged and more or less intermingled and overlaid with turquoise blue; the lower surface of the tail is a dark blue green; the primaries and secondaries are a blackish brown; the earlier primaries, with the outer webs above the emarginations only, the rest and the secondaries with the whole of the outer webs, of the same dark green as the upper surface of the tail; the tertiaries with almost the whole of both webs of this color; the inner webs of the quills margined with pale clayey yellow. Most of the feathers of the back and upper tail-coverts fringed with a paler shade of green.

The following five species, the four first of which were obtained by Mr. Davison, were exhibited by me and briefly described in a paper read at the Asiatic Society of Bengal on the 1st May. I now give more full and formal descriptions:—

Garrulus leucotis, *Hume. Pro. A.S.B., May 1st, 1874.*

Occiput and nape black; ear-coverts and chin to breast white; no white patch on secondaries, which are barred with blue like the primary coverts.

THE very handsome Jay, to which I have given the above specific appellation, and which in some respects recalls *G. atricapillus*, Geof. St. Hil., was obtained in the hills of the Salween district of the Tenasserim province near Kyouknyat, at an elevation of about 3,000 feet, where it appeared to be the local and only representative of our familiar European species.

The following are the measurements (recorded in the flesh) and description of a female:—

Length, 12·5; expanse, 20·5; tail, 4·82; wing, 6·55; tarsus, 1·55; bill, from gape, 1·45; bill, at front, 1·15; weight, 5·25 oz.

The legs and feet are whitish horny; the bill blackish horny, whitish at tip; the irides wood brown.

The lores, forehead, sinciput, a broad circle round the eye; the ear-coverts, chin and throat pure white, only the feathers of the sinciput with black central streaks at the tips; crown, occiput, nape, and a broad mandibular stripe on either side, 0·8 long and 0·45, or thereabouts, broad, velvet black; upper part of the breast, sides of neck behind the white ear-coverts, and upper back, a deep vinaceous brown; middle back paler; scapulars and lower back (which latter is palest) a pale vinaceous rufescent, the ordinary Jay color in fact; rump, vent, upper and lower tail-coverts white; tail black, with faint blue barring at the base, hidden by the upper tail-coverts; lower breast abdomen, flanks and tibial plumes pale rufous; axillaries and wing living, (except lower greater primary coverts which are a grey brown like the under surface of the quills) a sort of dull chestnut; winglet and primary coverts black, barred with shaded blue in the usual Jay fashion; primaries black, all but the first margined on their outer webs (the later ones only towards their tips) with dull white; coverts along the ulna dark chestnut; secondaries and their greater coverts black, the former conspicuously barred on the outer webs but not quite to their tips, with dark shading to very pale blue, or almost bluish white; tertiaries velvet black, the second, as I make out, deep maroon chestnut except at the tip; there is only one such feather in each wing.

Gecinus nigrigenis,* *Hume. Pro. A.S.B., May*
1st, 1874.

The entire top, back and sides of the head and nape black in the female; in the male similar but the crown crimson; chin, throat, sides of neck and breast bright turmeric yellow; abdomen and rest of lower and upper parts much as in striolatus but rump crimson.

THIS is quite the most beautiful of all our Indian *Gecini*. It seems to be very common about Pahchan, Kollidoo, Darguin, and other parts of the Salween and neighbouring districts of the Tenasserim provinces.

* Since this was in type I see that on the 21st April a Wood-pecker was exhibited on behalf of my friend Lieutenant Wardlaw Ramsay at a meeting of the Zoo, obtained about 100 miles north of the locality whence my specimens came, under the name of *Gecinus erythropygius*. This may perhaps be the same bird.

The sexes do not differ in size. The following is a *resumé* of the dimensions of eight specimens (four of each sex) measured in the flesh :—

Length, 12·75 to 13·3; expanse, 19·5 to 20·5; tail, from vent, 5·0 to 5·6; wing, 6·1 to 6·45; tarsus, 1·1 to 1·2; bill, from gape, 1·5 to 1·6; bill, at front, 1·25 to 1·35; weight, 4·75 to 6 ozs.

The legs and feet are a dirty brownish green; bill horny brown; upper mandible from nostrils to base, and lower mandible from angle of gonys to base, with gape, greenish yellow; irides from pale to gamboge yellow.

The fully adult male has the lores, a narrow frontal band, and the entire sides of the head (sides of jaw, cheeks, ear-coverts, &c.,) and nape, velvet black; the entire cap deep, rather dull crimson. In younger birds the crimson is confined to a circular patch about the size of a six-pence on the crown, and between this and the entire cap every intermediate amount of crimson is to be noticed.

The chin, throat, upper breast, and sides of the neck are bright gamboge yellow, paler and greener in younger birds; the interscapular region, scapulars, upper tail-coverts, wing-coverts, (except the greater primary coverts) outer webs of secondaries, and the greater parts of both webs of the tertiaries a beautiful bright golden green, much as in the same parts of *Chrysophlegma flavinucha*; lower back and rump intensely bright crimson; tail feathers plain dull black, at times faintly tinged with greenish on the margin towards their base; primaries and their greater coverts black, with large conspicuous white bars, or bar-like spots on the inner webs, and in the case of the former corresponding white spots on parts of the outer webs of all except of the first primary; the white spotting of the outer webs occurs in a transverse band across the primaries; it is at the base of the second, lower on the third, and so on until at the eighth or ninth it is quite at the tip; the inner webs of the secondaries are similarly strongly barred with white; the abdomen, wing lining, axillaries and flanks are light grey, each feather with one or more hastate pale brown bands, not very unlike what we see in *squamatus* and *striolatus*, and all these parts in some individuals are more or less overlaid with green; the lower breast is similar to the abdomen, but is very strongly tinged and overlaid with a greener shade of the yellow of the upper breast and throat; the lower tail-coverts are brown, with a white fringe, and one or more hastate white bars following

the contour of the feather. These feathers also are at times more or less tinged with green.

The female is very similar, but there is no crimson upon the head, the whole of which is black; the yellow of the throat and neck is duller and less pure, the whole upper surface is slightly duller, and the lower surface is less tinged with green.

One single female exhibits a remarkable peculiarity. In this specimen from the posterior angle of the eye a regular narrow pale yellow stripe runs backwards over the ear-coverts, dividing these from the black of the crown and occiput and joining into the yellow of the sides of the neck.

No other specimen, male or female, shows any trace of this.

Gampsorhynchus torquatus *Hume. Pro.*
A. S. B., May 1st, 1874.

Resembles rufulus, but is rather smaller, and has a slightly smaller bill. The white of the head does not extend backwards beyond the crown, nor that of the throat on to the breast. A deep rufous brown band bounds the white of the head everywhere, being deepest and most conspicuous across the base of the throat, where it forms a regular and most marked collar.

THE Tenasserim *Gampsorhynchus* appears to me to be quite distinct from that which we obtain in Sikhim. It is a rather smaller and brighter colored bird, and has a most conspicuous torque, which I have never observed in the many specimens of *rufulus* that I have procured.

Our specimens were obtained on the banks of the Younzaleen below the Pine forests in the Salween district.

A male measured in the flesh:—

Length, 9·5; expanse, 11·25; tail, from vent, 4·7; wing, 3·75; tarsus, 1·05; bill, from gape, 0·95; bill, at front, 0·75; weight, 1·3 oz.

The lower mandible, gape, and edges and tip of upper mandible pure fleshy white; the rest of the upper mandible purplish brown; legs, feet and claws fleshy white with a blue tinge; irides bright yellow.

The forehead and anterior half of crown, lores, orbital region, ear-coverts, cheeks, chin and throat pure white; the white is everywhere bordered by a band of deep brownish red, very deep and brown across the base of the throat, where it forms

a conspicuous torque, half broken through in the centre by a little projection of the white of the throat into it; below this torque the sides of the neck and entire lower parts, including wing lining, are pale buff; the centre of the abdomen and vent feathers much paler, almost white; the red brown of the occiput shades into the rich bright rufous olive of the entire mantle; the quills are hair brown; the secondaries narrowly tipped with yellowish white, and with the outer webs, and the tertiaries, with the greater part of both webs, strongly tinged or overlaid with the color of the mantle; the outer webs of the primaries similarly tinged, but margined with a much paler and more rufescent shade, almost rufescent white in some, on the terminal halves; the tail is pale brown obsoletely barred and tinged, most strongly so on the basal half, with rufescent olive; each feather tipped for about quarter of an inch with white; the tail is very much graduated; the feathers respectively fall short of the central pair by 0·3, 0·5, 0·9, 1·2 and 1·7; the fifth and sixth quills are equal and longest, the first four fall short of them respectively by 0·2, 0·4, 0·9 and 1·5. On the lower surface the quills are a rich glossy hair brown, margined on the inner webs with a sort of creamy buff.

Proparus dubius, Hume. Pro. A. S.B., May 1st, 1874.

Forehead rufescent; head and nape a rich rufous olive brown; a white line from the top of the eye over the ear-coverts surmounted by a black line extending right round the base of the nape; chin, throat, breast and middle of abdomen uniform pale rufescent.

THIS last bird I described with some hesitation; it is a *Leiotrichine* form, allied to *Minla* and *Proparus*, but distinct from all known species, I believe, of this group. My reason for doubt is this. In some particulars it closely resembles Mr. Mandelli's *Minla rufogularis*, (STRAY FEATHERS, Vol. 1, p. 416), but it is longer, has a smaller wing, entirely wants the rusty red throat, and the black and white bands continued over the forehead, which bands in our bird do not extend further forward than the middle of the eye. In other respects Mr. Mandelli's description would apply fairly well. Could it be that my bird is the female, *rufogularis* the male? Amongst the species comprised in the various subgenera, which may all be included in the genus *Leiothrix*, there are never very marked

differences in the plumage of the sexes. Again both Mr. Mandelli and Mr. Brooks placed *rufogularis* as a *Minla* (I have not myself seen a specimen); whereas this present bird is a typical *Proparus* with a still stronger and more Parian bill than *vinipectus*.

On the whole I have no doubt that it is distinct. Our bird I may note is from the outskirts of the Pine forests above the Salween, Mandelli's was from Sikkim.

The dimensions of the present species, as recorded in the flesh, were :—

Length, 5·5; tail, from vent, 2·35; wing, 2·05; tarsus, 0·9; bill, from gape, 0·6; bill, at front, 0·4; weight, 0·5 oz.

Legs, feet, and claws fleshy pink; bill black, tip albescent horny; irides pale yellowish red.

The forehead is a clear pale rufous; the crown, occiput, and nape a rich rufous olive brown, each feather narrowly, so narrowly as to be barely perceptible, fringed with dark brown so as to impart a slightly scaly appearance; anterior portion of lores pale rufescent, paler and duller than the forehead; posterior portion of lores, ear-coverts, and an indistinct ring round the eye brown; eyelid feathers white. Over the eye, beginning half way between the anterior angle and the upper margin a pure white streak runs backwards over the eye-coverts and a little further back. Above this, but only commencing opposite the posterior angle of the eye, a velvet black stripe runs backwards right to the base of the nape, where, although a little broken, it meets the corresponding stripe from the other side. The entire mantle, tertiaries, coverts and outer webs of secondaries and primaries, (the inner webs are dark hair brown,) and tail, a rich rufescent olive brown, most rufescent on the wings and tail; the chin, throat, sides of neck behind ear-coverts, breast, middle of abdomen, and wing lining uniform pale rufescent; tibial plumes darker; sides, flanks and lower tail-coverts somewhat rufescent olive brown.

I am much puzzled about the location of this species. The wings are short and bowed, the fifth quill is the longest, the sixth subequal, the bill is essentially Parian, but rather too much compressed and raised on the culmen. The tail is long and narrow and much rounded, perhaps cuneate is the proper term. The tarsus very stout, the feet moderate, the hind toe and claw long. It is structurally *very* similar to *vinipectus*, but alike in bill, tarsus and feet is more robust.

The two clearly go together, but they are not in my opinion congeneric with *chrysolis* (*vel chrysæus*), Hodgson, and they

are both more or less reed and grass-haunters. I would separate them as *Schœniparus*.

**Arborophila Mandellii, Hume. Pro. A. S. B.,
May 1st, 1874.**

Belongs to the same type as rufogularis, Hodg., and intermedia, Blyth, in that the feathers of the upper back and interscapular region are neither barred nor fringed with black; the forehead is a deep maroon chestnut; the crown and occiput a rich ruddy olive; the chin, throat, ear-coverts and sides of the neck bright ferruginous, the two latter streaked with black; a broad black line sharply defines the ferruginous of the throat; in the centre of the base of the throat there is a snow white patch, immediately above the black border line. Below this latter the breast is a rich maroon chestnut.

EIGHT well-marked and distinct species of *Arborophila* or (if the subgenus *Peloperdix* be deemed worthy of retention) of *Arborophila* and *Peloperdix* occur within our limits. There are very likely more, but these are all that I have been able to meet with.

Field naturalists here do not seem to be able to distinguish these species, as I am continually receiving specimens misnamed, and a short key to the eight species may be useful. This key is purposely not framed on scientific lines, but simply on plain practical characters, that every sportsman who shoots may at once understand.

I. Upper back and interscapular region. Feathers conspicuously barred or fringed with black.	1. Breast pale uniform grey.	Top of head greyish olive, more or less black spotted.	<i>A. atrogularis</i> , Bly. (Assam, Sylhet, Tipperah).
	2. Breast uniform, tawny, or ferruginous olive.	Middle of throat palefawn color, densely black spotted.	<i>A. brunneopectus</i> , Tick. (Pegu, N. Tenasserim).
	3. Breast rufescent olive, barred black.	Chin, throat and sides of neck white, spotted black, bounded below by a rufous torque.	<i>A. chloropus</i> , Tick. (Pegu, N. Tenasserim).
	4. (a.) Breast pale ashy, surmounted by a broad white band. (b.) Breast grey, tinged rusty.	Top of head uniform bright chestnut. ♂ Middle of throat unspotted rufous ♀	<i>A. torqueola</i> , Valenc. (Himalayas).

II. Feathers unbarred and unfringed, or scarcely perceptibly fringed darker.	1. Lower margin of rufous of throat sharply defined by a black line, breast grey. 2. Lower margin of rufous of throat sharply defined by a black line, breast maroon chestnut. 3. Lower margin of rufous of throat meeting grey of breast without any intervening black line.	<i>A. rufogularis</i>, Hodg. (Kumaon and Eastern Himalayas, Tenasserim). <i>A. Mandelli</i>, Hume, (Bhotan Doars).
III. Feathers freckled and mottled with darker brown, shafts pale buffy.	1. Chin, throat and sides of neck white, spotted with black spots, no rufous torque.	<i>A. intermedia</i>, Bly. (Arracan). <i>A. Charltoni</i>, Eyton. (Tenasserim and Malay Peninsular).

This beautiful species is another that we owe to that indefatigable ornithologist Mr. L. Mandelli. He obtained the specimen in the Bhotan Doars.

The following are the dimensions (taken from the dry skin) and a description of a *presumed* male:—

Length, 8·5; wing, 5·0; tarsus, 1·5; mid toe and claw, 1·75; bill, from gape, 0·9; bill, at front, 0·65; height, at front, 0·3; tail, from vent, 1·5.

Lores, forehead, sinciput a rich deep brownish chestnut red; a faint, very narrow yellowish streak under the anterior portion of the lores; crown, occiput and nape a rich deep rufescent olive brown; a broad grey supercilium, continued backwards over the ear-coverts, and partly round the nape; chin, throat, cheeks, ear-coverts, sides of neck and the basal portion of the back of the neck, except exactly in the centre, a very rich bright ferruginous, spotted everywhere, except on the chin and throat, with velvet black, a band of which clearly defines the ferruginous across the base of the throat. Immediately above this black band, in the centre of the base of the neck in front, is a conspicuous pure white patch about 0·8 long and 0·35 to 0·4 deep. Below the black band the breast and sides of the breast are rich, slightly ferruginous maroon. I should mention that on either side of the upper portion of the throat a very narrow mandibular white stripe, about 0·6 long runs down from the base of the lower mandible; the abdomen and rest of lower parts pale slaty grey, each feather with a small irregular central white spot near the tip; the flank feathers tinged with rusty; the vent and lower tail-coverts strongly tinged with

dull olive, the coverts moreover having the white spot nearer the tips and expanded into a bar; wing lining about the carpal joint a rich hair brown, the rest a pale grey brown (much the color of the lower surface of the quills), a little tipped with white.

Upper back and interscapulary region plain olive, some of the feathers *very* narrowly and inconspicuously fringed with black; lower back, rump and upper tail-coverts a rather browner and brighter olive, some of the feathers very narrowly fringed with black, and most of them with conspicuous, hastate, subterminal, velvet black spots; coverts and scapulars and tips of tertiaries similar, (the black spot varying in shape from a sort of lunule on the scapulars to a linear lanceolate dash on some of the coverts), but the feathers more or less tinged towards the margins with deep ferruginous; the primaries plain uniform, hair brown; secondaries similar, but freckled and mottled more or less on the outer webs and at the tips with ferruginous.

A. O. H.

Messrs. Sclater and Finsch's

Index to the Ornithological Literature of 1872.

IN Messrs. Sclater and Finsch's Index to the Ornithological Literature of 1872, which has appeared as a Supplement to the last volume of the *Ibis*, I notice the following entry in regard to a paper of mine:—

"10.—OTOCARIS (*sic!*) Elwesi, &c."

Now if the evil genius of every Indian writer, the indigenous "devil" had really disfigured my pages with this ghastly misprint, I confess that I should, even then, have failed to discover much wit in the *very* novel and biting sarcasm traditionally involved in placing "*sic!*" after the supposed error; but the fact simply is that the misprint in question is none of mine, but belongs entirely to the learned compilers.

This may seem incredible, but I ask my readers to verify the fact for themselves. The article in question occurs at pages 36-38 of Vol. I of "STRAY FEATHERS," and a reference to these will show that in every one of the five places in which the genus *Otocoris* is referred to, it is spelt *Otocoris* and not *Otocaris*. Perhaps Messrs. Sclater and Finsch will kindly explain on what grounds they accuse me of spelling the name *Otocaris*.

If they had attacked me about spelling the word *Otocoris* instead of *Otocorys* one might have understood, but to charge me with spelling the word *Otocaris*! This is by many degrees too bad, and if these very learned and would-be ironical gentlemen are not sorry for thus traducing a blameless innocent like myself, I hope that some one else will kindly blush for them as they clearly must be past blushing for themselves.

As to *Otocoris*, if this *had* been what they charged me with, I should have pleaded guilty to the impeachment; I should have admitted that I was quite aware that Dr. Cabanis had chosen to spell the word *Otocorys*, and that I also knew that Dr. Finsch had endorsed this modification of the *real* name, but I should have urged that Prince Bonaparte named the genus, and named it *Otocoris* and not *Otocorys*; that I disputed the right of third parties to go and alter other people's names to please their own tastes, and that further as Dr. Gray adhered to *Otocoris* I on the whole thought it—

“Better to err with Gray than shine with.....”

Well,.....other people.

Now I cannot pretend to have as yet read or studied this Index to the Ornithological Literature of 1872, but the authors' names are a guarantee that it *must* be all that is excellent and accurate, and consequently my feelings have been much hurt to find in consulting the entries referring to myself four very inexplicable errors.

I am quite sure that no such work by Drs. Sclater and Finsch *can* possibly contain MORE than four errors. Then I would ask what I have done, wretched man that I am, to draw thus upon me the accumulated wrath of the immortals? Why are all these blunders poured out upon *my* devoted head?

Was it not enough to accuse me of spelling *Otocoris*, *Otocaris*, and then to gibbet my imaginary offence with a sarcastic, *SIC*!? No! the vengeance of the gods was not thus to be sated.

At page 461 I am said to have described *Ptyonoprogne cinerea* from Sindh. I never heard of the bird in my life; I described *P. pallida* from Sindh (which turns out to be the African *obsoleta*, Cab.) but *cinerea* is a pure creature of Drs. Finsch's and Sclater's imaginations.

At page 462 it is asserted that I state “reasons for identifying Dr. Stoliczka's species” (*F. sordida*) “with that of Hodgson” (*F. nemoricola*); whereas I give conclusive *proof* that the two are quite *distinct*.

At page 491 it is said that Lord Walden identifies “specimens named *Erythrosterna parva* in nuptial plumage by Mr. Hume with *Siphia (Menetica) hyperythra*, Cabanis, of Ceylon.”

"Will it surprise" my readers to learn that I had nothing earthly to do with this matter, and that my name has been substituted for Mr. Brooks', who in this case is the guilty party. As if I did not make blunders enough, alas! of my own without being saddled with those of other people!

Now the Index is doubtless a most excellent one, but I must say that before assailing their neighbours with ironical "*sic* !s" on account of a trival misprint, (which moreover has no existence except in their own or their Printers' fervid imaginations) the learned authors would have done well to purge their pages from errors far less venial than mere misprints, and to have borne in mind the wise words of the great prophet Ingoldsby—

"Last of all if you'd thrive and still sleep in whole bones,
If you've any glass windows, why never throw stones!"

A. O. H.

Notes.

IN CONTINUATION of what I said (STRAY FEATHERS, Vol. I., p. 437) of the entire distinctness of *Drymoipus rufescens*, nobis, and *D. Jerdoni*, Blyth, let me quote Blyth, Journal Asiatic Society, 1847, p. 459:—

"*D. Jerdoni*, nobis, described as a new species of *Prinia* in Vol. XI., p. 883, but regarded as a variety of *D. inornata* in Vol. XIII., p. 376, intermediate to *D. sylvatica* and *D. inornata* (vera) of Southern India; also nearly allied to the Javanese species, which it resembles in size, but differs in its subterminal dusky tail-band not being nearly so broad, and essentially resembling that of *D. sylvatica*. Except in being smaller, I can detect no available distinction of this species from *D. sylvatica*, i.e., distinctions which I might predicate as constant; but two specimens before me correspond exactly in dimensions, having the wing two inches and an eighth, middle tail feathers two and a half, bill to gape five-eighths, and tarsi three quarters; inhabits Southern India."

Now, how could this apply to my large dark rufous bird, with a wing of 2.62 to 2.75?

Then again I showed my bird to Jerdon, and he said he did not know it. I have still a note from Mr. Brooks, saying: "I got one or two more of that large *Drymoipus* which Jerdon could not name.

My dear friend Dr. Stoliczka and others, who will, *vi et armis*, make *rufescens* = *Jerdoni*, go upon one single point—the

specimen in the museum here. Unfortunately the way birds had their names changed in that museum during the *hiatus*, *valde deflendus*, that occurred between Blyth's departure and Dr. Anderson's advent, is a caution, and where Blyth's written descriptions differ materially from specimens named as belonging to the species described, we may always rest assured that the names have been changed. In this present case not only have we Blyth's descriptions, showing an utterly irreconcilable difference in size, but we have the facts, 1st, that Jerdon saw *rufescens* and said it was new; 2nd, that he gave me what he called *Jerdoni*, a totally different and very much smaller bird; 3rd, that he sent home to the British Museum what he reconsidered *Jerdoni*, which specimen is one of the *small* birds such as Blyth described and Jerdon gave me. How any one can go on believing that *rufescens* and *Jerdoni* are identical in the face of this passes my comprehension?

IN A RECENT PAPER read May 1st before the Asiatic Society, I stated that having found that Colonel Tytler's name "*affinis*" for the Andaman Paroquet, which I have recently shown to be distinct from *erythrogenys*, Blyth, from the Nicobars, could not stand, that name having already been assigned by Mr. Gould to another species of the same genus, I had named the Andaman bird, *P. Tytleri*, in memory of my late friend who did so much towards the elucidation of the Avifauna of the Andaman Islands.

LOOKING through for the first time the Annals and Magazine of Natural History, in which some ornithologists (most unfortunately for us exiles, who cannot keep and who have not access to extensive libraries) now and again describe new species of birds I find that in June 1870 Lord Walden described the Malabar Scops Owl as *Ephialtes Jerdoni*.

About twenty years previously Jerdon had described this bird as *Scops malabaricus*, in his Second Supplemental Catalogue, and in February 1870, I published this same species in Part II. of my Rough Notes, under Jerdon's name, with a full description.

MR. MANDELLI writes to inform me that he has procured a specimen of *Podoces humilis*, Hume, (LAHORE TO YARKAND, Fig. XXIII.) from Thibet, a little beyond the boundary of native Sikkim.

A SPECIMEN of that rare Bullfinch, *P. erythaca*, has recently been obtained for me by Mr. Gammie, (to whom I have repeatedly owed rare birds and eggs,) at Jor Bungala, close to Darjeeling, at an elevation of between five and six thousand feet. As far as I know this is the first specimen obtained since the late lamented Captain Beavan shot the type on Mount Tongloo. Perhaps others have been met with, and if so, I should be glad to learn the localities from, and dates on, which they were procured.

Since this was in type, Mr. Mandelli has also kindly sent me a specimen of Beavan's Bull-finch, procured in April, also in Sikhim. It would appear that it is only an occasional migrant to Sikhim (just as *Syrhaptes paradoxus* is to England), for we have for years maintained the keenest watch for this species, and heretofore without success.

Where can the home of this species be? Swinhoe has not met with it in China, nor Perè David; nor any of the Russians in Siberia, nor our people in Yarkand. However there is a vast country outside the explorations of all these to which *erythaca* must somewhere belong.

CAPTAIN BUTLER writes to me that he "observed two or three specimens of *Ceyx tridactyla* at Khandalla, in May 1871, in a rocky nulla, running from the reversing station down the ghats, through densely wooded jungles, the only ones I have ever met with."

IN THE IBIS for 1874, page 3, Mr. Slater talks of *Pachyglossa melanozantha*, which he places in Strickland's genus, *Prionochilus*, as a Nepalese type, and as having escaped nearly every subsequent collector. As far as his notes enable me to judge, some of Hodgson's specimen came from the interior of Sikhim, and from this same district I have now seen many specimens. Captain Elwes, I know, obtained at least one which he gave me, and which is still in my museum with others sent me by Captain Masson and Mr. Birch. *P. vincens*, (of which I am indebted for specimens to Lieutenant W. Vincent Legge, R.A.,) from Ceylon, is a true *Prionochilus*, which genus also includes, as Mr. Slater points out, *P. percussus* (Pl. col., 394, fig. 2), *P. thoracicus* (Pl. col., 600, figs. 1 and 2), *P. maculatus*, *P. aureolimbatus* (P. Z. S., 1865, p. 477) from Celebes, and *P. xanthopygius* (Ibis, 1872, p. 379,) from Borneo, but I doubt somewhat, I must confess, the propriety of uniting the Sikhim bird and discarding the genus *Pachyglossa*.

SOMETIME ago Mr. Brooks, it may be remembered, separated the Black-backed Black and White Wagtail from Cashmere, as *M. cashmerensis*, remarking that it "is quite distinct from *M. luzoniensis*, Scopoli, with which I compared it. The latter is, as noted by Dr. Jerdon, identical with *M. Hodgsoni*, Blyth, vel *M. alboides*, Hodg. My new bird is colored very like *M. lugens*, Temm. and Schleg., except that the chin and throat are black. The black extends down the breast for $2\frac{1}{4}$ inches from base of lower mandible; white portion of face as in *M. personata* of Gould and *M. lugens*; remainder of head and whole of back deep black; all the wing-coverts, except a few at the upper portion of the bend of the wing pure white; all the quills edged with white, the tertials very broadly so; so that when the wing is closed, it looks almost entirely white. I need not notice that the tail is the same as that of all other Black and White Wagtails. Total length, 7.6; wing, 3.55; tail, 4 inches; bill, at front, .5; tarsus, .97. My bird has a grey back in winter, and some of those shot in May were only partly changed. If Mr. Gould's specimens of *M. personata* were not midsummer ones, my bird may be the summer plumage of that species."

Now Mr. Brooks writes:—"The Cashmere Black-backed Wagtail, which I described as *M. cashmerensis*, is, I find, only the full breeding plumage of *M. personata*, Gould. Gould described from specimens obtained in the plains of India, and he did not know that his species later on obtained a black back. The change from a pure grey back in March and April to a pure black one late in May and early in June is a curious one, for it appears to be a change in the color of the feather without any further moult. I obtained many specimens and only the minority had pure black backs; some had the rump and lower back grey still late in May, others retained a certain amount of black on the lower back as late even as June. Some of the females had dusky grey backs, while the males were more or less black. I saw several pairs, of which one bird was grey and the other black. But the shape of the white patch in which the eye is set is peculiar in this species, and this alone separates it from any other Wagtail without regard to the color of the back.

"I do not now think that *M. Hodgsoni*, Gray, is a synonym of *M. luzoniensis*. On a drawing of *M. luzoniensis* by Hodgson, which he terms *M. alboides*, there is written in pencil *M. Hodgsoni*. This is, I think, only a suggestion, a query by Hodgson.

"As far as I can understand, the north-eastern black-backed species was termed *M. Hodgsoni* by Gray, and it is identical with *M. personata*, Gould, and *M. cashmerensis*, Brooks. *M. luzo-*

niensis, which I have had good opportunities of observing in the Dinapore district, is quite a distinct species. Both it and *M. Hodgsoni* are common there, and the two in winter dress are widely different. In *luzoniensis* the white extends down the side of the neck in winter dress, much as in *M. dukhunensis*, and is never small and of the diamond shape of the white eye patch of *M. Hodgsoni*. Then again old examples of *M. luzoniensis* retain more or less black on the back, while those of *M. Hodgsoni* resume pure grey backs in winter. Another notable point of difference is the voice; that of *luzoniensis* being soft and more musical than those of the two north-west species. *M. luzoniensis* may be described as being like *M. dukhunensis*, but with black back and white chin and throat.

"As far as I can see at present, it appears very likely that *M. lugens*, *M. Hodgsoni*, and perhaps *M. lugubris* too may be the same bird, but I have not seen any good drawing of the latter. Any one looking at my series of winter examples of *M. Hodgsoni* (*personata*) and *M. luzoniensis* would never dream of confounding the two.

"In winter young examples of *M. dukhunensis* are very difficult to distinguish from those of similar age of *M. luzoniensis*, and we can only make sure of a young bird being *luzoniensis* when it shows a superior amount of white in the wing-coverts. Mature *luzoniensis* like mature *Hodgsoni* shows the greater coverts when the wing is closed as an entire patch of white.

"*M. dukhunensis* appears to be a more northern bird than *M. Hodgsoni*, and I did not see it breeding in Cashmere.

"I have long intended cancelling my supposed species *M. cashmerensis*, but if the present note is published, it will answer the purpose."

I am unable as yet myself to concur in these views, but I shall hope to take the Black and Grey Wagtails up again before long, and reconsider the question in the light of the enormous series of specimens now at my command.

MR. J. R. CRIPPS very kindly sends me specimens of the Kyah (*Ortygornis gularis*) and the Yellow-billed Finch-Thrush, (*Paradoxernis flavirostris*), shot on the banks of the Kooshiara river, below Inayetgunj, Sylhet. This Finch-Thrush is comparatively rare in the Sikhim Terai, and Jerdon talks of it as a tree bird; but as far as my knowledge of the other two species (*P. gularis* and *ruficeps*) goes, they are more of reed birds, and Mr. Cripps remarks of the present species: — "Jerdon

seems to say that these Finch-Thrushes are only found in the hills, but these were in the plains on the banks of the Kooshiara and were going about in pairs, not very numerous, in long grass and reed jungle. They have a mellow warble of three notes. This was in February." Quite recently Mr. Davison shot *P. ruficeps* in Northern Tenasserim, where he found it in long reeds, and my impression is that though at times found in tree jungle, grass and reed beds are their normal haunts.

AMONGST OTHER birds recently obtained by Mr. Mandelli, I may note, from the Bhotan Doars, *Megalaima cyanotis* and *Alcedo grandis*, and from the interior of Sikkim, *Accentor montanellus* and *Calendrella piscoletta*. The latter is not uncommon in the North-West Punjab during the cold season.

DR. G. KING writes to me under date the 24th April :—"I was surprised to see a specimen of *Pterocles exustus* in the Calcutta Botanical Gardens two days ago. It squatted on the ground within three yards of me. I had a good look at it. I never knew that it put in an appearance in this Delta."

MISS M. B. COCKBURN writes from Kotagherry, Nilghiris :—"In No. 6, STRAY FEATHERS, page 496, Mr. J. W. Vipan mentions having shot a Painted Spur-fowl at Burliah. Some years ago one was shot at the 'Orange Valley,' a few miles from this, and brought to me here."

DR. JERDON's description of *Siphia erythaca* is really most unsatisfactory. He says :—"Above dusky slate color, sides of the throat and neck the same." Now whatever color you call the upper surface, you must call the lores, cheeks, and sides of throat something else. They are in fact perfectly black, a dull obscure black no doubt, but still black in one light and blackish dusky in another; in fact the contrast between the sides and the top and back of the head is strong. Then he omits to notice that the upper tail-coverts are black, contrasting again strongly with the slatey rump. Lastly he says that the vent and lower tail-coverts are white, whereas they are whitey brown, as a rule strongly tinged with yellowish ferruginous. His dimensions too are rather too small. I recently obtained a peculiarly fine specimen of this species from the outskirts of the Pine forests in the Salween district, British Burmah. Away from

my museum I referred to Jerdon, and noticing these marked differences I concluded that my identification had been hasty, and that the Salween bird was distinct. Mr. Mandelli, however, kindly sent me down specimens of the Sikhim bird, and I find that it is identical.

The following are the dimensions of the Burmese specimen recorded in the flesh, together with a full description:—

Length, 5.4; expanse, 8.82; tail, from vent, 2.2; wing, 2.9; tarsus, 0.65; bill, from gape, 0.55; bill, at front, 0.33; weight, 0.4 oz.

The bill was black, the legs and feet dark reddish horny, irides very dark brown.

The top and back of the head and neck and entire mantle a very dark bluish slatey; upper tail-coverts black; primary greater coverts and quills hair brown, the latter narrowly edged on their outer margins with yellowish olivaceous brown; tail dull black, all but the central feathers pure white at their bases; lores, cheeks, ear-coverts, a patch on the sides of the neck, and another at each side of the breast, just above the shoulder of the closed wing, dull black; chin, throat, breast and upper half of abdomen bright ferruginous; lower abdomen, vent and lower tail-coverts pale whitey brown, tinged, the latter most conspicuously, with pale yellowish rusty or ferruginous.

ÆGITHINA TIPHIA, *Lin.*, and *ZEYLONICA*, *Gmel.*

I am sorry that I am as yet unable to distinguish these two supposed species. Lord Walden says, *Ibis*, 1871, p. 168:—‘Dr. Stoliczka states that birds with the whole upper plumage of *zeylonica* are never met with in Burmah and the Malayan country. My experience of the species fully confirms this statement, and I may add that I have never seen a full-plumaged Ceylon male in the garb of a Burmese *tiphia*.....It is very likely that *I. zeylonica* and *I. tiphia* inter-breed at the extreme limits of their respective regions in the same way as *Coracias indica* and *affinis*; but this in no way establishes their specific identity.’

In opposition to this I have from Thayetmyo, killed by Mr. Eugene Oates on the 19th May, a typical *Iora zeylonica*, with the whole nape and back black, absolutely undistinguishable from Ceylon males in breeding plumage; and a second bird, killed on the 2nd June in the same locality, with the whole head and nape black, and the back yellow fringed

with black, as is so commonly the case in *zeylonica* from different parts of India. Couple with these a breeding male now in my museum, shot, together with the female, from the nest, which contained eggs, on the Teriat Hills, quite in the south of the Peninsula of India, by Mr. J. Darling (Junior), which is in the typical *tiphia* plumage.

Now, this does not look very much like "inter-breeding at the extreme limits of their respective regions;" and as I can show every possible gradation of plumage, and every variation of size in each state of plumage, or nearly so, between these two supposed species; and as moreover we get breeding *tiphia* males from the extreme south of India, and breeding *zeylonica* males from Thayetmyo, it remains for Lord Walden and others to point out clearly how we are to distinguish them. I submit that I have proved that they cannot be separated by reference either to habitat, size, or plumage.

I should add here that I utterly and absolutely repudiate, as a delusion and a snare, the theory of the inter-breeding of nearly allied *species* (?) at the confines of their respective limits. The true explanation of the cases which this theory is meant to explain is simply this. If in one region A, we find one form *a*, and in a neighbouring region B, we find a nearly allied form *b*, and just where A and B inosculate, we find a third form, which we will call *c*, intermediate between *a* and *b*; then this form is due, I hold, not to the inter-breeding of *a* and *b*, but to the fact that the physical conditions of existence, which in A determined the form *a* and in B, the form *b* are at the confines of these regions intermediate in character, and have, therefore, given rise to form *c* intermediate between *a* and *b*.

This is a first principle in regard to which no man should lose an opportunity of making his confession of faith. Any one else may believe what they like. They may be right and I may be wrong; I claim no infallibility. I have no quarrel with those who differ from me; but this is what I believe, and what I personally am convinced is the only philosophical view of the question.

“ὅτῳ δὲ μὴ τὰδ ἐστὶν ἐν γνώμῃ φίλα
κείνος τὰ κείνου στεργέτω, κάγῳ τάδε.”

A. O. H.

Letters to the Editor.

SIR,

You will expect me to tell you a great deal about the birds which I noticed on the road from Murri to Ladak, but I am afraid I can give you but little satisfaction. Novelties are rarely found along the road, when such a large camp as ours moves from stage to stage, sometimes extending over four or five miles of the march.

On our way from Murri to Srinagur in July I saw very little. The lower road along the Jhelum is dreadfully hot, and you meet nothing but the most common birds of the plains. At Urumboo, which is nearly 2,000 feet, we saw the first apple trees, and the Jackdaw made here its first appearance. On the Woolar lake, in Cashmir, I found *Podiceps minor* and *Hydrochelidon indica* breeding a second time on the 26th July, and both had young besides. I also got the glistening eggs of *Hydrophasianus sinensis*; *Gallinula chloropus* and *Porzana fusca* also breed on the lake; the latter has a white egg, and the feet are coral red, not pale green, as Jerdon says. I hardly think I mistake the bird, for it agrees with Jerdon's description in every other respect. *Pandion haliaetus* and *Aquila chrysaetos* were both fishing along the lake, in company with the Kites, of which I secured several specimens. I wonder whether they will all turn out to be *melanotis* or *major*; they do not appear to be particularly large, but none have yellow feet.

In the Sind valley, through which we passed during the first half of August, I got all of Brooks' new Cashmir species, with the exception of the Wren, of which there was no trace at this time of the year. *Horeites pallidus* is heard throughout the valley up to about 8,000 feet, but not easy to obtain. I have a fine set of Brooks' *Dumeticola major*, but some tally very well with the description of *affinis*. I shot at Sonamurg another much larger *Dumeticola*-like species which I have not identified. An *Alauda*, apparently *triborhyncha*, but somewhat larger than the usual measurements given, was not uncommon. I found several nests of *Hemichelidon fuliginosa* and one of *Yunx torquilla*, but both had already nestlings.

I had been anxiously waiting for *Pyrrhula aurantiaca* at Baltal and on the road up the Zojyi la, and I cannot blame myself for not having kept a good look-out, but not a specimen was to be seen on the 14th August, the day we crossed the pass. Possibly they were all breeding in some of the Deodar forests

high up, or they had become extinct since Henderson saw them here in such great numbers. It is beyond my power to explain how that happened, unless the birds Henderson saw were migrating just at the time he met them.

At the top of the pass *Carpodacus erythrinus* and Brooks' *Phylloscopus Tytleri* were common, and a little further on I met with flocks of my *Fringilla sordida*. They resemble a great deal the larks in their flight, and feed on the ground in great numbers together like these. The most common bird all through Ladak is *Ruticilla rufiventris*; it is met with almost every hundred yard along the march, and is numerously represented at each village. The Sparrow does not feel comfortable above 12,000 feet, and none remain for instance at Leh during the winter. *Montifringilla Adamsi* was seen first a little east of Shergool, crossing the pass to Kharbu. It was common at about 12,000 feet in flocks, resembling in habit *Fringillauda*. Since we left Cashmir I have not seen a single *Corvus intermedius*, until we reached Leh, where three or four turned up. The Common Crow here is *thibitanus* or *corax*, as it may be; it seems to me smaller than the Northern Nipal and Sikhim bird. The only novelty I shot, going from Lamaguru to the Indus, is a new *Pyrhocorax*, which I think may well be named after our leader.

P. Forsythi.*—It is a considerably smaller bird than *alpinus*; like this last entirely black, only somewhat duller; the bill is slightly more arched and stronger notched; dark brown towards the tip and paler at the base with a fleshy tinge; and the feet are blackish brown or almost quite black. The wing is 10·25; tail, 6·5; tarsus, 1·5; bill, at front, 1 inch.

I have an idea that I saw a specimen of this bird in 1865 near Padam, but have not now my notes to refer to. The specimen was solitary when I shot it, sitting on a rock near the road.

The Indus valley from Kalsi to Leh is very desolate and very few, and these the commonest birds are to be seen. Here at Leh I found *Sylviparus modestus* and *Phylloscopus tristis*, the most common birds among the willows; both were evidently breeding here. Besides these I got *Ph. trochilus* (?) *viridanus*, *lugubris* and *affinis*. The last appeared only a few days ago in greater numbers, and is never found among the willows, but between stones and on stonewalls. *Ph. viridanus* and *trochilus* are rare. *Cyanecula suecica* was breeding here, and is common. A few days ago there was a heavy fall of snow on the

* *P. alpinus*, Juv?—Ed.

Kardung ridge, and next morning when I went towards the pass I found numbers of *Montifringilla Adamsi*, the *Metoponia pusilla*, *Linota brevirostris*, and *Calandrella brachydactyla*. *Alauda gulgula* is the common lark in the fields. The first *Pipastes agilis* I shot only five days ago, and since yesterday they became tolerably common. *Casarca rutila*, Teals and Snipes, are coming down to the Indus valley, evidently a sign of the low temperature at greater elevations. I was rather surprised to see the other day a solitary *Ardea cinerea* along the Indus below Leh. Altogether I shall have now about 600* birds, but I do not expect much more than 150 or 160 species. However we shall have a fair material for comparison. The fewer numbers, but more interesting specimens, ought to begin now to appear, when we leave this, which I hope will be on the 12th. People who have returned from Changchemo speak of great cold and early winter. There were already several falls of snow thereabout, and no doubt we shall have it fresh in going over that high ground in Changchemo. The hands will be rather stiff for geologising.—F. STOLICZKA, *Naturalist, Yarkand Expedition.*

CAMP LEH, }
The 10th September 1873.

SIR,

As there is an opportunity of sending letters *via* Kabul I drop you a line, for I am sure you will be not a little surprised at my long silence.

In my last note† I promised you a brief account of the winter birds of Kashgar. It ought to have been on its way by this time, but we were bundled out of Kashgar before the close of the winter season, and had only a couple of days at Yanjihissar in order to prepare for the Pamir trip. Since then we had been constantly on the move, until we reached this, where the ruinous state of our baggage animals directed a halt for twelve days. We leave this to-morrow for the Great Pamir, Sirikul, Yarkand, Kogyar and Korakoram, and so on to beloved Calcutta.

While here I took the opportunity of writing the note about the winter Avifauna of Kashgar, but I like to look up a few names before I send it to you, for reduction of baggage obliged me to leave even the Indian Ornithologist's *Vade Mecum* at Sirikul. You shall have the note by the next mail.

* Not a single one carbolized as yet.

† Not received.—Ed.

When we left the Kashgar plain the only birds that I saw had just arrived were *Sturnus vulgaris*, *Saxicola deserti*, *Phylloscopus viridanus* (solitary specimen), and a few others which seemed to have removed during the winter to the warmer desert country in a south-easterly direction; they hardly could have crossed the high mountains so early. In the hills between Yanjihissar and Sirikul scarcely a single migratory bird, except what really appears to be true *Milvus govinda*, was to be seen.

In crossing by the Little Pamir I met near the Pamirkul *Hirundo rustica*, *Saxicola ananthe*, and another *Saxicola* with slatey grey back; this was on 5th April. The birds looked very miserable, for the cold was bitterly severe, the daily minimum little above zero. On this side of the Pamir our route was chiefly through snow, and the most unpleasant snow storms you could fancy. Since we arrived here on the 13th the weather improved, and spring is evidently approaching. Unfortunately the valley is little better than a desert, cultivation limited, and the jungle very low and scrubby. Swallows are coming and going daily. The same applies to *Saxicola ananthe*, *deserti*, *leucomelanura*, *Kingi* (rare), and the one with the grey back. Of *Pratincola indica* I have seen but few. A little *Phylloscopus*, apparently Brooks' *subviridis*, is passing up. *Passer montanus* is not numerous here, and I got a female, of what appears to be *indicus*, which certainly does not remain here during the winter. *Budytes melanocephala*, and if distinct, as it decidedly appears to be also *cinereocapilla*, are on their way up; also *B. citreola*, which I have got already near Yanjihissar last month.

I got a beautiful new Finch* here with rosy wings, something like a *Calacanthis*. There were about twenty in a flock, evidently travelling on to the Pamir. *Ruticilla rufiventris* is going up, but another allied species with slatey head—apparently a new one—is a permanent resident through the whole of Eastern Turkistan. *R. erythrogastra* you may see in every bush here, all in pairs, but they had not begun breeding yet, though, no doubt, they have on the Yarkand side. I shall get hold of these going back. *Parus cyanus*, *Metoponia pusilla*, *Linota brevirostris*, a black-faced *Accentor*, *Fregilus graculus*, *Pica bactriana*, *Corvus*,? *intermedius*, *Otocoris longirostris*, *Corvus*,? *Lawrencei*, *Columba rupicola*, and a few others are permanent inhabitants. *Motacilla*,? *alba* and *Alanda triborhyncha* appears to make themselves comfortable here; some of them will no doubt breed in this valley.

* Probably *R. sanguineus*, Gould.—Ed.

Coturnix communis, *Accipiter nisus*, a solitary *Buteo ferox* and *Tinnunculus alaudarius*, a large number of *Querquedula crecca*, *Spatula clypeata*, few *Anas boschas*, many *Casarca rutila*, *Anser indicus* and *cinereus*, *Fulica atra*, *Gallinago scolopacinus*, *Philomachus pugnax*, *Graculus carbo*, a gigantic *Larus*, *Podiceps cristatus*, *Ardea cinerea*, and some others are no doubt awaiting the melting away of the ice on the Pamir Lakes.

I trust we shall go leisurely on our way back and halt about ten days near Yarkand. There are very large swamps north-east of the city, with high grass, and I expect a great number of our Indian birds will breed there. I would be excessively sorry if I had to leave those swamps unexplored.—FERD. STOLICZKA.

PANJA Wakhan, 25th March 1874.

SIR,

I SEE in your Contributions to the Ornithology of India, STRAY FEATHERS, Vol. II., page 285, that you say you have never heard of the occurrence of *Glareola orientalis* or large Swallow Plover in the Panjab, so I trouble you with these few lines to say that I shot a specimen on the 19th November 1871 on a bank in a pool about a mile from Ludiana, Panjab. It was a young bird I suppose, having lighter colored tips to some of the feathers on the back of neck and back. Its length was 9 inches, tail 3 inches, legs dark brownish purple. I regret I did not stuff it, but made a drawing of it. I have since lost the drawing, but I feel certain it was the bird described by Dr. Jerdon. It is the only one I have ever seen up here.—F. FIELD.

SHAHPUR, Panjab.

SIR,

SINCE writing my additional note I find that the under-mentioned bird has been shot at Sambhur :—

910.—*Ortygometra pygmæa*, Naum.

About a year ago I saw what I took to be a specimen of the Pigmy Rail running about in a small cluster of trees, but as I had not a gun with me at the time I could not make sure of my surmise.

I have also the following additional notes :—

120.—*Merops ægyptius*, *Forsk.*

Some male birds of this species, which were shot on the 22nd May 1874, proved on dissection to be manifestly breeding. The birds were then very plentiful about Sambhur, but we have not yet found their eggs.

197—*Xantholæma hæmacephala*, *Müll.*

During my last visit to Sambhur I took a nest of this bird with three eggs on the 28th May. Passing by an old house near the lake edge I observed a dried-up branch of a *Saujna* tree (*Moringa pterygosperma*) about six feet in length and about five inches in diameter lying on the ground. This branch had an upright sloping bent-portion about a foot and three quarters from the ground, and on the lower side of this I saw a Barbet clinging.

This bird flew off and exposed the nest aperture, and immediately after out flew another bird. The branch was so light that I could easily lift it in my hand, and on tilting it round I found that it contained three beautiful white fresh eggs with a delicate rose blush.

The girth of the branch which was, in section, a broad oval measured 15·5 inches ; the nest aperture in diameter was 1·25 ; from the outer lower edge of the entrance to the beginning of the descent was nearly straight, and measured 2 inches. Again from the outer lower edge to the bottom of the excavation the distance was 9 inches. The excavation was a long oval with a minor axis of 2·5 inches and a major axis of 6·5 inches. The top entrance into this oval had a diameter of 1·75 inches, or half an inch greater than the diameter of the entrance aperture.

The egg cavity was 2 inches in diameter and contained in depth about three quarters of an inch (in the centre) of fine dust and chips as well as a lot of droppings of the birds.

Considering that the branch was not a fixture, and that there was a constant traffic morning and evening past where it lay, it was an extraordinarily insecure position for the birds to select for their nest.—R. M. ADAM.

SAMBHUR, May 24th, 1874.



STRAY FEATHERS.

Vol. II.]

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[No. 6.]

A First List of the Birds of the Tenasserim Provinces.

MR. DAVISON and my whole staff have been, for some nine months now, working in Tenasserim.

They have only in this period succeeded in exploring, and that not nearly so thoroughly as Mr. Davison would have desired, the northern half of these provinces, from Pah-chaun to Tavoy, and at least another twelve months and perhaps a still longer period must expire before we shall be in a position to give anything like a complete account of the Avifauna of Tenasserim.

In the meantime a list, as complete as I can *now* make it, of the species which occur in the province will, I am assured, be very acceptable to many interested in questions of distribution.

We obtained altogether 2,750 specimens, representing 324 species. These will be found printed in ordinary type in the following list. Besides these there are 107 other species which I have good reason to believe occur in Tenasserim; some were seen or even shot, but not preserved, others, though not met with by Davison, have been sent me thence previously, while others, specimens obtained in Tenasserim are in the Indian Museum, here or at home. These species are entered in the list in italics. Altogether the list, still unquestionably miserably imperfect, contains 431 species: opposite each species of which we actually preserved specimens (and all these are printed in ordinary type), I have noted (unless the distribution of the species was general) the places at or near which the specimens preserved were obtained, and I give a small sketch map in which all the places so referred to are duly entered, their names, in order to catch the eye more readily, being underlined.

I have added a few remarks here and there in cases in which I thought that doubts might arise as to the correctness of the identification, &c.

Of course we have obtained a goodly amount of information in regard to the habits and vertical and horizontal distribution of many little known species, and have recorded whole series of measurements in the flesh, and full descriptions of the colors of the soft parts of many birds rarely, if ever, previously handled in the flesh by ornithologists, but all this I reserve until our work in Tenasserim completed, I can present something approaching to a reliable Conspectus of the Ornis of the province as a whole.

Here I shall only draw attention to the marked intermixture of Chinese forms in the more northern portion of the province.

The numbers prefixed to the species in the list are those of Dr. Jerdon's work and my catalogue.

- 4.—*Gyps indicus*, Scop.
- 5.—*Gyps Bengalensis*, Lath. *Pabyouk*; occasionally seen.
- 20.—*Hierax cœrulescens*, Lin. *Pahpoon*; only.
- 20 *ter.*—*Hierax fringillarius*, Drap. *Meeta Myo*; only.
- 22.—*Lophospiza indica*, Hodgs. *Pine Forest North of Kollidoo*; only.
- 23 *ter.*—*Micronisus poliopsis*, Hume. *Pahchaun, Pabyouk, Pahpoon*; general, but not common.
- 25.—*Accipiter virgatus*, Tem.
- 27.—*Aquila?*, *Tavoy*; large brown eagle seen.
- 32.—*Neopus malayensis*, Reinw.
- 34.—*Spizaetus caligatus*, Raffl. *Ye-boo*.
- 34 *ter.*—*Limnaetus albiniger*, Bly.
- 39 *ter.*—*Spilornis Rutherfordi*, Swinh. *Neighbourhood of Amherst and of Ye*.
- 40.—*Pandion haliaetus*, Lin.
- 41.—*Haliaetus ichthyaetus*, Horsf. *Pabyouk*; only.
- 41 *ter.*—*Haliaetus humilis*, Tem.
- 43.—*Cuncuma leucogaster*, Gm.
- 48.—*Poliornis teesa*, Frankl.
- 48 *bis.*—*Poliornis barbatus*, Eyton.
- 53.—*Circus melanoleucus*, Gm. *Pahpoon, Ngabeemah*; only.
- 54.—*Circus aeruginosus*, Lin.
- 55.—*Haliaster indus*, Bodd. *Passim*; but not numerous.
- 56 *ter.*—*Milvus affinis*, Gould. *Passim*; but not numerous.
- 57 *bis.*—*Pernis brachypterus*, Bly.
- 59.—*Elanus melanopterus*, Daud.
- 62.—*Phodilus badius*, Horsf.
- 65 *bis.*—*Syrnium seloputo*, Horsf.
- 71.—*Huhua nipalensis*, Hodgs.

- 72.—*Ketupa ceylonensis*, *Gm. Amherst*; and seen near Palpoon.
 72 *bis.*—*Ketupa javensis*, *Less. Amherst*; only.
 74.—*Ephialtes pennatus*, *Hodgs.*
 75.—*Ephialtes*?, *Palpoon, Tavoy*; but heard everywhere. A form intermediate between *lempiji* and *lettia*.
 75 *quint.*—*Ephialtes Lempiji*, *Horsf.*
 77 *ter.*—*Athene castanoptera*, *Horsf.*
 79.—*Athene cuculoides*, *Vig. Passim*; very common; entirely identical with Himalayan birds.
 80.—*Glaucidium Brodiei*, *Burt. Meeta Myo, Kyouknyat*; only.
 81.—*Ninox hirsutus*, *Cuv et Tem. Palpoon, Kyouknyat, Amherst*; general.
 82.—*Hirundo rustica*, *L.?* *gutturalis*, *Scop. Passim*; common; probably should stand as *gutturalis*.
 82 *bis.*—*Hirundo Tytleri*, *Jerd. Tavoy*; only; where they only appeared for a few days. I do not know how these differ from *cahirca*, *Licht.*
 84.—*Hirundo filifera*, *Steph. Palpoon*; only.
 85 *bis.*—*Hirundo daurica*, *Lin. Palpoon*; only. The large Himalayan form.
 89.—*Cotyle sinensis*, *Gr. Palpoon*; only.
 100 *bis.*—*Cypselus sulfuratus*, *Bly.*
 101 *bis.*—*Cypselus pacificus*, *Lath. Amherst*; only.
 102 *bis.*—*Cypselus infumatus*, *Sclat. Passim.*
 103.—*Collocalia*?,
 104.—*Dendrochelidon coronatus*, *Tick. Ngabeemah, Pine forests north of Kollidoo, Henza Basin.*
 105 *quat.*—*Batrachostomus affinis*, *Bly.*
 110.—*Caprimulgus macrurus*, *Horsf. Passim.*
 114.—*Caprimulgus monticolus*, *Frankl. Amherst, Yeboo, Palpoon.*
 114 *bis.*—*Lyncornis cerviniceps*, *Gould. Palpoon*; only, and there common.
 116.—*Harpactes Hodgsoni*, *Gould. Neighbourhood of Kyouknyat and Palpoon*; absolutely identical with Himalayan examples.
 116 *ter.*—*Harpactes oreskios*, *Tem. Passim*; common.
 117.—*Merops viridis*, *Lin. General.*
 118.—*Merops Daudini*, *Cuv.*
 119.—*Merops Swinhoei*, *Hume. General.*
 122.—*Nyctiornis Athertoni*, *Jard and Sell. Palpoon, Amherst, Karope, Tavoy.*
 122 *bis.*—*Nyctiornis malaccensis*, *Cab. Near Zadee*; often heard elsewhere.
 124.—*Coracias affinis*, *McClell. Passim*; common.

- 126.—*Eurystomus orientalis*, Lin.
 127 bis.—*Pelargopsis burmanica*, Sharpe. *Passim*: common.
 128.—*Pelargopsis amauropterus*, Pears.
 129.—*Halcyon smyrnensis*, Lin. *Passim*; common.
 130.—*Halcyon pileata*, Bodd. *Karope, Tavoy, Moulmein*; not common.
 131.—*Halcyon coromanda*, Lath. *Meeta Myo, Amherst, Tavoy*.
 132.—*Halcyon chloris*, Bodd. *Amherst and Henza Basin*; only.
 132 ter.—*Carcineutes pulchellus*, Horsf. *Amherst*.
 133.—*Ceyx tridactyla*, Lin. *Between Tavoy and Meeta Myo, Karope, and near Ye*.
 134.—*Alcedo Bengalensis*, Gm. *Passim*; and not uncommon.
 135 bis.—*Alcedo asiatica*, Sw. *Amherst and Ye*. Identical with specimens from *Cuttack, Rajmahal Hills, Bhotau Doars, Tipperah, and Andamans*.
 136.—*Ceryle rudis*, Lin. *General, but not numerous*.
 137.—*Ceryle guttata*, Vig. *Kollidoo and Pahchaun*; only. Identical in dimensions and every other respect with *Himalayan* specimens.
 137 bis.—*Calyptomena viridis*, Raffl. *Amherst*; only.
 138.—*Psarisomus Dalhousiae*, Jameson.
 139 bis.—*Serilophus lunatus*, Gould. *Pahpoon, Amherst, Om-ben-gwen*; general.
 139 ter.—*Eurylaimus javanus*, Horsf. *General, south of Moulmein*.
 139 ter A.—*Eurylaimus ochromelas*, Raffl. *North of Ye only*; rare.
 139 quint.—*Cymbirhynchus macrorhynchus*, Gm. *General; south of Moulmein*.
 139 sextus.—*Corydon sumatranus*, Raffl. *Kohkrait to Pahpoon, and Amherst*.
 140.—*Dichoceros homrai*, Hodgs. *Pahpoon, and 30 miles north of Ye*.
 140 bis.—*Dichoceros bicornis*, Lin. *Kollidoo, Amherst, and Pahpoon*. Both species occur from *Pahpoon to Amherst at least*.
 142.—*Hydrocissa albirostris*, Shaw. *General*; and common.
 145 ter.—*Meniceros Tickelliae*, Blyth.
 146 bis.—*Rhyticeros subruficollis*, Blyth. *Ngabeemah, Karope, Meeta Myo, Om-ben-gwen*; only.
 146 ter.—*Rhyticeros plicatus*, Lath. *Zadee*; only.
 147 bis.—*Palæornis magnirostris*, Ball. *Neighbourhood of Moulmein and Attaran River up to Attaran*; only.
 148.—*Palæornis torquatus*, Bodd.

- 149 *bis.*—*Palæornis bengalensis*, Gm. *General*; does not ascend the Hills.
- 150 *bis.*—*Palæornis Finschii*, Hume. Kollidoo, Kyouknyat; Hills only.
- 152.—*Palæornis fasciatus*, Müll. *Passim*; common.
- 153.—*Loriculus vernalis*, Sparrm. *General*.
- 153 *ter.*—*Psittinus incerta*, Shaw.
- 156 *bis.*—*Picus atratus*, Bly. Pine Forest north of Pahpoon; only.
- 157.—*Picus Macii*, V.
- 163 *bis.*—*Yungipicus canicapillus*, Bly. *General*; common.
- 165 *bis.*—*Hemicercus canente*, Less. *General*; not very numerous.
- 165 *ter.*—*Meiglyptes tristis*, Horsf.
- 165 *quat.*—*Meiglyptes jugularis*, Bly. *General*; not numerous.
- 166.—*Chrysocolaptes sultaneus*, Hodgs. *General*; intermediate in size between true *sultaneus* and *Delesserti*.
- 168.—*Muelleripicus gutturalis*, Valenc. Neighbourhood of Pahpoon up to Pahchaun and 30 miles south of Moulmein. Identical with specimens from Upper Burmah and the Oudh Terai.
- 169 *ter.*—*Thriponax Crawfordi*, Gr. Pahpoon and Kyouknyat; only.
- 171 *bis.*—*Gecinus vittatus*, V. *General*; but does not ascend Hills north of Pahpoon where replaced by *nigrigenis*.
- 171 *ter.*—*Gecinus nigrigenis*,* Hume. Hills north of Pahpoon; only; there common.

* I see that my name *nigrigenis* must probably be maintained for this beautiful Red-backed Green Woodpecker discovered by Davison in January of this year in Northern Tenasserim. Ramsay's name *erythropygius* was doubtless published thirteen days earlier than mine, but I find that the specific name *erythropygius* has been already pre-occupied by Mr. D. G. Elliot, who, in the *Nouvelles Archives du Museum* for 1866, Bulletin, p. 76, describes a very nearly allied *Gecinus* from Cochin China, where it had been discovered by M. Germain. It is figured in Pl. III of the Volume cited.

The two birds differ, first in size, ours being a good deal the larger, as will be seen from the subjoined dimensions:—

♀ <i>G. erythropygius</i> , Elliot. ♀ <i>G. nigrigenis</i> , Hume.					
Length	...	...	11.0	...	12.75 to 13.25
Wing	...	...	5.7	...	6.12 to 6.4
Tail	...	...	4.35	...	5.0 to 5.6
Bill, at front	...	...	1.16	...	1.3 to 1.4
Tarsus	...	...	1.16	...	1.15 to 1.2

Besides this our bird is altogether brighter colored, the yellow of the chin and throat especially; the black of the head, extends further on to the sides of the head and down the nape; very few of our birds (only one in ten of our specimens) have a stripe from the eye backwards over the ear-coverts, and when our birds have it, it is *white*; in Elliot's it is *yellow*; moreover to judge from the plate the upper tail-coverts in *erythropygius*, Elliot, reach to within one inch of the end of the tail; in our bird they do not reach to within 2.5 inches; lastly the rump in our bird is apparently much brighter colored.

- 172.—*Gecinus occipitalis*, Vig. *General*.
 173.—*Chrysophlegma flavinucha*, Gould. *Neighbourhood of Pahpoon and northwards*; only.
 173 bis.—*Chrysophlegma mentalis*, Tem.
 173 ter.—*Chrysophlegma puniceus*, Horsf.
 173 quat.—*Chrysophlegma miniatus*, Forst.
 174.—*Chrysophlegma chlorolophus*, V. *Pahpoon and Kyouknyat*; only.
 176.—*Venilia pyrrhotis*, Hodgs. *Pahpoon and north*.
 177 bis.—*Gecinulus viridis*, Bly. *Pahpoon, Kyouknyat, Pahchaun, Ye, and Meeta Myo*.
 178.—*Micropternus phaiiceps*, Bly. *General*; common.
 184.—*Tiga intermedius*, Bly. *General*; common.
 187.—*Sasia ochracea*, Hodgs. *Pahpoon and neighbourhood, Tavoy and Thayetchaun*.
 187 bis.—*Sasia abnormis*, Tem. *Near Ye*; only.
 191 bis.—*Megalaima virens*, Scop. *Kollidoo, Kyouknyat*. The true Chinese bird, with which I compared it, differing from the Himalayan as pointed out by Swinhoe.
 192.—*Megalaima lineata*, V. *General*; common. Most of them are identical with Himalayan specimens of the type separated as *Hodgsoni*.
 195.—*Cyanops asiatica*, Lath. *Pahpoon and Kollidoo*.
 195 bis.—*Megalaima incognita*, Hume. *Karope, Ye, Amherst*.
 196 ter.—*Megalaima mystacophanos*, Tem. *Om-ben-gwen*.
 197.—*Xantholæma hæmacephala*, Müll. *General*; common.
 198 quat.—*Xantholæma cyanotis*, Bly. *Above Kyouknyat and Meeta Myo*; only.
 200.—*Cuculus striatus*, Drapiez.
 202.—*Cuculus Sonnerati*, Lath.
 203.—*Cuculus micropterus*, Gould.
 207.—*Heirococcyx sparveroides*, Vig. *Pahpoon*; only. A very large male such as Gould designated *strenuus*.
 209.—*Olofygon tenuirostris*, Gr. *Pahpoon, Moulmein, Ye-boo*; rare.
 210.—*Surniculus dicruroides*, Hodgs. *Lemyne*; only; rare.
 211 bis.—*Chrysococcyx xanthorhynchus*, Horsf.
 212.—*Coccytes jacobinus*, Bodd.
 213.—*Coccytes coromandus*, Lin. *Meeta Myo*; only.
 214 bis.—*Eudynamis malayana*, Cab. *Passim*.
 215.—*Zanclostomus tristis*, Less. *Passim*; very common.
 215 bis.—*Zanclostomus javanicus*, Horsf.
 216 ter.—*Phœnicophaus erythrognathus*, Hartl. *Near Zadee*; only; rare.

- 216 *quat.*—*Rhinortha chlorophea*, *Raffl.* *Lemyne, Thayetchoung, near Meeta Myo*; not common.
- 217 *quat.*—*Centrococcyx eurycercus*, *Hay.* *Passim*; vary extraordinarily in size; probably at least two species.
- 218.—*Centrococcyx bengalensis*, *Gm.*
- 223.—*Arachnothera magna*, *Hodgs.* *Kyouknyat and neighbourhood, and near Ye.*
- 224.—*Arachnothera pusilla*, *Bly.* *Kohkrait to Pahpoon*; common; a single specimen from Thayetchaun.
- 224 *bis.*—*Arachnothera modesta*, *Eyton.* *Meeta Myo*; only.
- 225 *ter.*—*Æthopyga Lathamii*,* *Jard.* *General*; south of Moulmein.
- 232 *bis.*—*Leptocoma Hasseltii*, *Tem.* *Om-ben-gwen to Tavoy*; rare.
- 232 *ter.*—*Anthreptes malaccensis*, *Scop.* *Shymootee, Thayetchaun, Amherst*; not common.
- 233 *bis.*—*Chalcoparia cingalensis*, *Gm.* *General*; common.
- 234.—*Arachnechthra asiatica*, *Lin.* *General, north of Ye*; not numerous.
- 234 *ter.*—*Arachnechthra flammularis*, *Bly.* *General*; but not numerous.
- 236.—*Dicaeum cruentatum*, *Lin.* *General*; common.
- 236 *bis.*—*Dicaeum trigonostigma*, *Scop.* *Amherst*; only; rare.
- 237.—*Dicaeum chrysorrhæum*, *Tem.* *Pahpoon, Amherst*; only.
- 237 *bis.*—*Dicaeum virescens*, *Hume.* *Pahpoon and neighbourhood.*
- 250 *bis.*—*Sitta neglecta*, *Walden.* *Dargwin*; only.
- 253.—*Dendrophila corallina*, *Hodgs.* *General*; this is identical with Himalayan specimens.
- 254 *bis.*—*Upupa longirostris*, *Jerd.* *Paphoon and neighbourhood, Moulmein and Amherst*; very few specimens are typical.
- 258.—*Lanius tephronotus*, *Vig.* *Kyouknyat*; only.
- 259.—*Lanius nigriceps*, *Frankl.* *Neighbourhood of Pahpoon*; only.
- 260 *bis.*—*Lanius hypoleucus*, *Bly.* *Kollidoo*; only.
- 261.—*Lanius cristatus*, *Lin.* *Pahpoon, Moulmein, Ngabeemah, Tavoy*; not common.

* Although I for the present record this as *Lathamii*, *Jard.*, I believe it will have to be separated as a distinct species. It is a bigger bird; it has no black internal margin to the moustachial streak: it has the entire cap and not merely the forehead and anterior part of the crown glossed with metallic colors; the upper tail-coverts are bright metallic green, while the metallic gloss of the tail feathers is violet, only slightly touched with green at the extreme margins; the wing lining is pure white; the abdomen, flanks, vent, and lower tail-coverts pale slaty grey, entirely untinted with green. If really new this species will stand as *Æ. cara*.

- 263.—*Tephrodornis pelvica*, *Hodgs.* *General.*
 267.—*Hemipus picatus*, *Sykes.* *Neighbourhood of Pahpoon*; only.
 267 *bis.*—*Hemipus obscurus*, *Horstf.*
 268 *bis.*—*Volvocivora avensis*, *Bly.* *Pabyouk, near Amherst*; only.
 269.—*Volvocivora melaschistos*, *Hodgs.* *Pahpoon, Pabyouk, Ye-boo, Ye.* These are doubtful; we have in India two very different forms, one much darker than the other. I do not know which is the true *melaschistos*. These Tenasserim birds are the less dark form.
 270.—*Graucalus Macei*, *Less.* *General*; common.
 271 *ter.*—*Pericrocotus elegans*, *McClell et Horsf.* *General*; but not numerous.
 273.—*Pericrocotus brevirostris*, *Vig.* *Pine Forests north of Pahpoon*; only.
 275.—*Pericrocotus roseus*, *Vig.* *Pahpoon*; only.
 276.—*Pericrocotus peregrinus*, *Lin.* *Ye-boo, Pabyouk, Amherst.*
 278.—*Buchanga albirictus*, *Hodgs.* *Moulmein, Tavoy*; not common.
 279.—*Dicrurus balicassius*, *Lin.* *Shymootee*; only. Identical with Malaccan specimens.
 280.—*Buchanga longicauda*, *Hay.* *General.* These are mostly the grey or very grey form designated *pyrrhops* by Hodgson and *intermedius* by Blyth, which lie between typical *longicauda* and *leucophæus*.
 282.—*Chaptia ænea*, *V.* *General.* Identical with Himalayan specimens.
 283.—*Bhringa tectirostris*, *Hodgs.* *Pahpoon*; only. Identical with Himalayan specimens.
 285 *bis.*—*Dissemurus paradiseus*, *Lin.* *Passim*; common. This is the smaller-crested species, *rangoonensis*, Gould.
 286.—*Chibia hottentotta*, *Lin.* *Pahpoon, Moulmein, and road between Moulmein and Amherst.*
 288.—*Tchitrea paradisi*, *Lin.* *Near Lemyne*; only. A single immature female; may be *T. atrocaudata*, Eyton.
 289.—*Tchitrea affinis*, *Hay.*
 289 *bis.*—*Philentoma velata*, *Tem.* *Near Om-ben-gwen*; only; very rare.
 290.—*Myiagra azurea*, *Bodd.* *General.* Identical with Continental Indian specimens.
 291.—*Leucocirca albicollis*, *V.* *Pahpoon and neighbourhood*; only.
 293 *bis.*—*Leucocirca javanica*, *Sparrm.* *Tavoy*; only; rare.
 295.—*Culicicapa cinereocapilla*, *V.* *Neighbourhood of Pahpoon*; only.

- 297.—*Alseonax latirostris*, *Raffl.* *Pabyouk and Meeta Myo*; not common.
- 301.—*Eumyias melanops*, *Vig.* *Neighbourhood of Pahpoon*; only.
- 304 *bis.*—*Cyornis elegans*, *Tem.* *Neighbourhood of Pahpoon and near Ye*; only.
- 315.—*Niltava Macgrigoræ*, *Burt.* *three days south of the Pahchaun*; only. Should perhaps be separated; is altogether brighter than Himalayan specimens; if considered distinct may stand as *Niltava vivida*.
- 316.—*Niltava grandis*, *Bly.*
- 317.—*Anthipes moniliger*, *Hodgs.*
- 322 *bis.*—*Siphia erythaca*, *Bly. et Jerd.* *Pine forests north of Pahpoon*; only.
- 323.—*Erythrosterina leucura*, *Gm.* *Neighbourhood of Pahpoon and Ye-boo.*
- 326.—*Erythrosterina maculata*, *Tick.*
- 333.—*Troglodytes* ? *Seen a little north of Pahpoon.*
- 343 *bis.*—*Myiophoneus Eugenei*, *Hume.* *Pahpoon and neighbourhood, Kyouknyat and Pine Forests to the north.*
- 345 *bis.*—*Brachyurus moluccensis*, *Müll.* *Moulmein, Amherst, Tavoy, Skymotee*; May, June, July only.
- 345 *ter.*—*Brachyurus megarhynchus*, *Schl.* *Tavoy and Amherst*; only; May, June, July only.
- 345 *quat.*—*Brachyurus cyaneus*, *Bly.* *Pahpoon and neighbourhood, Amherst, Tavoy.*
- 346.—*Melanopitta cuculata*, *Hartl.* *Amherst*; only. Identical with Himalayan specimens.
- 346 *ter.*—*Anthocincla Phayrei*, *Bly.* *Neighbourhood of Pahpoon.*
- 350 *bis.*—*Zoothera marginata*, *Bly.* *Neighbourhood of Pahpoon.* Compared with type.
- 351 *bis.*—*Cyanocincla solitarius*, *Müll.* *General*; common. Some typical, some absolutely without any red; many intermediate.
- 355.—*Geocichla citrina*, *Lath.* *Neighbourhood of Ye and Amherst.* These are typical; no *innotata* met with.
- 356 *bis.*—*Geocichla innotata*, *Bly.*
- 369 *bis.*—*Turdus obscurus*, *Gm.* *Forests north of Pahpoon.* Identical with Malaccan specimens.
- 375.—*Paradoxornis ruficeps*, *Bly.* *Reed jungle north of Pahpoon.*
- 384 *bis.*—*Gampsorhynchus torquatus*, *Hume.* *Grass and scrub in Pine Forests north of Pahpoon*; only.
- 385.—*Pyctorhis sinensis*, *Gm.* *Pahpoon*; only. This is typical and not *altirostris*, *Jerd.*; if this latter be really distinct.

- 387.—*Trichastoma Abbottii*, Bly. *Lemyne, Ye, Taroy.*
 387 bis.—*Trichastoma minor*, Hume. *Lemyne, Ye, Meeta Myo* ; only.
 388.—*Alcippe nipalensis*, Hodgs. *Pine Forests north of Pahpoon.* Identical with Nipalese specimens.
 389 bis.—*Alcippe Phayrei*, Bly. *Neighbourhood of Pahpoon and Ye.*
 390 ter.—*Turdinus crispifrons*, Bly.
 390 quat.—*Turdinus brevicaudatus*, Bly.
 390 quint.—*Turdinus guttatus*, Bly.
 393.—*Stachyris ruficeps*, Bly. *Neighbourhood of Pahpoon* ; only. This is true *ruficeps* not *rufifrons*, nobis.
 395.—*Mixornis rubricapillus*, Tick. *General* ; common.
 395 bis.—*Mixornis gularis*, Horsf.
 396.—*Timalia pileata*, Horsf. *Pahpoon, Ye-boo.*
 399 ter.—*Pellorneum Tickelli*, Bly.
 399 sextus.—*Pellorneum minor*, Hume. *General* ; common.
 401 ter.—*Pomatorhinus albogularis*, Bly.
 403.—*Pomatorhinus leucogaster*, Gould. *Pahpoon, Ye.*
 405.—*Pomatorhinus erythrogenys*, Vig. *Pine Forests north of Pahpoon.* Identical with the Western Himalayan race, and not with the Sikim and Nepal form.
 407 bis.—*Garrulax Belangeri*, Less. *Passim* ; very common.
 408 ter.—*Garrulax chinensis*, Scop. *Pahpoon* ; only. Pretty common.
 412.—*Garrulax pectoralis*, Gould.
 413.—*Garrulax moniliger*, Hodgs. *General* ; common.
 415 ter.—*Trochalopteron melanostigma*, Bly. *Pine Forests north of Pahpoon.*
 429 ter.—*Malacias melanoleuca*, Bly.
 440.—*Megalurus palustris*, Horsf. *Pabyouk* ; only.
 444 bis.—*Hypsipetes concolor*, Bly. *Pine Forests north of Pahpoon.* This is also *H. yunnanensis*. Why before redescribing this species Dr. Anderson failed to compare his specimens with Blyth's type in the Museum, of which he is curator, I cannot tell. My specimens agree absolutely both with Blyth's type and Anderson's description.
 447bis.—*Hypsipetes Tickelli*, Bly. *Forests north of Pahpoon* ; only.
 448 bis.—*Hemixus Hildebrandi*, Hume. *Forests north of Pahpoon* ; only.
 449 bis.—*Trachycomus ochrocephalus*, Gm.
 451.—*Criniger flaveolus*, Gould.
 451 bis.—*Criniger griseiceps*, Hume. *North of Pahpoon* ; only.

- 451 *ter.*—*Criniger ochraceus*, Moore. *Amherst, Ye, Meeta Myo, Tavoy*; not uncommon.
- 451 *quat.*—*Criniger phaiiocephalus*, Hartl.
- 452 *bis.*—*Ixos flavescens*, Bly. *North of Pahpoon*; only.
- 452 *ter.*—*Ixos Finlaysoni*, Strickl. *Very common south of Moulmein.*
- 452 *quint.*—*Iole viridescens*, Bly. *Amherst, Ye, and neighbourhood of Pahpoon.*
- 456.—*Rubigula flaviventris*, Tick. *Passim*; common.
- 457 *bis.*—*Brachypodius melanocephalus*, Gm. *Neighbourhood of Pahpoon, Amherst, &c.*; pretty common.
- 457 *quint.*—*Iridia cyaniventris*, Bly.
- 460.—*Otocompsa emeria*, Shaw. *General.*
- 461 *bis.*—*Molpastes nigropileus*, Bly. *Moulmein, Ngabeemah, Amherst.*
- 461 *ter.*—*Molpastes chrysorrhoides*, Lafr. *Neighbourhood of Pahpoon, Meeta Myo Hills, Tavoy.* This is the Chinese bird, described by Lord Walden long ago as *atricapilla*, V. Madras, J. of S., XIII p. 160, and is identical with Chinese specimens with which I have compared it. Gray is wrong in uniting this with *pusillus*, Blyth.
- 463 *ter.*—*Phyllornis chlorocephalus*, Walden. *General*; but not common.
- 465.—*Phyllornis aurifrons*, Tem. *General*; pretty common. Identical with Himalayan specimens.
- 466 *bis.*—*Phyllornis javensis*, Horsf. *Ye*; rare.
- 468.—*Ægithina tiphia*, L. *General.* The majority certainly in the *tiphia* plumage, but some inseparable from Ceylon specimens of the so-called *zeylonica* with which we compared them.
- 468 *bis.*—*Ægithina Lafresnayi*, Hartl.
- 468 *ter.*—*Ægithina scapularis*, Horsf.
- 469.—*Irena puella*, Lath. *Passim*; common This is the Continental form not *malaiensis* with the long under tail-coverts.
- 471.—*Oriolus chinensis*, Lin. *Moulmein and south*; only. These, Chinese, and Southern Indian examples are all identical.
- 471 *ter.*—*Oriolus tenuirostris*, Bly. *Kollidoo*; only; rare.
- 472.—*Oriolus melanocephalus*, Lin. *General*; common.
- 474.—*Oriolus Trailli*, Vig. *Above Kyouknyat*; rare.
- 475.—*Copsychus saularis*, Lin. *General*; common. Some typical, some intermediate between this and *mindanensis*.
- 476.—*Cercotrichas macrurus*, Gm. *Passim*; common.
- 477.—*Notodela leucura*, Hodgs.
- 481.—*Pratincola caprata*, Lin. *Pahpoon, Pabyouk, Ngabeemah, Yeboo*; not common.

- 483.—*Pratincola rubicola*, Lin. *Pahpoon, Pabyouk*; rare.
- 484.—*Pratincola leucura*, Bly. *Seen at Pahpoon*; common in jheels.
- 486.—*Pratincola ferrea*, Hodgs. *Forests north of Pahpoon.*
- 507 bis.—*Larvivora cyane*, Pall. *Pahpoon and neighbourhood*; common; near *Om-ben-gwen*, single specimen. This species well figured by Radde is entered in Mr. Gray's Hand List as *gracilis*, Swinh.
- 512.—*Calliope camtschatkensis*, Gm. *Pahpoon*; only; rare.
- 517 ter.—*Acrocephalus Maackii*, Schrenk; *bistrigiceps*, Swinh. *Tavoy*; only; not uncommon.
- 518.—*Arundinax ædon*, Pall. *Neighbourhood of Pahpoon.*
- 520 ter.—*Locustella lanceolata*, Tem. *Ye-boo*; only; not uncommon. Appears distinct from my *subsignata*, from the Andamans with which Walden unites it.
- 527 quat.—*Horeites pallidipes*, Blanf. *Pahpoon*; only; rare.
- 530.—*Orthotomus longicauda*, Gm. *General*; not uncommon.
- 530 bis.—*Orthotomus nitidus*, Hume. *Pahpoon, Kyouknyat, Thayetchaun*; rather rare.
- 532.—*Prinia flaviventris*, Deless.
- 536.—*Prinia gracilis*, Frankl. *Kollidoo*; only; not common. A dark race ought probably to be separated.
- 538 bis.—*Prinia Beavani*, Wald. *Pretty general*; not uncommon.
- 539.—*Cisticola schœnicola*. *Tavoy and Amherst.*
- 555.—*Phylloscopus fuscatus*, Bly. *Ye-boo, Pahpoon, and neighbourhood.*
- 556 bis.—*Phylloscopus borealis*, Blas. *Kyouknyat and Shymotee.* Specimens received thro' Capt. Marshall from Mr. Swinhoe, labelled *sylvicultrix* by him, were simply *maguirostris*, Blyth. He identified his *sylvicultrix* as *borealis*, but now that I have the true *borealis* I find it perfectly different from what I received from him as *sylvicultrix*.*
- 556 ter.—*Phylloscopus Brooksi*, Hume. *Pahpoon*; only; not uncommon.
- 558.—*Phylloscopus lugubris*, Bly. *Pahpoon*; only.
- 560.—*Phylloscopus viridanus*, Bly. *Neighbourhood of Pahpoon.*
- 561.—*Phylloscopus affinis*, Tick.
- 564.—*Reguloides trochiloides*, Sund. *Neighbourhood of Pahpoon.*
- 565.—*Reguloides superciliosus*, Gm. *Kollidoo, Pahpoon, and its neighbourhood.*

* Mr. Swinhoe's specimens were labelled many years ago, and doubtless in those days, like most of us, he was somewhat uncertain about these troublesome little birds. I merely mention the matter with reference to what I said.—ST. FEA, I, 494.

- 566.—*Reguloides proregulus*, *Pall.* *Pine Forests north of Pah-poon.*
- 567.—*Reguloides viridipennis*, *Bly.*
- 569 *bis.*—*Callicipeta tephrocephalus*, *Anderson.* *Neighbourhood of Pahpoon.*
- 574.—*Abornis superciliaris*, *Tick.* *North of Pahpoon.*
- 584 *ter.*—*Enicurus Leschenaultii*, *V.* *Neighbourhood of Pahpoon, Meeta Myo.*
- 586.—*Enicurus schistaceus*, *Hodgs.* *Pahpoon to Pahchaun and Meeta Myo.* This is the Indian form, NOT *leucoschistos*, *Swinh.*
- 590.—*Motacilla luzoniensis*, *Scop.* *Passim*; common in the winter.
- 591 *bis.*—*Motacilla dukhunensis*, *Sykes.* *Single specimen obtained at Pahpoon*; a typical *dukhunensis*.
- 592.—*Calobates melanope*, *Pall.* *General*; common.
- 593 *ter.*—*Budytes cinereocapilla*, *Sari.* *South of Moulmein*; only.
- 594.—*Budytes calcaratus*, *Hodgs.* *Single immature specimen at Pahpoon.* I suspect that this is the true *calcaratus*, and that it will prove distinct from the Cashmere *citreoloides*, *Gould.*
- 595.—*Nemoricola indica*, *Gm.* *Pahpoon, Ye, Ye-boo*; not common.
- 596.—*Pipastes agilis*, *Sykes.* *Pretty general.*
- 599.—*Corydalla Richardi*, *V.* *Pahpoon, Tavoy, Moulmein.*
- 600.—*Corydalla rufula*, *V.* *Pabyouk, Amherst, Tavoy.*
- 605 *bis.*—*Anthus cervinus*, *Pall.* *Moulmein to Ye*; not common.
- 610 *bis.*—*Allotrius ærulatus*, *Tick.*
- 615.—*Leiothrix argentauris*, *Hodgs.*
- 619.—*Minla castaneiceps*, *Hodgs.*
- 621 *bis.*—*Proparus dubius*, *Hume.* *Pine Forests north of Pahpoon*; there common.
- 625.—*Ixulus striatus*, *Bly.*
- 630.—*Erpornis xantholeuca*, *Hodgs.* *North of Pahpoon*; rare.
- 631.—*Zosterops palpebrosus*, *Tem.*
- 631 *quat.*—*Zosterops siamensis*, *Bly.*
- 645 *bis.*—*Parus commixtus*, *Swinh.* *Pine forests north of Pahpoon.*
- 649 *bis.*—*Machlolophus subviridis*, *Tick.*
- 650.—*Melanochlora sultanea*, *Hodgs.* *Pahpoon and neighbourhood and Meeta Myo.* Identical with Himalayan specimens.
- 660.—*Corvus Levallantii*, *Less.* *Pretty general.*

- 663.—*Corvus impudicus*, *Hodgs.* *Plain country Passim.* This is the so-called dark race; size and shape of *impudicus*, but has the grey of the latter constantly entirely replaced by dull black. I have as yet obtained no intermediate forms; it seems to require specific separation; if not already named, may stand as *insolens*, nobis.
- 669 *bis.*—*Garrulus leucotis*, *Hume.* *Pine Forests north of Pahpoon*; rare.
- 671 *bis.*—*Urocissa magnirostris*, *Bly.* *Pahpoon, Amherst, Meeta Myo.* Doubtfully distinct.
- 673.—*Cissa speciosa*, *Shaw.* *Passim*; common.
- 674.—*Dendrocitta rufa*, *Scop.* *Passim*; common.
- 676.—*Dendrocitta himalayensis*, *Bly.* *North of Pahpoon.* Absolutely identical with the Himalayan bird.
- 678 *bis.*—*Crypsirina varians*, *Lath.* *Passim*; common.
- 678 *quat.*—*Temnurus leucopterus*, *Tem.* *Meeta Myo*; only. Identical with Malaccan examples.
- 683 *bis.*—*Sturnopastor superciliaris*, *Bly.* *General*; very common.
- 684.—*Acridotheres tristis*, *Lin.* *Passim*; common.
- 686.—*Acridotheres fuscus*, *Wagl.* *Moulmein and southwards.* Somewhat darker race, approaching *siamensis*.
- 688.—*Temenuchus malabaricus*,* *Gm.* *Passim*; common.
- 689 *quint.*—*Temenuchus dauricus*, *Pall.* *Moulmein, Tavoy, and Amherst*; not common.
- 690 *ter.*—*Calornis affinis*, *Hay.* *South of Moulmein* only. These though not typical are nearer the Tipperah birds than the Sumatran *insidiator*, or the Nicobar and Andaman *Tytleri*.
- 691.—*Saroglossa spiloptera*, *Vig.*
- 693.—*Eulabes javanensis*, *Osbec.* *Hills, Passim*; much the same size of bill as specimens from Sikhim and Nepal Terai.
- 693 *sextus.*—*Ampeliceps coronatus*, *Bly.* *South of Moulmein*; only.

* The Burmese race of *malabaricus* is very distinguishable, and may have hereafter to be specifically separated. The adult males differ conspicuously; they always have the lower parts a much paler rufous, which rufous extends much less on to the breast than in *malabaricus*. They have the upper tail-coverts much more strongly tinged with a kind of rufous golden tint; and lastly, they always have, so far as our numerous specimens go, a larger or smaller patch of pure white on the wing; this patch however is variable in extent; sometimes the entire winglet and the whole of the primary greater coverts are snow white; and this appears to be typical of the oldest adults, while in the younger males only some of these feathers will be pure white; and in a quite young male only one single one of the coverts is white and no portion of the winglet.

The females only differ in being much paler underneath than adult female *malabarica*. If considered distinct it may stand as *T. leucopterus*, nobis.

- 694.—*Ploceus baya*, Bly. *Pretty general*; identical with Continental Indian specimens.
- 696 *ter.*—*Ploceus hypoxanthus*, Daud.
- 698.—*Munia atricapilla*, V. *Ye-boo*; only; rare.
- 699.—*Munia punctulata*, ?* *Lin.* *Tavoy*; only; rare.
- 702.—*Munia acuticauda*, Hodgs. *Passim*.
- 704.—*Estrilda amandava*, Lin.
- 708 *bis.*—*Passer flaveolus*, Bly.
- 710.—*Passer montanus*, *Lin.* *Passim*; common.
- 722 *bis.*—*Euspiza rutila*, *Pall.* *Neighbourhood of Pahpoon*; rare.
- 723.—*Euspiza aureola*, *Pall.* *Passim*; common. I cannot clearly separate *flavocollaris*, McClell: Mr. Gray accepts it as a distinct species; if distinct it occurs as plentifully as *aureola*, but it seems to me merely a stage of the latter.
- 771.—*Treron nipalensis*, Hodgs. *Passim*; common.
- 773 *bis.*—*Crocopus viridifrons*, Bly. *Pahpoon*; only.
- 774.—*Osmotreron bicincta*, *Jerd.* *General*; common.
- 776.—*Osmotreron Phayrei*, Bly. *General*; common.
- 778.—*Sphenocercus sphenurus*, *Vig.* *Hills north of Pahpoon*; not common.
- 779.—*Sphenocercus apicaudus*, Hodgs. *Hills north of Pahpoon*; not common.
- 780.—*Carpophaga ænea*, *Lin.* *General*; not common.
- 781.—*Carpophaga insignis*, Hodgs.
- 782.—*Alsocomus puniceus*, *Tick.* *Pahpoon*; only; rare.
- 791.—*Macropygia tusalia*, Hodgs. *Kollidoo*; rare.
- 791 *quat.*—*Macropygia assimilis*, *Hume.* *Kollidoo*; rare.
- 793.—*Turtur meena*, *Sykes.* *Pahpoon and neighbourhood*; only; common.
- 795 *bis.*—*Turtur tigrina*, *Tem.* *Passim*; common.
- 797.—*Turtur humilis*, *Tem.* *Pabyouk and Tavoy*; not common.
- 798.—*Chalcophaps indica*, *Lin.* *General*; not common.
- 798 *ter.*—*Calanas nicobarica*, *Lin.*
- 803 *bis.*—*Pavo muticus*, *Lin.* *General*; but very local.
- 803 *ter.*—*Argus giganteus*, *Tem.*
- 803 *quint.*—*Polyplectron bicalcaratum*, *Lin.*
- 809 *bis.*—*Euplocamus Vieillotii*, G. R. Gr.

* This *Munia* (*punctulata*) is not identical with the Continental *punctulata*. The brown of the upper surface is of a different hue; all the feathers of the head, neck, mantle, and rump have very conspicuous pale shafts. The rump is greyer, the feathers being more conspicuously fringed with greyish white, and the tail and upper tail coverts are fringed and tinged with an olive yellow, and not the golden yellow Continental specimens exhibit. If it is ever considered necessary to separate this form it may stand as *M. superstriata*, nobis.

- 811 *ter.*—*Gallophasis lineatus*, Lath. General in the Hills; not very common.
- 812.—*Gallus ferrugineus*, Gm. Pahpoon; very common. Amherst.
- 824 *quat.*—*Arboricola brunneopectus*, Tick. North of Pahpoon; rare.
- 824 *quint.*—*Arboricola chloropus*, Tick. Neighbourhood of Pahpoon; common.
- 824 *Sextus.*—*Arboricola Charltoni*, Eyton.
- 831 *bis.*—*Phænicoperdix chloropus*, Bly.
- 831 *ter.*—*Rollulus roulroul*, Scop.
- 831 *quat.*—*Caloperdix oclea*, Tem. *ocellatus*, Raffl.
- 833.—*Turnix pugnax*, Tem. Pabyouk; only; rare.
- 834 *bis.*—*Turnix maculosus*, Tem. Kollidoo; only.
- 842.—*Glareola orientalis*, Leach. Kokbaing and Ye; not common.
- 845.—*Charadius fulvus*, Gm. Ye; not common.
- 847.—*Ægialitis mongolicus*, Pall. Crab Is., Tavoy River; only.
- 849.—*Ægialitis fluviatilis*, Bechst. Ye, Ye-boo, and Tavoy.
- 854.—*Chettusia cinerea*, Bly. Ye; only. Identical with *Calcutta specimens*. I cannot discover that either in size or color *inornata*, Schl., differs in any way.
- 855 *bis.*—*Lobivanellus atronuchalis*, Bly. South of Moulmein; only.
- 857.—*Hoplopterus ventralis*, Cuv. Salween and Younzaleen Rivers; only; not in Attaran or Tavoy River.
- 858.—*Esacus recurvirostris*, Cuv. Seen on Attaran River; only.
- 867.—*Scolopax rusticola*, Lin. Skin in Col. D. Brown's possession; shot by him at Moulmein some three years ago.
- 870.—*Gallinago Horsfieldii*, Gr. General; common, south of Moulmein.
- 871.—*Gallinago scolopacina*, Bonap. Pabyouk; apparently rare.
- 876.—*Terekia cinerea*, Gûldenst. Tavoy; only.
- 877.—*Numenius arquatus*, Lin. Tavoy and Amherst. Seem to differ somewhat from Indian birds.
- 878.—*Numenius phæopus*, Lin. Tavoy and Amherst.
- 884.—*Tringa damacensis*, Horsf. Ye; only; apparently rare.
- 885.—*Tringa Temminckii*, Leisl. Ye-boo, Ye, Tavoy; not common.
- 887.—*Eurinatorhynchus griseus*, Nilss.
- 891.—*Totanus glareola*, Lin. Passim; common.
- 893.—*Actitis hypoleuca*, Lin. Passim; very common.
- 894.—*Totanus canescens*, Gm. Pabyouk, Ye-boo.

- 895.—*Totanus stagnatilis*, *Bechst.* *Ye-boo*; only; apparently not common.
- 897.—*Totanus calidris*, *Lin.* *Long Is., Tavoy River*; only.
- 900.—*Metopodius indicus*, *Lath.* *Pahpoon, Ye-boo, Ngabeemah.*
- 902.—*Porphyrio neglectus*, *Schlegel.* *Ye-boo.*
- 903 *bis.*—*Podica personata*, *Gr.*
- 904.—*Gallix cinerea*, *Gm.* *Tavoy, Shymootee, Attaran River*; common at Tavoy.
- 905.—*Gallinula chloropus*, *Lin.* *Pahpoon, Tavoy, Ye-boo*; common.
- 907.—*Porzana phœnicura*, *Penn.* *Passim*; very common.
- 910.—*Porzana pygmaea*, *Naum.* *Tavoy*; only.
- 912 *bis.*—*Porzana fasciata*, *Raffl.* *Amherst*; only. Identical with Malaccan specimens.
- 913.—*Hypotaenidia striata*, *Lin.* *Tavoy and Attaran River.*
- 915.—*Leptoptilus dubius*, *Gm.* *Seen*; from Moulmein to Ye.
- 916.—*Leptoptilus javanica*, *Horsf.* *Seen*; from Moulmein to Ye.
- 917.—*Mycteria australis*? *Lath?* *indica*; *Lath.*
- 920.—*Melanopelargus episcopus*, *Bodd.*
- 922.—*Ardea sumatrana*, *Raffl.*
- 924.—*Ardea purpurea*, *Lin.* *Tavoy*; only; rare.
- 925.—*Herodias alba*, *Lin.* *Henza Basin and Crab Is., Tavoy River*; should probably stand as *H. egretta*, *Gm. nec Tem.*
- 927 *bis.*—*Herodias melanopus*, *Wagl.* *Pahpoon, Tavoy.*
- 929.—*Bubulcus coromandus*, *Bodd.* *General.*
- 930.—*Ardeola Grayii*, *Sykes.* *Pahpoon and Long Is., Tavoy River.*
- 930 *bis.*—*Ardeola prasinoscelsis*, *Swinh.* *Tavoy and Ye-boo.* Identical with Chinese specimens, entire head and neck and long crest-feathers deep chesnut, and back slaty black.
- 931.—*Butorides javanicus*, *Horsf.* *Passim*; common.
- 932.—*Ardetta flavicollis*, *Lath.* *Amherst*; only.
- 933.—*Ardetta cinnamomea*, *Gm.* *Amherst, Tavoy, Om-bengwen.*
- 934.—*Ardetta sinensis*, *Gm.* *Tavoy, Meeta Myo, Amherst.*
- 936 *bis.*—*Goisakius melanolophus*, *Raffl.*
- 937.—*Nyctiardea nycticorax*, *Lin.* *Ye-boo.*
- 938.—*Tantalus leucocephalus*, *Gm.* *Tavoy River*; only.
- 941.—*Thresciornis melanocephalus*, *Lin.*
- 951.—*Nettapus coromandelicus*, *Lin.* *Ye and Tavoy.*
- 952.—*Dondrocygna arcuata*, *Cuv.* *Pahpoon, Ye, Amherst, Tavoy*; common.
- 955.—*Anas scutulata*, *Müll.*
- 965.—*Querquedula ciria*, *Lin.*

- 976.—*Thalassidroma?*
 677 bis.—*Stercorarius pomarinus*, Tem.
 983 bis.—*Gelochelidon innotata*, Beavan.
 985.—*Seena seena*, Sykes. *Salween River*.
 988 bis.—*Sterna Jerdoni*, Beavan.
 991.—*Onychoprion melanauchen*, Tem.
 992.—*Onychoprion anosthatus*, Scop.
 1005.—*Graculus carbo*, Lin.
 1007.—*Graculus melanognathus*, Brandt. *Palphoon, Ye-boo* ; common.
 1008.—*Plotus melanogaster*, Penn. *Palphoon, Ye-boo, Ye* ; common.

Note on *Carcineutes amabilis*.

By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c.

IN Vol. I of this Journal (p. 474) Mr. Hume describes a new species of *Carcineutes* from Pegu, about which I would like to say a few words. I know this bird of Mr. Hume's, I believe, for Mr. Gould has long had a Siamese specimen in his collection which he wanted me to describe and figure in my 'monograph.' The characters he assigned to his supposed new species were much the same as those brought forward by Mr. Hume, namely, the continuous blue of the head and back and the absence of the rufous collar. But this bird I would never allow Mr. Gould to describe; and now that Mr. Hume has done so, it seems only fair to the former gentleman to give my reasons why *Carcineutes amabilis* is not distinct from *G. pulchellus*. The Javan bird was one of the first that I figured in my book; it came out, indeed, in the first number when Mr. Keulemans was living in Holland and drawing birds for me from the Leiden collection, as I from time to time indicated to him. This state of things did not, it is true, last long, for, after finishing two parts, Mr. Keulemans was able to come over to England and carry on my work here; but among the inconvenient results of my separation from my artist is the fact that my description of *C. pulchellus* does not tally with the figure in the plate, as they were taken from different specimens. Candidly speaking, I did not observe this difficulty about the blue collar until long after the part was published and Mr. Gould produced his second species. On turning over my series, however, I came to the conclusion that the Siamese bird was only the

ordinary *C. pulchellus*, and I am inclined to consider Mr. Hume's new Kingfisher to be likewise identical. I challenged Mr. Keulemans at once as to the correctness of his drawing in the 'monograph,' but he was certain that it was correct, and that the specimen figured had no rufous collar; nor have I any reason to doubt this assertion, for I have a specimen now before me from Java in which the rufous collar is entirely concealed. Mr. Hume says that "on lifting the feathers it is always apparent enough, but in the Pegu birds it is absolutely wanting." This will not apply to the Siamese specimen referred to, for although the blue head appears to be continuous with the back, on examining the plumes of the hind neck, traces of the rufous collar can be found still *staining* the blue feathers, while in a beautiful skin, prepared by Mr. Wallace, the rufous collar is shaded either by approaching or disappearing blue. What I mean is, that the blue supersedes the rufous by a gradual change of feather and not by a moult. I regret the fact that no mention is made of this subject in my monograph, where I ought not to have overlooked such an important difference; but I have examined many specimens since, and I incline to an opinion that the rufous collar disappears with age, for the Java birds, which I mention above as having a rufous collar concealed by the blue, is quite a nestling, with the horny tip to his little black beak, and with his wings and tail not half grown. This shows that the young male resembles the old bird from the nest.

On comparing Malacca females, I think that there is so much variation in the extent of the ochre and black banding as to dispel the characters of the female *C. amabilis*; one of them might be described as "ochraceous, comparatively narrowly banded with black." This specimen has a very few bars on the breast, and with the darker coloration of the back the breast seems to become more thickly barred, and a delicate bluish or lilac lustre is also apparent on the latter part. Until, therefore, some further explanation of the plumages of these birds is brought forward, I must give my verdict against the recognition of *Carcineutes amabilis* as a species.

R. B. SHARPE.

MR. SHARPE'S view is most probably correct, but what I should be led to suspect is, that the Pegu race wants the rufous collar, that the Javan bird has it, and that in intermediate localities intermediate forms occur. If this could be shown to be

the case, then it would be quite in accordance with my views to suppress *C. amabilis*, but according to the common practice, e. g., *Coracias indica* and *affinis*, it should be retained.

I cannot at present accept the view that the rufous collar disappears with age. I have examined more than twenty specimens of males from the Straits, and not one of these wants the rufous collar. It is against all probabilities that out of this large number not one should have been an old bird.

I may add, for what it is worth, that specimens from Amherst (I have only two males, one a nestling, with a tail about 1 inch in length and a still shorter bill, the other an adult) rather favor the view of the gradual local grading of a collared into a collarless race. The nestling has only an imperfect very narrow collar, one or two of the blue feathers of the back of the neck, however, exhibiting, when lifted, a slight rufous tinge. In the adult the collar is perfect, but still *very* narrow, far narrower, I may say *strikingly* narrower, than in any of our large Straits' series. Amherst is some 250 miles south of the locality in which the type of *amabilis* was procured, and in its physical conditions much more nearly assimilates to the Straits than to the dry Red pine-clad hills on the extreme north of Pegu.

One more point I gather from the comparison of these two specimens, viz., that the collar is *better* developed in the adult than in the young; and this too I take to be the true lesson to be read in the nestling referred to by Mr. Sharpe, and not as he holds, that the collar disappears by age.

A. O. H.

Megalaima incognita, *Hume*.

My friend, Captain G. F. L. Marshall, writes as follows:—

"Is not your new Barbet, *Megalaima incognita* (described in STRAY FEATHERS, Vol. II, p. 442), identical with *M. Humei* (Marshall), described in the *Ibis* for 1870, p. 536?" The diagnosis does not distinguish between the two, which leads me to think that you overlooked the latter. In the detailed description, however, you mention a black superciliary streak and a black cheek stripe. In these points and in the blue washing being more distinct on the throat seem to exist the only differences in colouring between the bird now described and *M. Humei*. The black supercilium and ear-coverts it has in common with

M. mysticophanos, with which species *M. Humei* was long confounded.

"If I am correct in believing that your new bird is *M. Humei*, the locality is very interesting, as all the Museum specimens I have seen had come from Borneo."

As a fact, though I seem to have failed to make it clear, no two species of the genus are more distinct than *Humei* and *incognita*. In my diagnosis it is said of *incognita* that it has a narrow frontal band and a *small patch* on the nape, dark crimson. Now, *Humei* has no such frontal band, and has the major portion of the crown, a part of the occiput (and no part of the nape), crimson.

As I have now before me four fine specimens of *incognita* (3 adults and 1 young), it may be well to point out more in detail how this new species differs from *Humei* and other more nearly allied species.

In the first place, it is a smaller bird altogether than *M. Humei*, with a bill not more than half the size; it has a crimson frontal band, which *Humei* has not; it has no tinge of yellow on the forehead, which *Humei* has; it has no red on the crown or occiput, only a small red patch about the size of a pea (wanting altogether in the young) at the base of the nape; it has a marked black supercilium and a marked black moustachial stripe. It has a conspicuous ring of bright yellow eyelash feathers.

It belongs to the same sub-group as *Megalaima asiatica*, *nuchalis*, and *oorti*, and though it differs conspicuously from all of them, more nearly resembles these than any other known Barbet.

From the first it differs in being somewhat smaller, in having a basally more compressed and somewhat slenderer bill, in having no black coronal band, and only the lores, a narrow frontal band, and a small nuchal patch crimson, in having conspicuous black superciliary and moustachial stripes, prolonged above and below and almost meeting behind the ear-coverts, &c. From the two latter it differs in having no yellow (except in the ophthalmic ring) about the head (or indeed anywhere), in the crimson nuchal and pectoral patches being much smaller, and in the former being higher up than in *nuchalis* and lower down than in *oorti*, &c.

There is no possible question as to the distinctness of this species, of which my specimens were obtained in thin tree jungle, (1 and 2) near Amherst, (3) near Karopi, (4) further south, about 5 miles north of Ye. *As yet* we have not observed it elsewhere in Tenasserim.

Lophophorus Sclateri, Jerd.

THROUGH the kindness of Mr. J. Wood-Mason I have had an opportunity of examining a skin of a very fine male of this rare species.

A few measurements taken from this skin and a brief description may be useful to some of my readers:—

Length, 27; wing, 12·4; tail, from vent, 9; bill, at front, straight, 1·3; from gape, 1·95; tarsus (feathered in front and at the sides for 1·2), 3·2; mid toe, to root of claw, 2·45; claw, 0·75; hind toe, to root of claw, 0·8; claw, 0·6.

On one leg a short blunt spur, 0·5 in length, on the other merely a low horny boss.

The fifth quill is the longest, the sixth sub-equal, the fourth 0·3, the third 0·9, the second 2·1, and the first 2·6 shorter than the longest.

There is a large bare space all round the eye, which, in the fresh bird, is bright blue. The irides were brown. The legs and feet dark brown. The bill yellowish horny.

The entire lower parts, including the wing lining, velvet black; the feathers in one light with a dim slightly greenish, and in another light with a faint purplish reflection.

The sides, top, and back of the head metallic green; all the occipital and nuchal feathers curled up, much like the feathers on a pelican's neck; the ear-coverts metallic green, with a decided steel blue glance; the entire back and sides of the neck rich burnished copper color; base of the back of the neck and entire interscapular region very bright metallic green, scarcely at all mingled with any other colored reflections; middle back, rump, and upper tail-coverts pure silvery white; most of the feathers of the rump dark shafted; tail a deep maroon chesnut, all the feathers broadly tipped with white; primaries and their greater coverts and secondaries black, the latter with metallic reflections towards the tips on the outer webs. The rest of the wing and scapulars all with a brilliant metallic lustre as it were burnished, mostly more or less green in one light; but the feathers about the shoulder of the wing with a deep steel blue and purple glow; the lesser coverts immediately below these with an intense ruddy golden or coppery glow, and most of the lesser and median coverts and the outer scapulars with more or less of golden or coppery reflections in different lights.

With the sole exception of the crest, which is insignificant as compared with that of *Impeyanus*, the present species is, I think, decidedly handsomer than the common one.

No European, I believe, has ever shot this Moonal; the few specimens hitherto procured have been brought in by the Arbors, Mishmees, or other aboriginal tribes from the hills on the extreme eastern limits of the valley of Assam.

Note on *Pelargopsis intermedia*, Hume.

BY R. BOWDLER SHARPE, F.L.S., F.Z.S., &C., OF THE
ZOOLOGICAL DEPARTMENT, BRITISH MUSEUM.

MR. HUME having kindly sent over for my inspection a specimen of his new *Pelargopsis* from the Nicobars, I have compared it with *P. leucocephala*, to which, as he surmises, it is nearly akin. I very much doubt if the Kingfisher from Sumatra, which Mr. Davison (*Stray Feathers*, I., p. 449) saw but did not obtain, would be the same as the Nicobar bird, i.e., *P. intermedia*; it would be probably the small Sumatran race of *P. Fraseri*, mentioned by me (*P. Z. S.*, 1870, p. 65) and figured in my 'monograph' (pl. 33). This identical specimen passed last year with the rest of Mr. Wallace's collection into the British Museum, and is now before me. I do not see any reason to modify my conclusion that it is a small race of *P. Fraseri*; and I shall not give it a name, because it seems to me probable that a reconsideration of the whole genus will shortly become necessary, as the different Malayan and Indian islands bring new species before our notice, and it will require much care and no small amount of patience to distinguish some of them in a patent and recognisable manner. After all, the differences which separate them may ultimately turn out to be of less value than I have been used to consider them, and they may be considered as races or rather sub-species of one prevalent form. As the genus now stands, however, *P. intermedia* is entitled to the same rank as *P. Fraseri* and *P. leucocephala*. Being much more blue than the two last-named birds, it is more nearly allied to the Bornean *P. leucocephala*, but it differs in two important particulars, viz., in the deep colored under parts and in the color of the blue of the back. I do not think much of the depth or paleness of the ochre on the breast, as it seems to bleach, nor do I attach much importance to the crown, as Mr. Hume (*STRAY FEATHERS*, II., p. 166) seems to do, for it is certain that the uncapped species of *Pelargopsis* have occasionally a strong inclination towards a cap, and these, I fancy, are young birds; for I generally

find that the markings on the head are more plain in those specimens which have brown margins to the feathers of the breast and hind neck and ochraceous edgings to the wing-coverts, these last being undoubtedly characters of the young. The color of the under parts is very rich ochre in *P. intermedia*, and is continued right up to the chin; of course with only one specimen I cannot say how far this character would be constant in a series, but all the Bornean birds now before me have whitish throats. The blue of the back is also different from that of *P. leucocephala*, being, as Mr. Hume remarks, of a rich smalt. I think, therefore, that *P. intermedia* must be kept as a good species.

Additional Notes on the Avifauna of the Andaman Islands.

SINCE I published my long paper on the ornithology of the Islands of the Bay of Bengal, I have received many specimens from the Andamans, and I have met with various notes by Mr. Sharpe, Lord Walden, &c., on birds belonging to these islands which require notice.

The result of further observations and identification is that four species have to be added to our list.

- (1) *Ephialtes modestus*, *Walden*.
- (2) *Geocichla andamanensis*, *Walden*.
- (3) *Emberiza pusilla*, *Pall*.
- (4) *Tringa crassirostris*, *Tem. et Schleg*.

That the supposed *Cyanocinclla cyamus*, L., of which we obtained no specimens, should stand as *C. solitarius*, Müll., and that the tern which I considered intermediate between *gracilis*, Gould, and *paradisea*, Brünn, has been identified as the latter by Mr. Howard Saunders. I may add that I have discovered that by a *lapsus calami* I entered *Turdus pallidus*, Gm., for *Turdus obscurus*, Gm.

Three supposed new species—

- (1) *Alcedo rufigastrea*, *vel* *Beavani*, *Wald*.
- (2) *Ianthænas nicobarica*, *Wald*.
- (3) *Megapodius trinkutensis*, *Sharpe*.

I am unable to admit, as such, for reasons given below

Lastly, a large series of *Euryzona Canningi* enable me to give full measurements recorded in the flesh and a fresh description of this rare and beautiful Rail.

39 quat.—*Spilornis Davisoni*, Hume.

Other specimens received during the summer from Captain Wimberley, together with numerous specimens of *Rutherfordi* obtained by Davison in Tenasserim, leave no possible doubts as to the distinctness of the present species.

Rutherfordi may also occur at the Andamans, but *Davisoni* is a perfectly distinct bird, which the tarsi and feet alone suffice (*vide ante*, p. 148) to separate.

74 quat.—*Ephialtes Balli*, Hume.

Several specimens, since obtained, adults, half grown, and young, show that the bird described at page 151 of this present volume is really the nestling of the present species, of which the type, still in the Indian Museum, was described, STRAY FEATHERS, Vol. I., p. 407. This is, I think, the handsomest as well as the gamest looking of all our Indian Scops Owls, of which we must now, I think, admit the following eleven species :—

74.	<i>Ephialtes pennatus</i> , Hodg.
74 bis	„ sunia, „
74 ter	„ spilocephalus, Blyth.
74 quat	„ Balli, Hume.
74 quint	„ modestus, Walden.
74 sex	„ Brucei, Hume.
75	„ lettia, Hodg.
75 bis	„ plumipes, Hume.
75 ter	„ bakhamuna, Forst.
75 quat	„ malabaricus, Jerd.
75 quint	„ lempigi, Horsf.

Of all these, except *modestus*, I have now several specimens (I have recently again received *Brucei*, a very marked species, from Mahabuleshwur), and of most of them large series.

As regards the first two on the list, recent instances in which grey birds with only a little rufous about them have been obtained, together with perfectly similar young, and Hutton's experience of always finding bright rufous young along with rufous old birds, make me now believe that they must be retained as distinct. Certainly *pennatus* often has more or less rufous about it, but the bright entirely rufous *sunia* appears to be so from the nest and at all ages.

As for *plumipes*, the only specimen of *semitorques* that I have been able to examine does not agree with it.

74 quint.—Ephialtes modestus, Walden.

This species was described, *Ann. and Mag. of Nat. Hist.*, 1874, p. 123, as follows :—

“ Stiff loral bristles, pure white at base, some tipped with fulvous, some with dark brown or black; those of the chin pale fulvous, nearly white; over each eye a distinct broad whitish band, formed by pure white feathers narrowly tipped with yellowish brown, which again in most is narrowly fringed with black, some nearest the eyes also edged throughout their length with yellowish brown; feathers of the head and nape pale yellowish rusty, each traversed by three or four narrow irregular light brown lines; interscapulars and feathers of the back and rump colored and marked like the plumage of the head and nape, but the brown transverse bands are broader and fewer; scapulars the same, but a few more or less pure white, mottled towards the tip with the prevailing tints; ear-coverts and cheeks principally white, with brown and ruddy fulvous markings; throat-feathers albescent, with one or more narrow brown cross bands; a half collar below the throat of feathers marked and colored like those of the nape; breast-feathers tipped with brown, a subterminal band of pale fulvous, then a brown band followed by a much broader pure white band; abdominal feathers white, tipped with an irregular ocellated mark, centred with pale rusty fulvous and encircled with brown, then a broad white band with a basal and narrower brown band; in many of the abdominal feathers the ocellated markings are replaced by an irregular cross band of mixed fulvous and brown; under tail-coverts white, with faint subterminal fulvous-brown bands; tarsus clothed with white feathers, faintly barred with pale brown; ground color of the primaries and secondaries brown, each quill traversed by three or more pale rufo-fulvous narrow bands more or less complete; the brown intervals towards the apices of the primaries and on their outer webs much freckled with rufo-fulvous; on the outer web of the second, third, and fourth primaries the pale rufo-fulvous bands change to fulvous white or pure white; under wing-coverts greyish white; median rectrices marked and colored like the apices of the primaries, laterals with clear rufo-fulvous bands running through, all tipped, like the median shoulder-edge, white; tarsi feathered to within an eighth of an inch of the base of the toes; fourth and fifth quills equal; third slightly longer than sixth.

"Wing, 4.75 inches; tail, 2.37; tarsus, 1.0; middle toe, with nail, 1.12; bill, from nostril (in a straight line), 0.65.

"Two examples of this small plain-colored Scops Owl were obtained near Port Blair, South Andaman, by Captain R. Wimberley."

Looking to the very small size and to the description, so far as it is possible to follow a description of such a bird, I am quite disposed to admit this as a good species.

I have unfortunately never seen a specimen, and considering how many *E. Balli* have recently been obtained, it is curious that no more *modestus* should yet have turned up. Another thing worthy of notice is, that the young of *Balli* approach, to judge by the description, very closely to *modestus* in plumage, but they have the wings 5.5.

103 *ter.*—*Collocalia innominata*, *Hume*.

Lord Walden, I see, unites this species, Jerdon's *unicolor*, and *spodiopygia*, Peale, apud nos, under the one general name of *francica*, Gm. When he was about it he had better, as Captain G. F. L. Marshall recently suggested to me, have united all the known *Collocalias* into one comprehensive species, *omnium-gatherum*, Walden. I may be wrong in the nomenclature. Jerdon's *unicolor* ought very possibly to stand under some other name; my *innominata* should, it may be, bear some other prior title; and my *spodiopygia* may not be Peale's, and should perchance stand as *inexpectata*, nobis, or again bear some other title, but the three species, whatever their proper names, are as distinct as *Oriolus*, *kundoo*, *chinensis*, and *melanocephalus*, nay more so, for they differ extraordinarily in size, and any ordinarily observant child of eight years of age would pick them out of a heap, at once, as distinct.

It is quite clear that Lord Walden has not seen the birds, or he could never possibly have fallen into the error of confounding together three such exceedingly different species.

110 *bis.*—*Caprimulgus andamanicus*, *Hume*.

Specimens subsequently received leave no doubt as to the distinctness of this species. Lord Walden, who calls it *macrurus*, admits that "it may claim to be regarded as belonging to a distinct species." He omits to notice that four months previously I had characterized and named it. He gives the wings of five specimens as varying from 7 to 7.13, and the tails from 5.25 to 5.5.

131.—*Halcyon coromanda*, *Lath.*

Other Andaman specimens exhibit the same differences that I pointed out (*ante*, p. 169), *viz.*, they have much larger bills, and are much darker on the lower surface. Before, I compared them with Sikhim specimens, now I compare them with Tenasserim birds. I took males before, now I take females.

Two fine Andaman females have the bill, measured from the anterior angle of the nostril to the point, 2.15. Equally fine Tenasserim females have the bills, similarly measured, 1.85.

The lower surface of the Andaman birds is conspicuously darker, and much more strongly tinged with ruddy purple on the breast than any out of some forty Sikhim and Tenasserim birds.

The wings, too, seem to average larger.

If this be separable from *coromanda*, it is probably *major* of the F. J.; *Schlegeli*, Reich.

134 *bis.*—*Alcedo asiatica*, *Swains.*

Lord Walden wants to make a new species out of the Andaman race of this bird.

In the *Ann. and Mag. of Nat. Hist. for 1873*, p. 487, he says
"Alcedo rufigastra, n. sp."

"Chin and throat creamy white, washed faintly with rufous; remainder of under surface and the under tail-coverts deep bright rufous; spot before the eye rufous, paler in some than in others; feathers of the head black, with a penultimate bright blue band, those of the cheeks all bright blue; back and upper tail-coverts bright blue; wing-coverts black, washed with blue, each feather tipped with bright blue; scapulars and rectrices black, washed with blue.

"Wing, 2.5 inches; tail, 1.62; bill, from nostril, 1.37.

"Described from three male examples obtained in the island of South Andaman by Lieutenant R. Wardlaw Ramsay.

"This is a well-marked form, intermediate between *A. moluccensis* and *A. asiatica*. Above it nearly resembles the first; underneath it is undistinguishable from the last." And later in the August number for 1874, just to hand, he says:—"At page 487 of the twelfth volume of this journal I described as new, under the title of *Alcedo rufigastra*, a species of Kingfisher of which examples had been sent to me from the Andaman Islands. A specimen obtained by the late Captain Beavan in Maumbhoom, on comparison, proved to be identical (*Ibis*, 1874, p. 136), and I wish, by changing the hybrid title

of *rufigastra* to that of Beavani, to commemorate the original discoverer of this species."

No one, I think, will doubt an author's right to change either his own name or one he has conferred on a new species; what I object to are people who presume to alter *other* people's names; but whether as *rufigastra* or *Beavani*, I fear this supposed new species cannot stand.

We have ten specimens from the Andamans, one from Cuttack, one from the Rajmahal hills, two from the Bhootan Doars, one from Tipperah, one from Ye, and two from Amherst, and all clearly belong to the same species; but what is noticeable is, that while some specimens have the upper surface *very* similar to that of *moluccensis*, (as figured by Mr. Sharpe, I have not a specimen down here), in others this corresponds perfectly with the figure of *Asiatica*, so that I can only conclude that the variation in tint in the upper surface (and it varies more or less in every single specimen) depends upon age and season and the length of time that has elapsed since the last moult.

351 *bis*.—*Cyanocinclla solitaria*, *Müll.*

We failed to obtain a specimen of the Blue-rock Thrush; one killed whilst Mr. Davison was at Port Blair exhibited no trace of rufous on the lower plumage; but Lord Walden mentions receiving one killed at Port Blair in February, having the whole lower breast and ventral region deep chesnut, a few feathers only here and there tipped with blue. The above species must, therefore, be included in our list.

356 *bis*.—*Geocichla albogularis*, *Blyth.*

Lord Walden considers that the Andaman Bush-Thrush is distinct from the Nicobar race, and has named it (*Ann. and Mag. of Nat. Hist.*, 1874) *G. andamanensis*. He says:—

"When writing on Andaman birds (l.c.), I had not had the advantage of seeing examples of the Nicobar *Geocichla* named *G. albogularis* by Mr. Blyth. Lately a considerable series has come under my observation; and a comparison made between them and Andaman examples makes it clear that they belong to a totally distinct species. Having already shown that the Andaman species differs from the Malayan *G. innolata*, it remains without a title; and therefore for the Andaman bird I propose the name given above."

I have not, it appears, a single Nicobar specimen. We saw the bird continually, but failed to preserve one. Lord Walden is doubtless right, and we must therefore enter 356 *ter*.—*Geocichla andamanensis*, *Walden*, in our list.

I notice that though Lord Walden says *he* pointed out the difference between the Andaman and Malayan Bush-Thrushes, he *did* so in the April number of the *Ibis*; I pointed it out in the January number of STRAY FEATHERS (p. 221), and moreover, I pointed out (which he failed to do) the special characteristic of the adult Andaman Bush-Thrush, *viz.*, the two brown eye-stripes, analogous to, though smaller and feebler, than those of *G. cyanotis*.

369 *bis.*—*Turdus obscurus*, *Gm.*

I erroneously entered this bird as *pallidus*, *Gm.*, which is *daubias*, Tem., quite a different bird. The present species is the one we get from Malacca and Tenasserim, of which *modestus*, Eyton, *rufulus*, Drapiez, &c., are synonyms.

520 *bis.*—*Locustella subsignata*, *Hume.*

Lord Walden gives *lanceolata*, Tem., from the Andamans, and unites with this my *subsignata*; he may possibly have obtained *lanceolata* from the Andamans (though, until some better authority where this group is concerned examines the specimens, I must defer including the species in our list), but he is, I think, very certainly in error in uniting *subsignata* with *lanceolata*.

What I take, at any rate, to be the true *lanceolata*, the bird we have from Tenasserim and Sumatra, is certainly distinct from *subsignata*. However, it may be argued that my *lanceolata* is not true *lanceolata*, and so to settle this point I have just sent a specimen home to Mr. Bowdler Sharpe, of the British Museum.

599.—*Corydalla Richardi*, *Vieill.*

Lord Walden, *Ibis*, 1874, p. 140, includes *C. striolata*, Blyth, amongst the birds of the Andamans, and states that he is "disposed to doubt the propriety of separating this form from *C. rufula*!"

Now, of course, I cannot tell what bird Lord Walden has got hold of; but all the seven specimens we obtained, and the like number subsequently sent us, are the Indian *Richardi*, with tarsi from 1.12 to 1.25, and hind claws from 0.7 to 1.2. Clearly none of these are *striolata*, in which the tarsus varies from 0.97 to 1.08, and the hind claws from 0.44 to 0.56.

However, Lord Walden may have rightly identified *striolata*, and there is no excuse for any one's failing to do this, since the publication of my friend Mr. Brooks' paper (STRAY FEATHERS, I., p. 358), clearly setting forth the differences between our three

Corydallas; but then what can be said to the remark as to uniting *striolata* and *rufula*? You might as well talk of uniting No. 3 and No. 5 shot, or *Aquila chrysaetos* and *Aquila heliaca*. Surely Lord Walden never can have seen true *striolata*. The only conclusion I can draw is, that he must have got specimens of the slightly different Malayan race of *C. rufula*, called, I believe, by Eyton *Anthus malaiensis*, which occurs in Tenasserim and Assam, and very possibly below Darjeeling. If this be so, I quite agree that it does not deserve specific separation, and we ought in that case to enter *rufula* in our Andamanese list, but until the obscurity which now involves the facts is dispelled, it would be premature to do so.

701.—*Munia striata*, Lin.

Lord Walden, in the *Ann. and Mag. of Nat. Hist.*, 1873, p. 488, separates the Andaman race of this species, which I designated (*ante*, p. 257) *nonstriata*, as *fumigata*. Though my article was in type months before Lord Walden's name was published, the latter has priority, and those who consider this race as entitled to specific separation, a point in regard to which I have never felt certain, must call it henceforth *fumigata*, Wald.

The following are his remarks on the species:—

"Above dark brown, deeper on the head; rump white; quills above and externally deep brown, on the borders of the inner webs pale tawny rufous, most developed on the secondaries and tertiaries; tail jet black, the middle pair of rectrices being slightly elongated; chin, throat, and cheeks concolorous with the head; ear-coverts brown, with pale edgings; breast, abdomen, and flanks dingy white, the breast feathers with brown spots; thigh and under tail-coverts brown, with rusty margins.

"Wing, 2·00 inches; tail, 1·75; tarsus, 0·50.

"Described from examples obtained by Lieutenant R. W. Ramsay in the island of South Andaman. Nearly allied to *M. acuticauda*, Hodg., but to be readily distinguished by the absence of pale shafts to the dorsal plumage."

720.—*Emberiza pusilla*, Pall.

Lieutenant Wardlaw Ramsay shot a female of this species on the 28th of March below Mr. DeRoepstorff's house on Mount Harriet. Davison saw and noted it, but I did not include it in our list, not being sure that he had correctly identified it. Lord Walden now confirms the identification, and this species must now be included in the Avifauna of the Bay of Bengal.

780 quat.—*Carpophaga palumboides*, *Hume*.

This species really has, I find, as Lord Walden said, only twelve tail feathers, but it is not a bit of an *Ianthænas* for all that. There is a specimen alive here now in Calcutta, and in its mode of holding itself and its broad substantial body it is a typical *Carpophaga*, and not at all like the more slender and pigeon-like *metallica*, which, rare as it is, is the only *Ianthænas* that I have seen alive.

Lord Walden has just described in the *Ann. and Mag. of Nat. Hist.* a supposed new nearly allied species. He says:—

“*Ianthænas nicobarica*, n. sp.

“Entire head, nape, cheeks, and neck dark French grey; chin and throat albescent grey; breast and abdomen darker grey than the head; feathers of the back and sides of the neck tipped with iridescent colors of changing green and pinkish violet; lower down a broad zone of dark grey feathers with bright green reflections, followed by an interscapular zone of iron grey feathers with pinkish violet reflections; lesser wing-coverts iron grey, with semilunar terminal pinkish violet edgings; all the iridescent tints described alter from green to violet or violet to green, according to the light in which the individual is held; back, uropygium, and upper-tail coverts dark ashy grey, many shades darker than the head, and tinted with iridescent hues; quills and rectrices almost black; base of the bill and eyelids bright red.

“Wing, 9.75 inches; tail, 6.50; bill, from forehead, 1.37; tarsus, 1; middle toe, with claw, 1.87.

“Described from examples obtained in Trinkut and Nangcowry Islands, Nicobars, by Captain Wimberley.

“Like *Ianthænas palumboides* (Hume), this species possesses twelve rectrices, and is a true *Ianthænas*.

“It is a representative form of the Andaman species, from which it is chiefly distinguished by wanting the pearly-white or greyish-white head, throat, and nape.”

I cannot think that this is distinct. If it is so, it occurs at the Andamans as well as at the Nicobars. The presence or absence of the pearly-white tinge appears to me to be either individual or dependent upon sex or age. The type specimen has *nothing like* the amount shown in the figure in the *Ibis*; it is exactly intermediate between that and the form now described as *nicobarica*.

I no more believe in this latter than I do in *Megapodius trinitensis*; and I am confident that when we have as many speci-

mens of *palumboides* as we have of *M. nicobariensis*, the non-validity of *nicobarica* will be as indisputable as that of *trinkutensis*.

803 *sextus*.—*Megapodius nicobariensis*, Blyth.

In the *Ann. and Mag. of Nat. Hist.* for June 1874, my friend Mr. R. Bowdler Sharpe describes a supposed new species of Megapode from the island of Trinkut under the name of "*M. trinkutensis*." He says:—

"Above olive brown; many of the feathers rather inclining to clearer and more rufous brown on their margins; wings uniform with back externally; the inner webs of coverts and quills deep brown; the primaries very pale fulvous brown on their outer webs; tail uniform with back; crown of head light bay; lores, cheeks, and region of the eye bare; ear-coverts, throat, sides of neck, and hinder part of latter forming a collar pale creamy fulvous; under surface of body rather lighter olive brown than the back; greyish on the abdomen, thighs, and under tail-coverts; under wing-coverts olive brown like the breast, except the greater series, which are greyish like the inner lining of the wing.

"Total length, 15·5 inches; culmen, 1·1; wing, 9·7; tail, 3·5; tarsus, 2·45.

Hab. Trinkut Island, Nicobars.

"This new species is closely allied to *M. nicobariensis*, as might have been expected; but on examining the excellent account of the latter bird lately published by Mr. Hume (*STRAY FEATHERS*, II., p. 276), it is evident that the Trinkut bird is distinct. It has none of the "French-grey" tinge on the throat and sides of neck, but, on the contrary, has these parts a pale fulvous colour, forming a collar round the hind neck."

I cannot think that this is a distinct species; I have now seventeen specimens before me from Tillangchong, Katchall, Trinkut, Nankowry, Bompoka, and Treis, and I have examined about a dozen others, all, though somewhat variable in size and in shade of plumage, belonged, in my opinion, unmistakeably, to one and the same species. This supposed new species is merely a stage of plumage of *nicobariensis* that we did not happen to see, though we did obtain two (not on Trinkut), showing traces of the pale fulvous collar referred to; and I have since seen a specimen from Nankowry answering well to Mr. Sharpe's careful description, which forms a valuable supplement to my own former description.

881 bis.—*Tringa crassirostris*, Tem and Schleg.

This species, which I first recorded as occurring within our limits in the Kurrachee Harbour, where it was common, is fully described, STRAY FEATHERS, Vol. I., p. 240. Lord Walden has now received it from the Andamans, and it must, therefore, now be included in our list.

912 bis.—*Euryzona Canningi*, Tytler.

It is to Captain Winberley that I am indebted for a magnificent series (no less than twelve specimens, all carefully sexed and measured in the flesh) of this singularly beautiful Rail.

The following are the dimensions; the sexes do not appear to differ perceptibly in size; the females may perhaps average smaller, but some females are as large as any males:—

Length, 13 to 14.5; expanse, 19 to 20; tail, from vent, 3.25 to 3.6; wing, 5.95 to 6.4; tarsus, 2.05 to 2.3; bill, from gape, 1.35 to 1.5; bill, at front, 1.1 to 1.22; mid toe and claw, 1.85 to 2.0; its claw only, 0.4 to 0.45.

The primaries vary somewhat in their proportions; the fourth, fifth, and sixth are sub-equal and longest, but sometimes one and sometimes another of these three is a little the longest.

The third is about 0.3, the second about 0.6, and the first about 1.4 shorter than the longest.

The legs and feet are olivo green; the bill a delicate pale chrysoprase green; the irides are red.

The entire head, neck all round, upper breast, and the entire upper surface including the whole visible portion of the closed wing, deep maroon chesnut; in fine specimens the richest color, conceivable; the lower breast, and the whole of the rest of the lower parts, including the axillaries and wing-lining, black (becoming somewhat duller and browner on the flanks and lower tail-coverts), very strongly and broadly barred with white, the bars, however, being narrower and less purely white on the flanks and lower tail-coverts.

Some specimens, chiefly females apparently, are duller colored and have a marked olivaceous tinge on the rump and upper tail-coverts.

When the wings are opened, and the elongated tertiaries (which are longer than the longest primaries) are pushed aside, the primaries and secondaries are found to be an olivaceous brown on the outer webs, pretty strongly tinged with rufous, with the inner webs black or blackish brown; on the inner webs are numerous moderately narrow, somewhat slanting,

transverse white or rufescent white bars, about three on the first primary, four on the next, and five or six on the others; in some specimens the outer webs are quite unbarred and unspotted; in others they have distinct buffy bars or spots corresponding with the bars on the inner webs, more or less bordered above and below with a blackish brown line; in some specimens the greater coverts are like the primaries, and exhibit similar spots on their outer webs; in others they are spotless, and in others again the whole visible portion of them is precisely like the lesser and median coverts.

986 bis.—*Sterna gracilis*, Gould.

Mr. Howard Saunders, whose great special knowledge of this group is well known, has identified four Terns sent from the Andamans as *S. paradisea*, Brünnich, and says that they are absolutely identical with English, American, Spanish, and African specimens. I doubted, as already noted (p. 317), whether the specimens I had should be referred to *paradisea* or *gracilis*, and I have now no doubt that our birds are the same as those seen by Mr. Saunders, and that *gracilis* must be excised from our list and replaced by 986 *ter*.—*STERNA PARADISEA*, Brün.

A. O. H.

Catalogue of the Accipitres.*

BY R. BOWDLER SHARPE. F.L.S., F.Z.S. &c., &c.

EVERY working ornithologist will hail with delight, this, the first volume of Mr. Sharpe's great contemplated work, a descriptive catalogue of every known species of bird.

The present volume, a goodly octavo of some 500 pages of close printing, comprises the known species of diurnal birds of prey, 377 in number.

Mr. Sharpe's plan is briefly as follows:—

He defines the ORDER, and gives a synopsis of the *sub-orders* it includes; he defines each SUB-ORDER, and gives a synopsis of the *families* it contains; he defines each FAMILY, and gives a key to the GENERA it comprises, and then he gives a key to each SPECIES included in the *genus*.

Having got down to the species, he gives its full synonymy with the *date* of each name quoted, a full description with

* Published by B. Quaritch, 15, Piccadilly. W. London.

dimensions and colors of the soft parts of adults and young, a brief sketch of its distribution, and a list of the British Museum specimens. To all this he adds a number of woodcuts of heads, bills, and feet, illustrative of generic characters and of coloured plates of the rarer and less known species; in the present volume there are some sixty woodcuts, and no less than twenty-one species are beautifully figured.

Lastly, a careful index, specific and generic, worthily completes this first section of the most comprehensive and perfect book of its kind that has ever yet appeared.

The labour bestowed on this first instalment must have been enormous, and one almost shudders to think of the long, long years of ceaseless toil that the complete enumeration in a similarly thorough manner of the 15,000 species now known will entail. Still the labour will not have been thrown away; the work will form an era in the science, the point of departure from which all future research will start, the common text book for all ornithologists in matters of nomenclature; and at the early age at which Mr. Sharpe (alone and unaided, by the sheer force of talent, perseverance, and industry) has raised himself to the distinguished position he now holds, we may well hope that he will not only live to complete this present undertaking, mighty as it seems, but to give the world hereafter, when we older ones have passed away, something greater and better than we have yet dreamt of.

Of course no work of this magnitude can, in the present state of science, be entirely free from errors, and doubtless sharp eyes in Europe will detect some slips here, some omissions there, and many will be found to dispute this identification or deny the correctness of that union of two forms hitherto accepted as specifically distinct; but taking the work as a whole, no *impartial* and *competent* judge will be found, I am certain, to dispute the extreme care and conscientiousness with which the work has been carried through, or the immense value of the resulting catalogue.

As a fact, there is nothing like it in existence. Professor Schlegel's pamphlet catalogues of various families of birds constitute the nearest approach to it; but these, valuable as they are, habitually give no descriptions, very rarely anything like a satisfactory one, and avowedly omit all species not contained in the Leyden Museum.

Ornithologists (like most of us in India) working apart from the great centres of European civilization, to whom ornithological libraries are not available, will find Mr. Sharpe's cata-

logue simply invaluable—a library in itself, which will supply them with all the information that they chiefly require from books, arranged in the simplest and most systematic manner.

Every colonial ornithologist will owe Mr. Sharpe a debt of gratitude that they can only rightly pay in one way, and that is by aiding him in what he has so much at heart, the perfecting of the British Museum collection. Looking through this present volume, I see that he has himself presented more than a hundred specimens of the *Accipitres* to the Museum, but those of us who have much correspondence with him know well that this can represent but a small share of what he has already secured, one way and another, for the collections under his charge. Like the apostle of old, he is instant, in season and out of season, for specimens, and I think the least all of us who will derive so much assistance from his work can do is, to second his labours vigorously by liberal contributions to our national collection. I must reserve to a future number the remarks that I have to make in regard to particular species included in this volume.

Novelties.

Podoces Biddulphi, Sp. Nov.

General color pale, vinaceous buff; forehead, crown, and occiput black, glossed with blue; occipital feathers forming a short broad crest; a broad black mandibular stripe on either side; wings variegated white and blue-glossed black; tail white; central feathers with conspicuous blackish brown shaft stripes, and tinged with vinaceous fawn.

THIS, the finest of the four Chough-Thrushes as yet known to me, was procured during the second Yarkand Expedition by Captain Biddulph, after whom I have named it. He was the only one of the Party who saw it in a wild state. He obtained it in January at "Maralbashi"; later Dr. Stoliczka purchased a caged specimen in Yarkand.

In size, general tone of coloring, and appearance this species resembles both *P. Hendersoni* and *panderi*, but it is distinguished from both at once by its conspicuous white tail, as well as by many other minor differences, which will become apparent from the following description. I should add that although both Captain Biddulph's specimens are females (and the females in this genus appear to be smaller and to have smaller bills than

the males), the bills are considerably longer than those of the male *Hendersoni*.

The following are measurements taken from the skin :—

Length, 11·5; wing, 5·9; bill, at front, 2·0; covered for 0·4 by frontal plumes; tail, from vent, 4; the exterior tail feathers on either side 0·3 shorter than the rest; 4th and 5th primaries equal and longest; 6th primary, 0·1; 3rd, 0·18; 2nd, 0·65; and 1st, 1·85 shorter than the longest; tarsus, 1·93; hind toe and claw, 0·87; claw only, 0·4; mid toe and claw, 1·2.

The bill, legs, and feet are black; the nareal tufts vinaceous fawn color.

The lores, a band under the eye, not quite extending to the posterior angle; a broad streak over the eye, extending to the ear-coverts; ear-coverts and sides of the neck pale vinaceous fawn color; chin and throat the same color, but mottled with dull black from the bases of the feathers, shewing through, just as in some of the black-throated *Saxicolas* in winter plumage, leading one to suspect that in summer these parts may be black; base of the lower mandible, and a broad moustachial patch, and an ill-defined stripe running upwards from this behind the eye, and then backwards over the ear-coverts, and dividing these from the long supercilium, dull black; forehead, crown, and occiput black, strongly glossed with steel blue; the feathers of the occiput narrow, pointed, and prolonged to form a short full demi-crest; entire mantle, including lesser and median wing-coverts and rump, a rich vinaceous fawn color, much the same color as *Garrulus bispecularis*; winglet, pure white; greater primary and secondary coverts black, strongly glossed with blue; primaries, 9th and 10th, entirely pure white, except at the extreme bases on the inner webs, where they are brownish black; 8th primary similar, but with the terminal half inch brown, and the basal portion of the shaft brownish. The rest of the primaries white, with the whole of the tips and the shafts blackish brown; secondaries, white-tipped for about a quarter of an inch, and the inner webs brownish black; the 1st secondary, with the entire outer web, white; the rest with the outer webs black, strongly glossed with steel blue; the tertiaries, with the inner webs, white, and in each feather a decreasing breadth of black, glossed with blue, on the outer webs.

Upper tail-coverts white, tinged with vinaceous fawn; tail feathers white, the central pair strongly tinged towards the margins with vinaceous fawn, and with a conspicuous blackish brown shaft stripe; the lateral feathers faintly tinged with vinaceous on the exterior margin, less and less so as they

recede from the centre; the pair next the central ones with conspicuous black shafts, which black shafting becomes less and less marked as the feathers approach the exterior of the tail; the entire lower surface of the body pale vinaceous fawn, paling still further towards the vent and lower tail-coverts, which latter may be said to be white, merely tinged with this color; axillaries brownish black; wing lining about the carpal joint white; the greater primary, lower coverts, and the coverts of the ulna blackish brown.

Phylloscopus Brooksi, *Sp. Nov.*

Nearly uniform olive brown above; below white, strongly tinged, except on middle of throat and abdomen, with fulvous buff; no wing bar; wing, 2.5; 4th and 5th quills longest; 6th quill slightly longer than or sub-equal with the 3rd; legs and feet very stout, yellowish, fleshy. A conspicuous yellowish buff eye-streak from nostrils over eye and ear-coverts.

THIS well marked and, as I believe, new species was procured by Mr. Davison near Pabpoon in the northern portion of the Tenasserim Provinces.

The tarsi and feet are comparatively so large and strong that I hesitated to class it as a *Phylloscopus*, thinking that it ought probably to be separated as a distinct sub-genus. It has to my eye a certain something of *Calliope* about it. My friend, Mr. Brooks, however, after whom I have named the bird, whose special knowledge of this little group is well known advises me to retain it as a *Phylloscopus*, and I have accordingly followed his advice.

The following are the measurements of two specimens recorded in the flesh:—

Length, 5.62; expanse, 7.5, 7.9; tail, from vent, 2.25, 2.46; wing, 2.45, 2.5; tarsus, 0.82, 0.9; bill, from gape, 0.6, 0.65.

The irides are brown; the legs, feet, claws, lower mandible, and edges of upper mandible yellowish flesh color; the rest of upper mandible reddish horny.

The entire upper parts are brown, with a dull yellowish olive tinge, not nearly so green as in *magnirostris*, and with not near so bright a yellowish olive tinge on the back and wings as in the true *borealis*. The head is purest brown, and has least

of the olive tinge, in one specimen none at all; this is most marked on the upper tail-coverts, where also there is a faint rufescent tinge.

From the nostrils a conspicuous broad fulvous buff streak runs over the eyes and ear-coverts, and extends even a little further back towards the nape; this is margined above by an indistinct brown line, darker and purer brown than the crown; there is a dark streak through the upper part of the lores to the eye and again behind the eye, involving the upper part of the ear-coverts; the lower part of the lores and the feathers immediately below the eye a sort of fulvous buff; cheeks and lower part of the ear-coverts more or less mottled brown and fulvous or buff; the quills and tail are rather pale hair-brown, with, in the case of the latter, a barely perceptible rufescent tinge; all are margined on the outer web with dull olive, except the first two or three primaries, which have the extreme margins of the outer webs brighter and more albescent.

The first primary is 0.92, the second 0.3, and the third 0.08 shorter than the fourth.

The throat and middle of the abdomen are fulvescent white; the rest of the lower parts strongly tinged with fulvous buff, slightly shaded on the breast, and more strongly so on the sides with olive; the lower tail-coverts, shoulder of the wing, and wing lining clear buff or fulvous buff.

The tibial plumes are brown at their bases, but broadly tipped with fulvous buff.

This species is perhaps most nearly allied to *P. xanthodryas*, Swinh. (P. Z. S., 1863, p. 296); but this appears to be a larger bird, though, as in the case of so many of Mr. Swinhoe's new birds, no detailed description has apparently yet been published.

Compared with true *magnirostris*, it is a bulkier bird, with a somewhat shorter and much more rounded wing, with a much longer 1st primary, and with paler and much larger and stronger tarsi and feet; the bill is considerably smaller; the upper surface is not nearso green, and the lower surface is tinged with fulvous buff, instead of mingled green and yellowish.

Compared with the true *borealis*, it has equally a much more rounded and less pointed wing, and a much longer 1st primary, much stronger and stouter tarsi and legs, and in what I take to be the true *borealis*, following Mr. Brooks, the greater part of the lower surface is a dull greyish white, not yellowish green as in *magnirostris*.

Suya obscura, Sp. Nov.

Allied to Suya crinigera, but considerably smaller; more rufescent above; purer white on throat and centre of abdomen; striations of head and back much feebler; subterminal tail band stronger and more marked; and extreme tips of lateral tail feathers pale rufous.

THIS species, which was obtained in Cashmere by Captain Biddulph, is a small representative of *crinigera*. The following are dimensions:—

Length, 6; wing, barely, 2.1; tail, from vent, 3; tarsus, 0.9; bill, at front, 0.4.

The legs and feet are fleshy; upper mandible pale brown; gape and lower mandible horny yellow.

The entire upper parts are a slightly rufescent olive brown; the feathers of the head obscurely centred darker; a trace of the same on the feathers of the interscapular region; wings hair brown; all the feathers narrowly margined on the outer webs with dull pale rufous; the tail feathers brown, obsoletely barred darker, fringed at the margins, and all but the central feathers narrowly tipped, with dull pale rufescent, and with broad dark brown subterminal bands most conspicuous on the lower surface, which is greyish brown; a short whitish streak through the upper portion of the lores; cheeks and ear-coverts mingled pale brown and olivaceous white; chin, throat, and middle of abdomen almost pure white; breast faintly, sides more strongly, tinged olivaceous; flanks, lower tail-coverts, and tibial plumes rufescent fawn.

Orthotomus nitidus, Sp. Nov.

Resembles O. flavoviridis, Moore, but is brighter colored, has the rufous of the head paler, and entirely wants the black on the throat and fore part of the neck.

WE obtained in several places in Tenasserim a brightly colored, and, I believe, hitherto undescribed species of Tailor-bird, the nearest ally of which is *flavoviridis* of Moore, from which, however, it differs, as above pointed out.

Unfortunately none of our specimens were measured in the flesh, and none, though otherwise fine specimens, have elongated central tail feathers; but this may be due, to sex, for all are females, or possibly to the season at which they were killed.

The following are measurements taken from the skin :—

Length, 4 to 4.25; wing, 2.7; bill, at front, 0.55 to 0.6; tarsus, 0.7 to 0.8; tail, from vent, 1.4.

The forehead, crown, and sides of the occiput light ferruginous; entire back, rump, upper tail-coverts bright yellowish olive green; quills and tail feathers hair-brown, palest on the tail feathers, which have a pretty conspicuous subterminal dark band, and all margined and more or less suffused on the outer webs with the same color as the back; a dull white ring round the eye; lores, cheeks, and ear-coverts greyish white; shoulder of the wing, wing lining, sides, flanks, and lower tail coverts bright gamboge yellow; tibial plumes golden fulvous; chin, throat, breast, abdomen, silky white, only a little greyish mottling on the upper part of the breast, where the feathers are deranged and the bluish dusky basal portions show through.

Hemixus Hildebrandi, *Sp. Nov.*

Precisely similar to Hemixus flavala, Hodgs., but slightly larger, and with forehead, crown, and occiput black.

THIS pretty new species, the Black-capped Golden-winged Bulbul, was obtained by Mr. Davison on the banks of the Younzaleen, in the Salween District of the Tenasserim Provinces, on the outskirts of the Pine Forests, at an elevation of about 3,000 feet.

It bears to *H. flavala* the same relation that *Spizixus semitorques* does to *S. cinereicapillus*; no separate description seems necessary.

The following are the dimensions recorded in the flesh of a male :—

Length, 8.75; expanse, 12.7; tail, from vent, 3.8; wing 4.12; tarsus, 0.6; bill, from gape, 1; weight, 1.25 oz.

The irides were crimson; bill black; legs and feet dark reddish horny.

Beyond the slight excess in size that these figures sufficiently indicate, the only other point of difference that I can discover consists in the entire cap being black instead of grey, as in *H. flavala*.

The only other *Hemixus* with which I am acquainted is *H. castanonotus*, Swinhoe, *Ibis*, 1870, pl. XI, Fig. 1.

Palæornis Finschii, Sp. Nov.

THE forests of the Upper Salween are tenanted by a race of Paroquets closely allied indeed to *schisticeps*, Hodgs., but at the same time very distinguishable; and as the points of difference are constant in all the ten specimens that I have obtained from these forests, I think it may be as well to describe this new form under the above designation.

This present race or species differs from *schisticeps*, Hodgs.

1st.—In its smaller size; in the finest male of *Finschii* the wing does not quite reach to 6 inches, whereas in *schisticeps* the wings of ordinary males vary from 6·5 to 6·8.

2nd.—In the greater length, different shape, and different coloration of the tail feathers. In no specimens of *schisticeps* which I have seen does the tail, measured from the vent, quite come up to 10 inches. In the present species the tail in the adult male similarly measured varies from 11 to 12 inches. Then the tail feathers are excessively narrow; nowhere in the terminal 6 inches are they quite 0·3 in width, and for the greater part of the distance they are scarcely more than 0·2. In *schisticeps* they are almost double this. Then the central tail feathers are differently colored; in *schisticeps* they are green at the base, then bright blue, then bright yellow, while in *Finschii* the basal halves are a delicate lavender blue, only tinged with green on the margins quite at the base, and the terminal halves are dingy white, rarely with a faint fulvous tinge at the extreme tips.

3rd.—The entire mantle and the upper tail-coverts exhibit a golden fulvous tinge not present in any of the very numerous specimens of *schisticeps* that I have examined.

4th.—The red wing patch in the male is not confined to the immediate neighbourhood of the elbow joint, as it generally seems to be in *schisticeps*, but extends, in fine adults, a considerable distance towards the carpal joint in a line parallel or nearly so to the radius.

5th.—In the adult males the head appears to be much paler than in *schisticeps*, a sort of lavender slaty, and without any appreciable darkening towards the margin or dark line bounding it on the back of the neck; the broad black moustachial stripe being only continued as a line as far up the sides of the neck as the ear-coverts.

Besides these differences the lower wing-coverts are perhaps slightly bluer, and the bird is altogether decidedly less bulky.

I notice also that in the females the black moustachial stripe is very distinctly shot or tinged with green.

One female, I should mention, exhibits a trace of the dark bounding line on the back of the neck.

These birds lay in March, and the young are fit to be caged in April; and these ten specimens, shot in February and the end of January, are in most perfect plumage.

A fine male measured in the flesh:—

Length, 18; expanse, 17·5; tail, from vent, 11·9; wing, 5·9; tarsus, 0·55; bill, from gape, 0·7 (another was only 0·65); and weight 3 ozs.

The upper mandible was orange vermilion (in another vermilion); its tip and the lower mandible yellow; the legs and feet a dingy green; the claws bluish horny.

A female measured:—

Length, 14·75; expanse, 17·35; tail, from vent, 8·5; wing, 5·8; tarsus, 0·66; bill, from gape, nearly 0·8.

These birds were obtained chiefly in the neighbourhood of Kollidoo at elevations of from 3,500 to 5,000 feet, and in their habits appear to differ in no way from those of their nearest congener *P. schisticeps*.

Cyornis Mandellii, *Sp. Nov.*

Lores and a ring round the eye white; above brown, tinged rufescent, especially on rump, basal margins of tail feathers, outer margins of secondaries, tertiaries, and their coverts; chin, throat, abdomen, and lower tail-coverts pure white; breast olive brown, feathers faintly margined fulvous; legs and feet fleshy white.

I have long had by me a *Cyornis*, which Mr. Mandelli gave me to describe soon after it was shot in October 1872, when it was obtained at a low elevation in native Sikhim. I have hitherto refrained from describing it, believing it to be the female of some blue male; but as Mr. Mandelli has procured two more precisely similar specimens from the same locality, and believes that the sexes are alike, I think it best to give the bird a name, and describe it, the more so that two years' waiting has thrown no additional light upon the subject.

I may commence by premising that it has been carefully compared with a series of both sexes of *unicolor*, *rubeculoides*,

elegans, *Tickellia* (which is the same as *Jerdoni*), *ruficauda*, and *magnirostris*, and with the male of *pallipes*. Of this latter species I have no ascertained female, and I am not aware whether the female differs from the male; but it cannot be the female of this species, as, letting alone the fact that this latter has only been obtained on the Nilghiris, our present bird is altogether smaller.

The following are the measurements from the dry skin:—

Length, 5.25; wing, 2.9; the 3rd and 4th primaries equal, the 5th slightly shorter, the 2nd, 0.3, and the 1st, 1.4 shorter than the longest; the 3rd quill is, therefore, slightly longer than in typical *Cyornis*; tail, from vent, 2.0; bill, at front, 0.45; tarsus, 0.6.

The legs and feet were apparently very pale fleshy or pinkish white; the upper mandible blackish brown, paling just at the tip; the lower mandible pale yellowish horny.

The lores, a ring round the eye, and a patch at the base of the lower mandible white; the rictal and nareal bristles black; the forehead, crown, occiput, cheeks, ear-coverts, and nape brown; the mantle, rump, and upper tail-coverts also brown, but more and more tinged with rufous as they approach the latter, which are a decided rufous brown; wings hair brown, darkest on the primaries, the second of which has a barely perceptible whitish margin to the outer web; all the secondaries, tertiaries, and their greater and median coverts margined with pale ferruginous on their outer webs; tail hair brown, the feathers tinged on their outer webs towards the bases with the same rufescent brown as the upper tail-coverts; an indistinct pale brown streak runs down on either side, dividing the white patch at the base of the lower mandible from the white medial portion of the chin and throat; the breast, sides, and flanks are pale brown, more or less margined and streaked with pale rufous buff; the wing lining and axillaries and the inner margins of the quills towards their bases pale rufous buff; the abdomen, vent, and lower tail-coverts white; the tail is even; the tarsi and feet are perhaps slightly slenderer than in *elegans*; the bill is a great deal broader than in that species, almost exactly the same size as in *Tickellia*.

In many respects this new species resembles *magnirostris*, but has a considerably smaller bill. It is just possible that my original surmise may prove correct, and that all these birds may be females; if so, it is to be hoped that the attention thus drawn to this species may lead to the discovery of the male.

Microperdix Blewitti, Sp. Nov.

Closely allied to M. erythrorhyncha, but is persistently smaller in all its dimensions, and conspicuously paler on its lower surface.

YEAR after year Mr. F. R. Blewitt has continued sending me, from Raipoor and its neighbourhood, specimens of this small Bush Quail, so very close to the Southern Indian bird, and yet differing from it so persistently in size and in the tint of the lower surface.

I have never been able to meet with any intermediate form. I have examined and compared more than 20 of each species or race. The two birds do differ markedly and persistently, and whether deserving of a distinct specific appellation, or whether only demanding recognition as a very distinct race, it is equally desirable that the differences existing between the two should be put on record.

I may notice that this race extends to the Balaghat district at any rate, as I have received specimens thence from Mr. R. Thompson.

First as to size. The wing of the largest male of the Raipoor bird is a little less than 3.15. In the Nilghiri bird, though Jerdon gives it as 3, I find it in no adult male below 3.2, in most 3.4, and in one 3.5.

The tarsus again is very markedly slenderer, and in no specimen exceeds 0.9, whereas in *erythrorhyncha* I find it 1.1 in several.

The bill at front in *erythrorhyncha*, adult male, is about 0.57, in *Blewitti*, similarly measured, it is 0.47.

Then again the total length of an adult male of the present species, measured in the flesh, is 6 inches, of *erythrorhyncha*, 6.5 to 7.25.

As to plumage. In the male, in the first place, the black frontal band is much narrower, and the white band surmounting it broader, and there is altogether less black on the crown and sides of the occiput than in *erythrorhyncha*.

In the second place, the chestnut of the lower surface is much paler, and whereas in *erythrorhyncha* only the feathers of the upper breast and the sides of the lower breast are broadly fringed with greyish pink, and exhibit a black subterminal spot, in *Blewitti* this coloration extends over the entire breast and part of the upper abdomen, and the pinkish grey fringing is much broader, paler, and more conspicuously marked.

In the females the difference in size is as marked as in the males, but as regards plumage all that can be said is, that those of *Blewitti* are everywhere paler colored.

I have for years hesitated to describe this race, notwithstanding its persistent if small differences; what has now turned the scale is, that Mr. Davison, who has shot and trapped hundreds of the Nilghiri bird, and who has had them for years running wild in coveys in his garden, assures me that he has never seen a Nilghiri specimen that could for a moment be mistaken for these Raipoor birds. Indeed, in general appearance, the two races differ more than might possibly be gathered from the above remarks.

Stoliczkana, Gen. Nov.

Size small; sexes dissimilar; plumage full, lax, and fluffy; bill slender, feeble, compressed, almost Sylvine in its appearance, but absolutely unnotched at the point; wing short, rounded; 5th quill the longest, 4th and 6th sub-equal, 7th equal to 3rd; tail rather long, much rounded; legs and feet Parine; front toes slender, outer lateral toes slightly longer than the inner, and equal to hind toe, which is very stout; central toe as long as outer toe and claw; hind claw large and much compressed.

I have ventured to suggest a new genus for the reception of a remarkable bird obtained at very high elevation in Thibet by Forsyth's second Yarkand expedition, and which I can refer to no genus with which I am acquainted. The form, the coloration, and the loose fluffy plumage, together with the comparatively elongated and much rounded or graduated tail, recall *Orites*, but the bill is slenderer than in any known Tit; it is, however, entire at the tip, and very hard and sharp pointed. I think that we must accept this as a sort of link between the Warblers and the Long-tailed Tits, or, if not, as an aberrant Slender-billed Tit.

Stoliczkana Stoliczkæ, Sp. Nov.

Male. Forehead and broad band over eyes and ear-coverts yellowish white; chin, throat, sides, flanks, lower tail-coverts, rump, and crown vinaceous ruddy, all but the latter more or less shot with pale smalt blue; female, duller colored, and with all these parts, except the rump and crown, unicolorous with the abdomen; wing, 2'1; tail, 2'25.

THIS is the most singular new form that I have ever yet had to characterize, and in naming it I have sought to conserve,

in the most prominent manner possible, the name of a dear lost friend, its discoverer. I would fain hope that I may not be mistaken in believing it to be new, and that it may remain for ever, *monumentum ære perennius*, a humble but lasting tribute to the memory of one so loved, so respected, and, alas, so early lost to science and to us.

Hereafter it is hoped that this and all the other novelties and rarities amassed by the expedition, the fruits of Dr. Stoliczka's self-devotion in this and other branches of natural history, may be duly figured and given to the world in some form not unworthy of his reputation.

In the meantime it is necessary to publish at once brief descriptions, so as to secure for him, if it really be his, priority as discoverer. Other expeditions have recently traversed neighbouring and somewhat similar tracts, and I do not, therefore, think it right to delay the publication of those species which I believe to be new, even though I should, in some cases, prove hereafter to be mistaken as to their being still undescribed.

There is, I know, a Russian work* which may possibly contain some of these species; and if this should be so, I must crave forgiveness, since, though long ago ordered, I have failed to obtain a copy; and if I hesitate any longer to describe these, which I believe to be new forms, some one else may take the initiative, and thus disconnect Dr. Stoliczka's name from a part, at any rate, of the good work which he sacrificed his life to perform.

It may not unnaturally be asked why I of all persons have taken upon myself to publish these species, imperfect as my knowledge is of the Avifauna to which they pertain. The fact simply is, that in almost the last letter which Stoliczka wrote to Sir Douglas Forsyth, he sketched out in some detail the manner in which, on his arrival in India, he wished the scientific results of the expedition to be worked out, and in this he indicated me by name as the person whom he wished to associate with himself in the ornithological section of the work, and he had already, in private letters, warned me that there would be more work than he could do, and that I must undertake the birds.

Under these circumstances, fully admitting the mediocrity of the qualifications I bring to the task, I yet feel that in undertaking it I am only fulfilling his latest and repeatedly expressed wishes.

* *Severtzoff, Turkest. Jevotn. (1873.)* See also an article in *Cabanis' J. für. O., 1873, p. 322.*

The following are the dimensions recorded by its discoverer from a fresh specimen, a male, of the present species, Stoliczka's Slender-billed Tit:—

"Length, 4.6; wing, 2.1; tail, 2.05; expanse, 6.2; bill, at front, 0.35; height of bill, that is of both mandibles closed, measured over the centre of the nostrils, 0.1; tarsus, 0.7; hind toe and claw, 0.47; claw only, straight from root to point, 0.25; mid toe and claw, 0.53. Female exactly the same size. Irides, bright red; bill, black; legs and feet horny blackish brown."

Wings typical, 1st quill, 1.0 inch, 2nd quill, 0.37, 3rd quill, 0.08, shorter than the 5th, which is longest.

The exterior tail feathers 0.5 shorter than the central pair; the next 0.25 shorter; and the rest regularly graduated between these and the central pair.

In the male, the forehead with a very broad superciliary band running backwards over the eye and ear-coverts almost to the nape, pale straw yellow or yellowish white; the lores and stripe through the eye, but extending only a short distance behind it, black or dusky; the crown and occiput vinaceous ruddy; the chin, throat, ear-coverts, sides, flanks, lower tail-coverts, rump, and upper tail-coverts the same vinaceous ruddy, brighter and almost with a golden tinge on the flanks and rump; all the feathers, except on the chin and the middle of the throat and the lower tail-coverts, fringed towards their tips, most broadly and conspicuously on the rump, with pale smalt blue, somewhat duller on the flanks, and slightly duller still on the sides of the throat and ear-coverts; entire mantle a pale, earthy, slightly olivaceous brown, the dusky bases of the feathers often showing through more or less; the wings pale brown; the primaries inconspicuously margined on their outer webs with a paler and slightly olivaceous tinge; the secondaries and tertiaries similarly but often more noticeably margined on their outer webs with a faint yellowish or rufescent tinge; tail black; the central feathers with a faint greenish grey shade, and all but the two exterior pair distinctly tinged at their margins, towards their bases, with a dull pale greenish blue; the exterior tail feathers, with nearly the whole of the outer webs and the inner webs at the tips, a slightly sullied brownish or yellowish white; the next pair distinctly, but narrowly, margined at the tip, and on the terminal two-thirds of the outer web with the same yellowish sullied white; the next pair with a very perceptible trace of a similar pale margin; the breast, middle of abdomen, and vent pale fawn color; tibial plumes slightly vinaceous

rufous; axillaries dusky at their bases, but broadly tipped with white; wing lining and the interior margins of the quills inside a slanting line, from the base of the 1st primary to the tip of the 1st secondary, in the closed wing on its lower surface, white, faintly tinged with pinkish fawn color; rest of the under surface of the wing, outside this imaginary line, pale greyish brown.

The female differs in being rather paler and duller colored every where, and in wanting the ruddy vinaceous blue-tipped feathers, on the chin, throat, ear-coverts, sides, and flanks, which with the rest of the lower parts are a dull pale brownish white.

Passer Stoliczkæ, Sp. Nov?

Sexes dissimilar; male with the lores; a band through the eyes and over the ear-coverts, chin, and a broad band down the throat on to the upper breast; forehead and a very broad band over crown and occiput to nape black; a white band over the lores and anterior half of eye; a very broad pale ferruginous band, over posterior half of eyes and black eye streak, continued backwards so as nearly to meet on the nape; greater portion of lesser and median coverts velvet black, the latter broadly tipped with pure white.

THIS very well marked Sparrow was obtained by Dr. Stoliczka in Yarkand, where it appears to have been very common during the winter.

It seems incredible that such a species should have hitherto escaped observation, as its summer home must probably be Siberia; but I have found nothing at all corresponding to it in Radde, Middendorff, or Schrenck, or in Swinhoe's list of Chinese birds, or amongst Pere David's novelties. Again, I have examined specimens, plates, or descriptions of every species in Mr. Gray's hand list, under genera 1811 to 1819 (except of *Pallasi*, Bp., of which I can find no description), and I am unable to identify the present bird with any of them.

In shape of bill and general appearance it seems to me to approximate most closely to *Passer Lichtensteinii*, Hengl. (*simplex*, Licht. nec. Sw.), but differs from this markedly in the coloration of the head of the male, in the black shoulder of the wing, &c.

I am almost convinced that it cannot be new, but having failed to find anything like it on record, feel bound to describe it under Stoliczka's name. The following are the dimensions and colors

of the soft parts recorded by him, in the flesh, of a male and female :—

“*Male*.—Length, 6·8; wing, 3·25; tail, 2·6; tarsus, 0·8; expanse, 9·7; bill, at front, 0·4; from gape, 0·56.

The irides deep chocolate; bill pale horny, yellowish at sides of base, pale below; legs and feet fleshy white.

Wings reach within 1·8 of end of tail. Shot about four miles east of Kashgar on the 16th December 1873, in a low jungle, feeding on seeds of *Eleagnus*, with *P. montanus*.”

“*Female*.—Length, 6·9; wing, 3·15; tail, 2·65; tarsus, 0·8; expanse, 9·75; bill at front, 0·4; from gape, 0·55;

The irides dark chocolate; bill pale fleshy, tinged with dusky yellowish at the lateral bases; legs and feet pale, tinged with dusky; claws dark horny.

Wings reach within 1·75 of end of tail. Shot on 17th December at same place.”

A male, killed at Tigila in the Altun Artush district, has the chin and a broad band down the middle of the throat, on to the upper breast, where it widens out slightly, lores and a narrow stripe through the eye over the ear-coverts, the forehead and a very broad band covering the central portion of the crown, occiput and nape, black; a short, broad, white, or rufescent white stripe over the lores and anterior half of the eye; behind this, over the posterior half of the eye and the whole of the ear-coverts, a broad pale ferruginous band, which when on a level with the end of the black eye streak sends off one narrow branch nearly at right angles behind the black eye streak and the ear-coverts, and the other behind the back of the nape, where it very nearly meets the corresponding streak from the other side. Thus this ferruginous band is somewhat “T” shaped, and the transverse portion forms about one-third of a collar. The ear-coverts are pale fawn colour, divided from the black of the throat by an ill-defined nearly pure white band. The rest of the lower parts (except the wing lining, which is pure white) very pale brown, albescent on the centre of the abdomen, and the lower tail-coverts with darker, (but still pale,) brown centres. There are the faintest possible streaks of pale rufescent on the breast.

The interscapular region is *pale* rufous, each feather broadly fringed with pale fawny brown and with a black linear lanceolate shaft stripe; scapulars similar, but less rufous, and the shaft stripes feeble; middle and lower back and rump pale, unstriated fawny brown; tail and upper tail-coverts hair brown, the feathers fringed, the latter most broadly so,

with pale brownish yellow; the lesser coverts immediately along the edge of the wing white; the rest of the lesser coverts, and the basal portion of the median ones, velvet black, the latter with broad pure white tips; the greater coverts dark hair brown, broadly margined on the outer webs with rufescent fawn, and tipped, those of the primaries, very narrowly, those of the secondaries broadly, with slightly rufescent white; primaries and secondaries pale hair brown, conspicuously margined on the outer webs with yellowish fawn colour, and the tertiaries very deep brown, broadly fringed everywhere with a more rufescent fawn, or pale reddish buff, which however, just at the tips of the feathers, becomes almost white.

A male, killed in the middle of December, has all the black and ferruginous feathers of the head tipped with pale fawny brown; it is more of a creamy white below, and has the tail feathers, especially the central ones, paler, and the latter more overlaid with a fawny tinge.

In other specimens, the eye streak is barely perceptible; the ear-coverts are white, or nearly so; the rufous band does not run down the neck behind them; the rufous nearly meets on the *occiput*, and there are signs of a broad black nuchal half collar below this, much obscured by fawny brown tippings to the feathers.

The female, killed at the close of February, has only an indication of the black throat stripe, the feathers being broadly fringed with pale brownish white; the whole top, back, and sides of the head are pale brown, unicolorous with the lower back, only on the forehead and above the eyes there is an indistinct, ill-defined slightly rufescent fawny band. There is no rufescent tinge on the interscapular region, and the velvet black of the shoulder of the male's wing is replaced by dark brown, the feathers so broadly tipped with fawny brown as to leave but little of the darker colour visible. The rest of the plumage is similar to that of the male, but is everywhere paler and duller.

A female, killed in the middle of December, has the crown and forehead a rather darker brown, and exhibits absolutely no trace of the black throat streak.

Turtur Stoliczkæ, Sp. Nov.

Closely allied to T. risorius, but much larger. Wing, 7.35; tail, 6.2 (against wing, 6.5, and tail, 5 in risorius); nuchal collar much broader, and more conspicuously margined above and below with white; lateral tail feathers, much more broadly tipped with white, external pair for 2.4 (against 1.7 in risorius); secondaries and their coverts a pale pearl grey.

THE Kashgar Ring Dove is certainly distinct from the Indian *risorius*, and equally so from *lugens*, Rüpp., *semitorquatus*, Rüpp., *albiventris*, Gr., *vinacea*, Gm., *bitorquata*, Tem., and *erythrophrys*, Reich., which latter Mr. Gray, as it seems to me, wrongly unites with *risorius*.

It is just possible that this may be the true *turcicus*, Swenkf., of which I can find no description, which, like *erythrophrys*, Mr. Gray unites with *risorius*.

In the diagnosis I have noted some of the more important particulars in which this supposed new species differs from *risorius*. I may add that from *erythrophrys*, to which in its large size, broad black nuchal collar, and some other points it approximates, it may be at once distinguished by its white wing lining only faintly shaded with pearl grey, and its vent and lower tail-coverts of a pale French grey.

The following are the dimensions of a male of the present species taken from the dry skin:—

Length, 14 nearly; wing, 7.35; tail, from vent, 6.2; tarsus, 0.95; the bill appears to have been black; the legs and feet bright red.

The entire head, neck all round, and breast, pale pure vinaceous, albescent on the chin and upper throat; abdomen paler and tinged with pearl grey; vent and lower tail-coverts very pale French grey; wing lining white, faintly tinged with pearl grey; on the crown there is the faintest possible brown tinge; there is a black nuchal collar, fully double the width of that in *risorius*, margined distinctly both above and below with white; the vinaceous of the sides of the neck extends in a broad band on either side *behind* the nuchal collar, and is only faintly tinged with brown towards the middle; mantle and tertiaries dull, rather pale, earthy brown; rump and upper tail-coverts and central tail feathers very pale pearl grey, more or less tinged and suffused with pale earthy brown. These parts are decidedly paler, while the mantle is slightly darker than in *risorius*; shoulder of the wing, winglet, secondary coverts, and

secondaries pale pure pearl grey; primary greater coverts grey, tinged more or less with dusky; primaries dark brown, margined albescent and the later ones especially much suffused towards their bases with grey; the lateral tail feathers next the central pair a delicate French grey on their upper surfaces, paling to white towards the tips, and faintly tinged brown on part of the outer webs; on the lower surface the terminal 3 inches greyish white, below this blackish dusky, paling again towards their bases; the external tail feathers of all with the terminal 2·4 inches, and the whole outer web, except a slatey grey (on the upper surface) or dusky patch towards the middle of this latter, white; basal portion of the inner webs brownish, slatey on upper, and black on lower surface, paling, slightly only, towards the extreme bases. The intermediate feathers are intermediate in character between these two pairs.

Cettia Stoliczkæ, Sp. Nov.

Precisely like C. sericea, but altogether paler and much less rufescent; the bill slightly slenderer; the legs and feet fleshy white. Sexes differ conspicuously in size.

ALTHOUGH in almost every respect so very similar to Cetti's Warbler as to need no separate detailed description, Stoliczka's Warbler yet differs so markedly in the particulars above indicated that I do not hesitate to characterize it as distinct.

The upper surface is colored more like *H. olivetorum* than *C. sericea*. A dull grey brown tinged on the back with rufous, which is only conspicuous on the rump and upper tail-coverts. The following are the particulars recorded in regard to a male by Dr. Stoliczka:—

"Length, 6·3; wing, 2·75; tail, 2·8; tarsus 0·9; expanse, 8·15; bill, at front, 0·44; bill, from gape, 0·68. The irides brown, and upper mandible horny brown, lower fleshy brown; legs and feet whitish fleshy."

The female is much smaller; length, 5·6; wing, 2·35; tail 2·4; tarsus, 0·8.

Only a pair were preserved,—these I have compared with a large series of *sericea*, none of which at all approach these Yarkand birds in tint, none have quite such slender bills, and in none is there such a marked difference in the size of the sexes observable.

I believe that I am correct in referring the following species to *Ægithalus*, the Penduline Tits. Strange as it may seem, I have never examined a bird of this genus before; and what strikes me now is, that if I have correctly identified the genus, *Ægithalus* is a connecting link between *Sylviparus* and *Cephalopyrus*.

The bill is closest to that of the latter in shape, but is more truly conic, the culmen and gonys being absolutely straight lines. Laterally it is more compressed than *Sylviparus*, and *à fortiori* than *Cephalopyrus*. But the nostrils are concealed as in *Sylviparus*, and not apert, as in the other.

Then the wings are exactly intermediate between those of the two other genera.

In *Sylviparus*, in the fully developed wing, the first primary is about 0.65 long and 0.15 wide.

The second primary is 0.2 shorter than the third, which again is perceptibly shorter than the fourth or fifth, which are longest.

In *Ægithalus*, the first primary is about 0.5 long and 0.04 wide. The second primary is about 0.1 shorter than the third, which is equal to the fourth and longest.

In *Cephalopyrus*, the first primary is so minute as to be barely traceable, while the second primary is subequal with the third, which is longest.

The tarsi are shorter and stouter than *Sylviparus*, more like those of *Cephalopyrus*, but I think more truly Parine than either. The tail is very markedly emarginate.

Ægithalus Stoliczkæ, Sp. Nov.

General tint greyish white; a broad blackish band through lores, eyes, and ear-coverts; an ill-defined crescentic ferruginous band on the interscapular region, shading off insensibly on to the lower back; greater secondary coverts broadly edged with deep ferruginous, in some specimens almost maroon; wings and tail generally brown, conspicuously and broadly margined with white or brownish white.

The following are the dimensions of a male and other particulars, recorded by its discoverer, of Stoliczka's Penduline Tit.

"Length, 4.0; wing, 2.0; tail, 1.7; tarsus, 0.6; expanse 6.1; bill, at front, 0.3. The irides blackish brown; the bill bluish horny; the legs and feet plumbeous or bluish." All the specimens obtained are in winter plumage, and possibly that of the breeding season may be somewhat brighter colored.

A brownish black band occupies the lores and ear-coverts, and encloses the eyes. The forehead, crown, occiput, nape, sides of neck, chin, and throat, greyish white, with a slightly fulvous tinge on the nape. A crescentic ferruginous band stretches across the interscapular region, its concavity towards the nape, and along this edge it is pretty well defined; on the lower margin it shades away into the pale fulvous of the lower back and rump. The upper tail-coverts grey, barely if at all tinged with fulvous, and with inconspicuous brown central streaks. Scapulars and lesser wing-coverts fulvous ferruginous, intermediate in colour between the band, and the lower back; the ferruginous band varies greatly in intensity and in definition. The head in some is much greyer and the chin and throat much whiter. The black band again, in some, is entirely wanting in the lores, and elsewhere is much obscured. The winglet, quills, and primary greater coverts are hair brown, margined with white or more or less fulvous white, the secondaries and tertiaries very broadly so. The median coverts like the lesser, but faintly tipped with whitish. The secondary greater coverts are broadly margined towards the tip with more or less fulvous white, and higher up with ferruginous, very deep and conspicuous in some. The tail hair brown. The central feathers (which are 0.3 shorter than the anti-penultimate) and the rest, except the exterior pair, broadly margined on both webs with white, brownish, or fulvous white. The lower breast and entire lower parts white with a faint fulvous tinge, but one of the specimens, which has the black and ferruginous bands most conspicuous, exhibits traces of a more decided reddish pectoral band, which may probably characterize the bird in summer plumage.

As far as I can make out, the birds with very grey heads, white throats, and upper breasts, undefined pale ferruginous interscapular band, grey lores, and faintly marked, black aural band, and less deeply colored margins to secondary greater coverts, are in the winter plumage, while those with greyish white heads and throats; a reddish tinge peeping out in spots on the upper breast; strongly marked blackish band enveloping lores, eyes, and ear-coverts; strongly marked, ferruginous crescent on interscapular region, and deep almost maroon colored edges to the secondary greater coverts, exhibit an approach to the breeding plumage.

Propasser Stoliczkæ, Sp. Nov.

Female nearly uniform, pale, streakless. earthy brown. Male, similar, with frontal band, lores, cheeks, ear-coverts, and upper throat, dull crimson; band over eyes and frontal band pale silvery pink. Rump, breast, and upper abdomen rosy pink.

THIS Rose-finch appears undescribed; it was obtained on the 4th of June at Chiklik.

The following are the dimensions taken from the dry skins:—

Male, length, 6.25; wing, 3.6; tail, from vent, 2.8; tarsus, 0.8; bill, at front, 0.4.

Female, slightly smaller, *e.g.*, wing, 3.5.

The legs and feet appear to have been dark brown, darkest on the feet. The bills brownish horny, paler on the lower mandible.

The female is every where a nearly uniform pale whitey brown, the quills margined still paler.

The lateral tail feathers pale hair brown, but margined exteriorly with the same whitey brown. The lower parts similar, but with a slight fulvous tinge. The feathers of the forehead and anterior portion of crown inconspicuously centred darker; lores slightly more dusky.

The male is similar, but has the quills and rectrices slightly darker; the rump a soft rose pink; a narrow frontal band, the lores, a part of the orbital region, and the upper portion of the throat immediately round the base of the lower mandible, dull crimson; a band above the crimson frontal band, extending on either side above the eyes, pale silvery pink; sides of head, rest of throat, breast, and upper abdomen dull pale pink, of which faint traces in some specimens descend to the lower abdomen.

Notes.

AT PAGE 92 of this volume, in my diary of our trip to the Andamans and Nicobars, I rather reflected upon the conduct of an officer of the settlement in having prided himself on being on friendly terms with Hung-hung-soo, who, according to the published official account, and also to what Davison and I heard on the Islands, was a ruffian and murderer of no ordinary atrocity.

The officer referred to (I had purposely abstained from naming any one) has since written to me fully on this subject, and has convinced me that both in his public and private capacity he is, personally, quite blameless in this matter.

In the first place he was sent to the Nicobars with strict injunctions to make friends with all the people, no exception being made in the case of Hung-hung-soo or any one else; and in accordance with these instructions he did make friends with every one, Hung-hung-soo included, and his having done so was reported to and approved by the then head of the settlement. In the second place, he assures me on his honor that knowing more about the Nicobarese (as he certainly does) than any one else, he entirely disbelieves the official version of the matter, and in his own heart has no doubt that Hung-hung-soo is innocent of the murder of the European lady and her daughters, and that the story of his supposed crimes was a false one concocted by two well-known enemies of his, who were the sole witnesses, and who are unquestionably altogether unreliable.

Under these circumstances, I am very sorry that I said anything imputing blame to this gentleman. I may not agree with him in the view he takes of Hung-hung-soo's guilt, but he is far more likely to be right than I am; and whether he be so or not it is clear that, *holding the opinions he does on the matter, not the smallest slur can rest upon him in connection with it.* I wish to express to him now my sincere regret at having, in ignorance of his opinions, said anything that unjustly reflected on him.

I consider Hung-hung-soo guilty, and until now I did not know that it was possible for any one to think otherwise; the gentleman referred to, who certainly knows more of the Nicobarese than any one else living, believes Hung-hung-soo to be innocent, and his dealings with him have therefore been, not only in no way reprehensible, but on the contrary, so far as he personally is concerned, just and consistent.

I FIND in the Museum, Calcutta, a fine specimen of *Cypselus subfurcatus*, Blyth, which was obtained north of Chanda. This agrees exactly with the type specimens with which I have compared it.

Subfurcatus, though of the same type, is, as Blyth states, altogether a larger and darker bird, with longer wings and conspicuously more powerful feet than *C. affinis*; the tail is more appreciably furcate than in the general run of *affinis*, and

is also longer; the bird's total length is about 5.25; the wing of the specimen referred to 5.35; the tail, from vent, fully 2.

The whole head and neck are a much darker brown than in *affinis*; the entire mantle, breast, abdomen, and sides are blackish brown, almost black; and the upper tail-coverts and tail feathers, which are a very light brown in *affinis*, are almost black in *subfurcatus*.

RECENTLY, for the first time, I have had an opportunity of examining a really good specimen of *Hierax melanoleucos*, Blyth, the White-legged Falconet.

The following are dimensions taken from the skin:—

Length, 6.75; wing, 4.22; tail, from vent, 2.6; bill, at front, from edge of cere to point, 0.42; tarsus, 0.9; mid toe, to root of claw, 0.82; claw, 0.33; hind toe, to root of claw, 0.45; claw, 0.36; the 2nd and 3rd quills sub-equal and longest; the 1st, 0.15, and 4th, 0.3 shorter.

Lores and a very narrow line continued backwards over the eyes to the sides of the neck, chin, throat, sides of neck (except a broad black patch extending downwards from the posterior portion of the eye for about 0.8), breast, abdomen, vent, lower tail-coverts, flanks, and tibial plumes, silky white; the sides black; wing lining white; the greater lower-coverts barred with brown; forehead, crown, occiput, back, rump, upper tail-coverts, wings, and tail glossy black; all the tail feathers, except the two central ones, with white bars on the inner webs, six on the outer pair, five and four on the others, and with two or three small white spots on the outer webs of the two or three exterior tail feathers quite at their bases; quills barred with white on their inner webs.

The bird is considerably larger than either of the two other species, the Red-legged and Black-legged Falconets, which occur within our limits.

This specimen was shot near Suddya in Assam.

IN A RECENT number of the *Ibis* Lord Walden proposes to change Blyth's name "*punctatus*" for our Spotted Wren, to "*formosus*," a name of his own, because *punctatus* is a title previously bestowed in 1823 by Brehm on the common European Wren.

In this I am quite unable to concur; and as it involves, to my notion, a fundamental error in principle, I feel bound to protest against it. Had Brehm's name stood for the species to which it was applied, the proposed change would be correct;

but as a fact the name does not stand, it has become a mere synonyme, is dead for our purposes, and therefore the adjective *punctatus* is again available to characterize some other species of the genus. Blyth did thus utilize it, and his name *punctatus* should, in my opinion, most assuredly stand.

WITH reference to what I said (ante, p. 21) as to the young of *P. fasciatus* having a black bill, I wish now to record that I have obtained a quite young bird of this species with the upper mandible *reddish*. It is unfortunately not sexed. Except in this one point, the colour of the upper mandible, it seems to differ in no respect from two that I obtained myself from the nest, and which had both mandibles *blackish*.

IN THE Proceedings of the Zoological Society for 1874, at page 210, will be found a most valuable monograph of the genus *Saxicola* by Messrs Blanford and Dresser.

I shall have later some remarks to offer on this monograph; but I am desirous of correcting at the earliest possible opportunity an error into which the authors have been inadvertently led in regard to *Saxicola Hendersoni*, Hume, owing possibly to my having been unable, when I described and figured the species, to describe or figure the summer or breeding plumage.

Our authors identify this species with *melanoleuca*, Güld, *eurymelana*, Ehr., but it really belongs to an altogether different section of the Wheatears.

Melanoleuca (of which I have specimens, one sent me long ago by Mr. Sharpe as *eurymelana*) pertains to the black and white *Saxicolas*, which have the interscapular region white, whereas *Hendersoni* belongs to the section which has this region *black*. How the mistake can have occurred I cannot guess, because, although the only specimens of *Hendersoni* in the British Museum are in winter plumage, still the bill of *melanoleuca* is so much broader at the base than that of *Hendersoni*, and the coloration of the back in winter of this latter so manifestly foretells black in summer, that I should not have thought it likely for any one to unite it and a white-backed species like *melanoleuca*.

I have quite recently obtained in Dr. Stoliczka's collection three males of *Hendersoni* in full breeding plumage. They closely resemble *S. leucomela*, Pall., but are altogether slenderer birds, have much smaller bills, have the black descending

further both on the middle back and markedly on the breast, and have only a scarcely perceptible buffy tinge on the lower tail-coverts. In *Hendersoni*, moreover, the black in the exterior tail feather runs considerably further up the outer web than it does on the inner, whereas in all my specimens of *leucomela* the black is even on both webs.

From *S. morio*, Ehr., they equally differ in the much smaller bills, and in the much greater amount of black on the breast, &c., and also in the silvery whiteness of the cap. Unlike both *leucomela* and *morio*, the lower surface of the quills is in this species a pale grey brown. Lastly, both the secondaries and their greater coverts are very distinctly, though narrowly, tipped with white.

What I say of *morio*, I say on the assumption that our authors are correct in identifying Ehrenberg's bird with our Punjaub one, which I hold to be the young of *picata*. It is just possible that the true *morio* may, though very like our birds, be really distinct, and the only specimen of *morio* I have seen differs so markedly in the bill as to favour somewhat this hypothesis. But Messrs. Blanford and Dresser are not likely to have overlooked such a point.

One specimen of *Hendersoni* marked, a female, differs in having the black browner than in the males, and in having no more black either on breast or back than *leucomela*, from which it only differs in its almost white under tail-coverts, much smaller bill, and generally smaller size and slenderer form. This bird was killed along with one of the males, with which it perfectly agrees in every point structurally; but the difference in the extent of black on back and breast, as compared with all the three males, is so marked, that until further specimens are obtained it seems to me an open question whether it may not belong to some other species not included in the monograph.

I WISH some competent European ornithologist would point out how immature specimens of *Erythropus vespertinus* and its Eastern representative *E. anurensis*, are to be distinguished; or on the other hand that some Indian ornithologist would procure a really adult Orange-legged Hobby within our limits.

At present it is still doubtful whether the birds that we obtain in India belong to the Eastern or the Western form.

The history of this so-called Eastern form is this: Von Radde, in the 2nd volume of his *Reisen in suden von ost Siberien*, mentioned that the Red-footed Hobbies from Eastern

Siberia had the under surface of the wings either entirely white, or white barred with grey, instead of the uniform deep tint which is found in European examples, and he proposed to distinguish them as var. *amurensis*.

This same species next turned up in South Africa, and the following note by Mr. Gurney (*Ibis*, 1868) contains much interesting matter in regard to the two species:—

"*Erythropus amurensis*, (Radde,) *Falco vespertinus*, var. *amurensis*, Radde, Reisen II., p. 102, tab. I., fig. 2; *Ibis*, 1866, p. 119; Eastern Red-footed Hobby. Iris hazel; eyelids and bare skin, orange; bill, dark orange; black at the tip; tarsi and feet, dark orange.

"The examples from South-east Africa appear to me to be specifically identical with specimens of both sexes in the Norwich Museum obtained in Northern China, consisting of a male and female from Yoon Ying, near Pekin, and of two males from the neighbourhood of Talien Bay.

"The question whether the Red-footed Hobby of India belongs to the present species, or to its Western congener, *Erythropus vespertinus*, is one which, in the absence of Indian specimens, I am unable to decide, and to which I would beg the attention of ornithologists resident in that country (*Ibis*, 1866, p. 119).

"Of the specific distinction between *E. amurensis* and *E. vespertinus* I cannot entertain the slightest doubt. The adult male of the former differs from that of the latter, in having the under wing-coverts of a pure white, instead of a slaty black, as well as in the slightly darker colouring of its upper parts. The female of *E. amurensis* differs from the female of the other species in the absence of rufous colouring on the head, neck, and under parts, except the thighs and under tail-coverts, which are rufous in it, as in the female of *E. vespertinus*, and also excepting a very slight rufous tinge on the sides of the neck and throat, and on the under wing-coverts, near the carpal joint. The plumage of all the under parts in the female of *E. amurensis*, excepting that of the throat (which is pure white), the thighs, and the under tail-coverts is strongly marked with ovate and sagitate spots of dark slaty black on a white ground, which markings assume a transverse form on the under wing-coverts and lower flank feathers, and produce a general appearance of the under parts considerably resembling the front view of the adult Common Hobby (*Hypotriorchis subbuteo*)."

Mr. Gurney adds in *Epist*:—

"Judging from the Nepal specimen in the British Museum, I suppose *amurensis* to be the species found in India."

I have failed to *satisfy* myself as to which species our Indian bird belongs to, but either it is *vespertinus*, or only the perfect adults of the two species are distinguishable.

I carefully examined all the specimens of the Orange-legged Hobby in the Calcutta Museum.

These are, 1st, adult male from Algiers.

	"	"	"	Hungarian Museum.		
Nearly	"	"	"	"	"	"
	Adult female	"	"	"	"	"
2nd,	Nearly adult male from near Calcutta.					
	Young male	"	"			
	"	female	"	"		
	"	male	Nilghiris.			
	"	"	Cachar.			

These Indian birds are undistinguishable from the European. At first when I examined the nearly adult male, almost in full adult plumage, and found the under wing-coverts barred, I made certain it was *amurensis*, but the nearly adult Hungarian male (the fully adult specimen of which had the whole under wing-coverts uniform deep slaty) had I found the lower wing-coverts precisely similarly barred.

So with the inner webs of the quills, the bars of which disappear in the perfect adult. In both the nearly adult birds some of the lateral tail feathers are old ones conspicuously barred.

A good adult male, if such a thing is to be got in India, is what we want to settle the question. Considering how comparatively common they are said to be in Eastern Bengal during the rains, this ought not to be very difficult.

AN EXAMINATION of an enormous series of *Otocoris*, collected in Yarkand by Dr. Stoliczka and other members of the expedition, during the winter months chiefly, inspires me with great doubts as to the validity of *O. longirostris*, Gould., which must, I believe, as surmised by Dr. Jerdon, be merged in *O. pencillata*, Gould.

SINCE MY description of *Podoces Biddulphi* was printed, I have had the opportunity of examining a male of this species. In plumage it does not differ from the female, but it is a somewhat larger bird, and has a conspicuously larger bill.

The following are the dimensions of a male taken from the dry skin :—

Length, 12 ; wing, 6 ; tail, from vent, 4·3 ; bill, at front (covered for nearly 0·4 with dense plumes), 2·2 ; tarsus, 1·9 ; mid toe and claw, 0·97.

I HAVE BEEN for years now humbly protesting that the two Falcons which I have called *sacer* and *Hendersoni* are not identical. I have never pretended to say which was the true *sacer*, nor have I denied that *Hendersoni* might be the true *sacer*, while what we in India call *sacer* may not be true *sacer*, and ought, perhaps, to stand as *cherug*, Hodggs. All I have asserted was that the bird we get in the Punjaub, where it is so common that I have shot five in a morning, and which we in India call *sacer* and which Schlegel figures as *sacer*, is quite distinct from the Falcon which we get from Yarkand, the *Shanghar* of eastern Falconers, and which occasionally strays into India.

I was grieved to find that Mr. Gurney would not agree with me; but my knowledge of our Indian *sacer* was such that I felt perfectly convinced that *Hendersoni* would sooner or later be accepted as distinct. Now a second specimen of this latter species, a young bird, has been brought from Yarkand by the expedition, and now Messrs. Gurney, Sharpe, and others must pardon me if I venture to assert that they are in error, and that *Hendersoni* is perfectly distinct.

I do not doubt that they have specimens of *Hendersoni* at home labelled *sacer*, but what I submit for their consideration is, that they have united under one name two different Falcons, which, though structurally very similar, differ considerably in plumage.

My position is this, I have shot dozens of our Punjaub *sacer* ; I have examined more than one hundred, and have now nearly fifty before me. I have the bird from youth to extreme old age ; from uniform dark brown nearly all over, to pale isabelline above, with white head and white under parts only marked with a few reddish isabelline spots ; nowhere is there room in the series for either young or adult *Hendersoni*. The tails alone seem to separate them. *Sacer* has the central tail feathers plain or conspicuously marked with one to ten round or even long oval spots ; never has our *sacer* a regularly barred tail. In *Hendersoni*, on the other hand, both young and old have the tails regularly and closely barred.

I am sending home a series of six of our *sacer*, together with the young *Hendersoni*, to be figured ; they will be in Mr.

Sharpe's custody at the British Museum, where the old *Hendersoni*, the type specimen, is deposited, and I invite a careful examination by European ornithologists. I have selected out of my huge series the *sacer* that comes nearest to adult *Hendersoni* in the matter of the red bars, and any one who compares the two will see how widely different, in the two species, is the character of these red bars.

I HAVE, I find, omitted to notice that Mr. Sharpe, to whom I submitted specimens of the dark Andaman *Halecyon*, is of opinion that this is distinct from *smymensis*. For those who concur in the specific distinctness of this bird, it should now stand as *Halecyon saturator nobis*. (*vide ante*, p. 168.)

To the Editor.

SIR,

ARE you aware that the natives of the Dacca and Tipperah districts very often *themselves* hatch the eggs of the Water Cock (*Gallinula cinerea*)? The *modus operandi* is to take half a cocoanut shell, put a layer of cotton in, on top of which place the egg and fill up with cotton; the shell is then placed on the man's navel, and tied on with a long strip of cloth, which is wound round the body. Until the egg is hatched the man never bathes. At first I discredited the story, but many respectable natives assure me they have known instances of this being done; they value those birds hatched by man very much. Jerdon says, on the authority of Dr. Taylor, that the "Korah" is kept for fighting purposes; they are kept for the purpose of catching wild ones. When a wild one is heard calling, the tame bird being let loose finds him out, and grappling keeps hold until the owner comes up and catches both. I know two zemindars in the Tipperah district who are enthusiasts at this. Now is the time for this sport.—J. R. CRIPPS.

BALLEEGUNJ, SYLHET,
July 10th, 1874.

SIR,

IN your December number of Vol. I, Captain Vipan, in his letter to you, says of *Eurystomus orientalis*:—"I believe I am about the first who noticed this bird in Southern India."

Prior to Captain Vipan's visit to Nellumbore, I procured several specimens of this bird at that place. The majority of these specimens were unfortunately lost, having been destroyed by rats on the Nilghiris; but I succeeded in conveying a very good series to England, where the specimens now are.

The bird is by no means rare in the Malabar Forests (where I also obtained its eggs), and may frequently be seen perched on a lofty bamboo in the neighbourhood of some forest stream. It is an exceedingly silent bird, and sits for hours together on a twig, occasionally taking a short flight after a passing insect, but almost invariably, unless disturbed, returning to the same perch.

I have shot and seen on the Segoor Ghaut of the Nilghiris several painted Spur Fowl at various times. It is by no means uncommon in the rocky parts of the Ghaut, which are covered with low scrub jungle. A specimen which Mr. Davison took away with him from my collection was shot in the Nulla-Mallay Range of the the Kurnool Forests, where it is found on the rocky spurs running out from the main range.

I lately came across the *Trocholopteron* (Jerdoni) found on the Bannasore Peak, on the Palghaut Range of hills. I have also seen it on the Chinuaconoor Ghaut of the Nilghiri Hills.—

R. W. MORGAN.

COIMBATORE, June 10th, 1874.

SIR,

WHEN out for a drive this morning, I saw, to my great surprise, two full-fledged young Coels (*Eudynamis honorata*) flying in company with a female Crow (*Corvus impudicus*). All three after a short flight settled on a low tree. Shortly after the Crow left to join a troop of Crows feeding about 80 yards off. One of the young birds accompanied her, but after a minute's perch on the ground returned to its companion. As I stood near watching the young couple, the foster parent returned, when one of the former approached her with fluttering wings and open mouth to be fed. This was done, the Crow with her strange offspring immediately after flying away to another tree. What is extraordinary these Coels imitated, with singular exactness, the "caw" of the young Crow. I shot the pair, and have them now as specimens. I have noticed this fact, because in your "Rough Draft of Nests and Eggs," page 140, you remark that you had "never seen Crows feed fully-fledged Coels out of the nest." I must confess that it is

the only instance I have witnessed; but the Civil Surgeon here tells me that last year he saw a Crow feed a fully-fledged Coel as it perched on a tree near his house.—F. R. BLEWITT.

SEONI, CENTRAL PROVINCES,
20th August 1874.

SIR,

THE *Ibis* for July is just to hand, containing a vigorous attack on STRAY FEATHERS by Lord Walden. With it I also received a letter from a friend, who is one of the ablest of living English ornithologists.

The following extract may help to console you under the terrible calamity of Lord Walden's blighting displeasure:—

"I mourn over the loss of the capital papers in STRAY FEATHERS to the *Ibis*. There is a spirit and a vigour in Hume's dashing papers which the stiff *Ibis* sadly wants. I was delighted with his slashing review of Finsch's parrots. He is quite right. Finsch knows nothing about anything but dried skins, and I am sure would not know a parrot if he saw him flying. I have often been vexed with Finsch's dogmatic mistakes about the N. African birds, and I am glad Hume has shewn him up so good naturedly about the Indian."

I may add that I observed the large Paroquet (*P. sivalensis*, or whatever its name is) frequenting buildings at Goojerat in the Punjab. I did not at the time notice any of *P. torquatus*.—W. E. BROOKS.

MOGULSERAI,
30th September 1874.

Viscount Walden,

President of the Zoological Society, &c., &c.,

ON THE EDITOR OF "STRAY FEATHERS."

JUST as this present number was about to issue, I was gratified to receive a copy of the July number of our English "pendant," the *Ibis*.

In this number Viscount Walden, President of the Zoological Society, &c., &c., &c., devotes no less than thirty pages to a vehement Philippic against the mildest and most inoffensive of mortals—need I explain—myself.

Poor Lord Walden is very angry; His Lordship's general urbanity is proverbial, but on the present occasion his habitually sweet temper has been sadly ruffled.

I am so sorry ! I really am *quite* blameless in this matter ; no doubt I did allude in a delicate though regretful manner to certain so-called cabinet naturalists, not the *real* cabinet naturalists, to whose learning and research every branch of natural history owes so much, but the mere synonymy grubbers, who too often usurp that title.

But I protest that in all I said I had only the class in the abstract, and not any particular members of it in view.

If now His Lordship straightway places the cap upon his own illustrious head, and then so loudly vituperates the humble manufacturer as to attract every one's attention to the excessive accuracy of the fit, surely I am not to blame if (despite the curious toadyism which in England so often places a titled diletante in positions which only really eminent men of science could worthily fill) he finds *at last* his proper position in public estimation.

His Lordship's present laborious personal attack upon me professes to be a reply to certain strictures of mine on "Die Papagien" of Dr. Finsch. But it is no reply in any ordinary sense of the word ; it does not *attempt* even to show that Dr. Finsch is right in any one single point in which I stated that he was in error ; it is simply framed on the lines of the traditional Irish brief, "no case for the defence, abuse the counsel for the prosecution."

This tirade is not very amusing (but then his worst enemies never accused His Lordship of possessing the faintest perception of humour) nor very brilliant (but then his best friends never credited him with any striking capacities, except in matters of finance), but he has doubtless done his best, and it would be unkind to discourage him ; besides, it would be most ungrateful on my part to be hard upon His Lordship ; he figures my new species in the *Ibis* with the most amiable docility ; he often gives little crumbs of help in matters of synonymy, and now he has favored STRAY FEATHERS with an advertisement thirty pages in length !

As for Dr. Finsch, he is cast in a larger mould ; since my paper was published I have received a most friendly note from him, with copies of some of his more recent papers. I have no doubt that when he catches me tripping, as he always easily can, and takes the trouble to take me in hand, he will duly flagellate me. So much the better ; all we want is the truth—fancy the flint

abusing the steel for striking it; I for one am always quite ready to give and take in all good humour—and in the meantime he is too much of a *man* to allow literary controversies to disturb *his* equanimity.

Au reste, the "responsible" Editor of the *Ibis* may find it worth while to devote thirty pages of his valuable journal to a personal attack upon *me*, but I, the "irresponsible" Editor of STRAY FEATHERS, feel that in sacrificing as many *lines* to a personal reply to *Lord Walden* I have fully taxed my readers' patience; and while still continuing ready to point out in a kindly spirit the errors into which His Lordship's laudable desire to distinguish himself too often betrays him, cannot venture to spare another single line to a personal controversy with that exalted individual.

ALLAN HUME.

September 27th, 1874.

Trichastoma minor, Sp. Nov.

Resembles T. *Abbotti*, *Blyth*, but is conspicuously smaller (wing, 2.5 against 2.8 to 3 in *Abbotti*), has a more than proportionately slenderer bill, a longer tail, and is everywhere more rufescent.

According to the diagnosis of the genus *Trichastoma* given by Jerdon, taken, I believe, from Blyth's original definition, the 4th quill ought to be the longest, and the tail nearly even. As a matter of fact, in *Abbotti* the tail is perceptibly rounded, and the 5th quill is always the longest, with the 6th and 7th sub-equal, and the 4th noticeably, in fact fully 0.1, shorter than the 5th.

The present species has the tail even more rounded than *Abbotti*, and noticeably longer. The proportions of the primaries in both are very similar.

The following are the dimensions of a male taken from the dry skin:—

Length, 5.3; wing, 2.5; tail, from vent, 2.3; bill, at front, 0.55 (against 0.75 in *Abbotti*, similarly measured); tarsus, 1.0; the 5th quill is the longest; the 6th, sub-equal; the 4th, 0.08, the 3rd, 0.3, the 2nd, 0.7, and the 1st, 1.1 shorter than the 5th.

The exterior lateral tail feathers on either side 0.3 to 0.4 shorter than the central pair.

The legs, feet, and lower mandible appear to have been a pale fleshy yellow; the upper mandible a moderately dark brown.

The whole top and back of the head and neck, interscapular region, scapulars, and back a rufescent olive brown, paler and more rufescent on the forehead, where the olive tinge is wanting. Feathers of the head faintly paler shafted. Visible portions of closed wings, rump, tail, and upper tail-coverts ferruginous brown, tinged with olivaceous in some, more rusty in other specimens. Inner webs of quills hair brown.

Lores pale rufous; ear-coverts mingled pale rufous and olivaceous, and the shafts slightly paler. Middle of lower abdomen and feathers above the vent nearly pure white. The rest of the lower parts (including wing lining and inner margins of quills) rufous buff, tinged strongly with olive on the sides and flanks.

Our specimens were procured at various localities in Tenasserim, Lemyne, Yea, and Tavoy.

I need scarcely say that this species is wholly different from *T. rostratum*, Blyth, and *T. bicolor*, Less, both of which are said to have been recently sent from Tenasserim.

The former is about 5.75 in length, with a wing 2.7, is a ruddy brown above, has a very elongated bill, and is pure white underneath.

Bicolor is a much larger bird. Length, about 6.5; wing, 3.3. Is an uniform ruddy brown above, lighter and more rufous than *rostratum*, and it has a much thicker and basally broader bill than the latter. It also is white below, but it has a reddish, or in some a brownish, tinge on the breast.

After all but these two last pages were printed I received Part XXIV of Gould's Birds of Asia, and discovered, too late, that *Passer Stoliczkae*, supra, p. 516, is *P. ammodendri*, Severtzoff. I dare say when I do get the latter's work, I shall find that many of my other supposed Turkestan novelties have been already described by that naturalist. Still, as explained at p. 514, I felt bound in Stoliczka's interests to describe all species that seemed to be new.

Why I had not seen Gould's Birds of Asia is, that up to this time Mr. Gould had refused to supply Parts 24, &c., to my booksellers, under the impression that I had purchased Parts 1—23 from some gentleman who had not paid for them, whereas in reality I got my copy from Messrs. Wheldon. No one in Europe, I am sure, realizes the numerous disadvantages at which ornithologists in distant colonies are placed.

A. O. H.

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