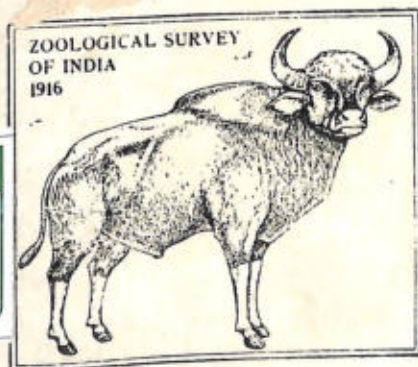




BIBLIOGRAPHY OF INDIAN ZOOLOGY

VOLUME 25



**ZOOLOGICAL SURVEY
OF INDIA**

BIBLIOGRAPHY OF INDIAN ZOOLOGY

Vol. 25
1982



Edited by the Director,
ZOOLOGICAL SURVEY OF INDIA
1991

Published : June, 1991

016.591
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Price : Inland Rs. 100.00
Foreign £ 6.50 \$ 10.00

Acc. No - P312
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Production : Publication Division
Zoological Survey of India, Calcutta.

BIBLIOGRAPHY OF INDIAN ZOOLOGY
Compiled and Prepared by the staff of
INFORMATION & DOCUMENTATION DIVISION
Z. S. I., CALCUTTA

Dr. Kuldip Rai, : Scientist "SE"
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FOREWORD

This Bibliography deals with published Zoological literature of Indian region comprising India, Bangladesh, Bhutan, Burma, Nepal, Pakistan and Sri Lanka. The main subject covered is Zoology and the subsidiary subjects are Wildlife, Environmental Science, Ecology, Aquatic Ecology, Parasitology, Histochemistry, Cytogenetics, Paleontology, Entomology, Systematics/Faunistics and Economic Zoology.

Documents indexed are Monographs, Proceedings, Journals, Articles, Conference Papers, etc. Mode of indexing is by Taxa Group Classification, Subject and Author indices and the method of searching is based on classification.

This 25th volume of the Bibliography of Indian Zoology refers mainly to the year 1982 and partly 1981. Needless to mention that a complete literature on a particular subject like Zoology is absolutely essential, hence to cover all aspects is quite time consuming. Though we are behind schedule, we hope to, very soon, bridge the gap and try not to be more than two years behind in bringing out this Bibliography after the relevant scientific journals are printed, which is usual for any Bibliography of this kind. We appeal to all workers in Zoology to send us the reprints of their publications to help us to serve you better.

Thanks are due to Dr. Kuldip Rai, Scientist-SE, Shri M. Z. Ansari, Assistant Zoologist and other staff members of the Information and Documentation Division for their sincere efforts in this compilation and to the staff of the Publication Division for bringing out this volume in its present form.

(Prof. Mohammed Shamim Jairajpuri)
Director.



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I. BIBLIOGRAPHY OF THE INDIAN ZOOLOGY FOR THE YEAR 1982

1. GENERAL ZOOLOGY

1. Acharyya, S. K. 1982. Wildlife and Nagaland. —*Hornbill*, (2) : 11-13.
2. Anon, 1982. Liberation of animals. —*Anim. Citizen*, 19 (4) : 32-33.
3. Bachkheti, N. D. 1982. Why conservation? —*Anim. Citizen*, 20 (1) : 9-11.
4. Blower, J. 1982. National parks for Burma. —*Tiger Pap.*, 9 (2) : 1-5.
5. Chakravarty, I., Ghosh, A, and Roy, B. R. 1982. A multigeneration study to determine the teratogenic effect of lac dye. —*Indian Shellac*, (Spl. Issue) : 6-11.
6. Daniel, A. and Ramanathan, M. B. 1982. Vertical distribution of macrozooplankton biomass and its major constituents in the northern Arabian sea during January to May, 1974. —*Rec. zool Surv. India*, 79 (3 & 4) (1981) : 385-395.
7. Das, S. M. 1982. Seasonal appearance of wildlife in Kumaun Himalayas. —*Envir. Awareness*, 5 (1) : 7-9.
8. Datta, N. C., Bandyopadhyay, B.K., Das, M. K. and Bandyopadhyay, S. B. 1982. Diurnal rhythm of some physico-chemical properties and zooplankton in a tropical freshwater pond in Calcutta, West Bengal, India. —*Indian J. Phys. nat. Sci.*, (A) 2 : 22-27.
The study deals with the changes of some physico-chemical properties and zooplankton population of a perennial fish pond in Calcutta.
9. Dhungel, S. K. 1982. A glimpse of Sagarmatha : world's highest National Park. —*Tiger Pap.*, 9 (2) : 11-14.
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12. Garson, P. J. 1982. Forest wildlife threatened in the Himalayas. —*Hornbill*, (2) : 5-8.
13. Ghosh, H. C. 1982. Observations on the flora and fauna of the Kumaon Himalaya. —*Zoologiana, zool. Surv. India*, 4 (1981) : 77-86.
14. Harshey, D. K., Patil, S. G. and Singh, D. F. 1982. Limnological studies on a tropical freshwater fish tank of Jabalpur, India. The abiotic factors. —*Geobios News Rep.*, 1 : 98-102.
15. Iyer, H. K., Rao, P. S., Unnithan, G. R., Nair, A. K. K. and Nair, R. G. 1982. Survey on the idle capacity of fish processing (freezing) plants in India-II-East coast. —*Fishery Technol.*, 19 (1) : 9-14.
16. Johri, V. 1982. Some remarkable animals. —*Anim. Citizen*, 19 (4) : 24 (D).
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18. Khan, R. A. 1982. Pollution of inland waters. —*Zoologiana, zool. Surv. India*, 4 (1981) : 15-27.
Pollution affects in many ways. It alters the natural quality of the water in which effluents are discharged, bringing drastic changes which in turn affect the biota

- like plants, plankton, bottom fauna and fishes. It also affects the wildlife and livestock and after all public health.
19. **Lavingia, B.** 1982. Honey-Dextran medium in preservation of cornea. —*Indian Bee J.*, **44** (1) : 7-8.
 20. **Moyle, P. B. and Senanayake, F. R.** 1982. Wildlife conservation in Sri Lanka : A Buddhist dilemma. —*Tiger Pap.*, **9** (4) : 1-4.
 21. **Mukherjee, A. K.** 1982, *Endangered animals of India*. Zoological Survey of India, Calcutta : i-x, pp. 1-122, figs. 45, pls. 14. The number of endangered or threatened species of animals, their habits, habitats and their status in the total faunistic composition had remained ambiguous or insufficiently known and so the present work deals with some aspects.
 22. **Mukherjee, R. N., Saha, S. S. and Ghosh, R. K.** 1982. Further wild encounters in Darjeeling Himalaya.—*Cheetal*, **23** (4) : 35-37.
 23. **Naoroji, R.** 1982. Periyar—a profile in decay. —*Hornbill*, (1) : 6-8.
 24. **Narayanaswami, T. S.** 1982. Wildlife preservation in India.—*Anim. Citizen*, **20** (1) : 21-24.
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 26. **Nayak, L. and Patra, A. K.** 1982. Diurnal changes of some hydrobiological factors of reservoir Hirakud, Orissa. —*Comp. Physiol. Ecol.*, **7** (4) : 262-267. Diurnal changes in some physico-chemical parameters and planktonic contents in Reservoir Hirakud were investigated from 13.00 hrs. on January 15 to 13.00 h. on January 16, 1980 during winter season and were found to vary.
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 33. **Roberts, J.** 1982. The Machapuchare wildlife conservation project in Nepal. —*Tiger Pap.*, **9** (4) : 18-20.
 34. **Roonwal, M. L.** 1982. *Fauna of the Great Indian Desert (Past and present composition, zoogeography, ecology, biology, physiology and conservation)*. Desert Resources and Technology (Ed. by Alam Singh) Vol. 1, pp. 1-86, pls. 8. Jodhpur (Scientific Publishers and Geotech Academia).
 35. **Roy, S. K.** 1982. Role of non-Governmental Organisations in conservation of the environment. —*Cheetal*, **23** (3) : 16-19.

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37. Sarkar, S. K. and Konar S. K. 1982. Acute toxicity of agricultural fertilizers to aquatic organisms. —*Geobios*, 9 (5 & 6) : 225-228.
38. Shahi, S. P. 1982. Man and wildlife. —*Cheetal*, 23 (3) : 30-39.
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40. Sharma, I. K. 1982. Flora and Fauna of the Thar desert. —*Wild. Wildl. Fund-Newsl.*, 3 (4) : 5-6.
41. Singh, V. B. 1982. Human dimension in wildlife management in India.—*Indian Forester*, 108 (6) : 449-454.
42. Stanley and Breedan, B. 1982. A year at Bharatpur's Keoladeo National Park. —*Hornbill*, (4) : 15-22.
43. Subba Rao, R. and Chandra Mohan, P. 1982. A preliminary account of the zooplankton of Lawson's Bay, Waltair. —*Geobios News Rep.*, 1 (2) : 129-130.
44. Subramanian, K. B. 1982. Management of National Parks and Sanctuaries.—*Anim. Citizen*, 20 (1) : 20.
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2. PROTOZOA
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50. Biswas, M. K. and Mukherjee, R. 1982. On some parasitic ciliates (Ciliophora : Protozoa) of invertebrate hosts from Calcutta and its environs. —*J. zool. Soc. India*, 33 (1-2) (1981) : 153-156.
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53. Choudhury, D. S. and Ghosh S. K. 1982. Staining of sporozoites from infected mosquitoes. —*Indian J. Malar.*, 19 (2) : 143-144.
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57. **Joshi, B. D.** 1982. Three new species of haematozoans from freshwater teleosts (Pisces). —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (4) : 397-406.
- The three new species of haematozoan parasites were described from two freshwater teleosts viz., *Mystus aor* and *Wallago attu*.
58. **Kaushik, N. K., Subramanyam, D. and Sehgal, S.** 1982. Blocking of malarial transmission by a gamete vaccine against *Plasmodium berghei* NK-65.—*Indian J. Malar.*, **19** (1) : 13-19.
- Effect of a gamete vaccine was studied in hamsters infected with *P. berghei*. The work reported here relates to an effective immunization of hamsters against sexual stages of *P. berghei* NK-65 using X-irradiated gametes.
59. **Mitra, K. and Sharma, N. N.** 1982. Growth studies on *Tritrichomonas foetus* under different experimental conditions.—*Indian J. Anim. Hlth.*, **21** (2) : 147-149.
60. **Mohan Rao, M. R. K. and Choudhury, Ch.** 1982. Histopathological evidence of *Balantidium coli* in a she buffalo.—*Indian J. Anim. Hlth.*, **21** (2) : 152.
61. **Pal, N., Banerjee, M. and Dasgupta, B.** 1982. Cytochemical observations on balantidia parasitic in Indian salamander.—*J. Beng. nat. Hist. Soc., (N. S.)*, **1** (1) : 11-26.
- The present study is based on *B. tylotritronis* and *B. rayi* found in the rectum of Indian Salamander (*Tylotriton verrucosus*) collected at Jorpokhri (altitude 7475 feet from mean sea level), Darjeeling district, W. Bengal.
- 61a. **Pal, N. L. and Dasgupta, B.** 1982. Malarial parasites of some Indian birds.
- Proc. zool. Soc. Calcutta*, **33** (1-2) (1980) : 87-109, pls. 5.
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65. **Rao, P. R., Hanumantha Rao, K. and Shyamasundari, K.** 1982. *Euplotes* (Protozoa : Ciliophora) : Comparative studies on four freshwater species.—*Life Sci. Adv.*, **1** (2) : 177-185.
- In systematic survey of ciliate fauna of Visakhapatnam, Andhra Pradesh, four species of *Euplotes* Ehrenberg have been identified. The four species can be differentiated mainly by (1) Nuclear configuration and (2) Silverline system.
66. **Rao, T. B., Rao, S. B. and Israel.** 1982. Variation in susceptibility to *Trypanosoma evansi* infection in Beranil treated mice. —*J. biol. Res.*, **2** (2) : 183-184.
67. **Sarkar, N. K. and Haldar, D. P.** 1982. Observations on the two new species of Cephaline gregarines (Protozoa : Sporozoa) from odonates in West Bengal.—*Proc. zool. Soc. Calcutta*, **33** (1-2) (1980) : 17-27, pl. 1.
- The morphology and life history of the two new species have been described

and a comparison of characters of these species with the previously described ones has also been made here.

68. Sasmal, N. K., Biswas, S. S., Bhattacharyya, B., Banerjee, C. D. and Maitra, D. N. 1982. Incidence of *Theileria hirci* (Dschun kowsky, 1924) infection of sheep in India.—*Indian J. Anim. Hlth.*, **21** (1) : 78, 1 pl.
69. Srivastava, I. K., Saxena, N., Pandey, V. C. and Dutta, G. P. 1982. Glucose-6 phosphate dehydrogenase in *Plasmodium knowlesi*. —*Indian J. Malar.*, **19** (2) : 97-100.

3. PORIFERA

70. Rao, I. S. and Khan, M. A. 1982. Ecology of *Corvospongilla lapidosa* Annandale, 1908) (Porifera : Spongillidae) in the Manjira reservoir, Sangareddy, Andhra Pradesh. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (6) : 553-562. The Spongillid *C. lapidosa* is reported for the first time from the Manjira reservoir in Andhra Pradesh. Observations made on certain aspects of its ecobiology are discussed.
71. Soota, T. D. and Patanayak, J. G. 1982. On some freshwater sponges from the unnamed collection of the Zoological Survey of India. —*Rec. zool. Surv. India*; **80** (1 & 2) : 215-229.
72. Thomas, P. A. 1981. Boring sponges destructive to economically important molluscan beds and coral reefs in Indian Seas. —*Indian J. Fish.*, **26** (1 & 2) (1979) : 163-200, figs. 5, pls. 5. Systematics, description and distribution are given of 32 species of boring sponges from the Indian Seas.

The present composition of boring sponges in the Indian Seas is likely to get altered in future and such changes, if any, may be well affirmed by comparing with the observations presently reported.

73. Thomas, P. A. 1982. Studies on the Indian sponges VIII, Four new records of silicious sponges *Echinochalina glabra* (Ridley and Dendy), *Higginsia mixta* (Hentschel), *Geodia lindgreni* (Lendenfeld) and *Pachamphilla dendyi* Hentschel from the Indian Ocean. —*J. mar. biol. Ass. India*, **19** (2) (1977) : 115-122.

All these species are known previously from Australia and adjacent regions. The discovery of these species from the Gulf of Mannar, Palk Bay and Andaman Sea extends the distribution of these species to the Indian Ocean.

4. COELENTERATA (CNIDARIA)

74. Nagabhusanam, A.K. and Jothinayagam, J. T. 1982. Observations on the Zoanthid, *Sphenopus marsupialis* (Gmelin) (Anthozoa : Zoanthoidea : Sphenopidae), along the Southeast Coast of India, with notes on its behaviour in aquaria. —*Rec. zool. Surv. India*, **80** (1 & 2) : 17-26.

5. PLATYHELMINTHES (a) Trematoda

75. Agrawal, N. and Khan, S. 1982. Studies on some *Tetracotyle* Fillipi (1859) metacercariae from fishes of Lucknow.—*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (6) : 515-521. Three unknown *Tetracotyle* metacercariae collected from piscine host, have been described here.

76. Agrawal, N. and Khan, S. 1982. Studies on some strigeid (*Neascus*) Metacercariae from fishes of Lucknow. — *Uttar Pradesh J. Zool.*, **2** (1) : 32-40.
77. Agrawal, N. and Singh, H. S. 1982. Studies on monogenetic trematodes from freshwater fishes of Gorakhpur (India), Part IV. — *Uttar Pradesh J. Zool.*, **2** (2) : 58-61.
78. Chakravorty, B. N. and Manna, B. 1982. On *Postorchigenes ovatus ovatus* Tuban-gui, 1928 (cf. Fischthal & Kuntz, 1967) (Lecithodendridae : Trematoda) : Seasonal occurrence in gut of *Hemidactylus flaviviridis*. — *Indian J. Anim. Hlth.*, **21** (2) : 79-82.
- The present specimens show variations in measurements and in some of their important characteristics from those described earlier.
- 78a. Dwivedi, M. P. and Dwivedi, U. 1982. A new trematode parasite, *Opedunculata sapani* n. sp. (Trematoda : Opecoelidae) from Sapana dam Betul. — *Uttar Pradesh J. Zool.*, **2** (1) : 7-9.
79. Ghosh, A. K., Nandi, S. N. and Ghosh, G. L. 1982. Neoplastic growth in *Gigantocotyle explanatum* (Croplin, 1847) Nasmak, 1937, infected bile duct of water buffaloes (*Bubalus bubalis*). — *Indian J. Anim. Hlth.*, **21** (1) : 51-52, 1 pl.
80. Gopal, K. S., Shyamasundari, K., Vijaya-lakshmi, C. and Hauumantha Rao, K. 1982. Observations on the esterase in *Spelotrena chauhanii* Gupta and Anis, 1975 with special reference to nervous system. — *Indian J. Zootomy*, **23** (1) : 23-27.
81. Gupta, B. C., Parshad, V.R. and Guraya, S. S. 1982. Effects of carbon dioxide, temperature, pH and the number of worms on the *in vitro* survival, histology and histochemistry of *Paramphistomum cervi* (Paramphistomatidae : Digenea). — *Vet. Parasitol.*, **11** (3) : 193-202.
- Survival of immature and mature stages of *P. cervi*, collected from the intestine and rumen of sheep has been studied in *in vitro* using Tyrode's, Hank's, Eagle's, Stephenson's saline and Hedon-Fleig media.
82. Gupta, S. P. and Sharma, R. K. 1982. Two new monogenetic trematodes of the genus *Bifurcohaptor* Jain, 1958, from freshwater fishes of Uttar Pradesh. — *Indian J. Helminth.*, **33** (1) (1981) : 38-44.
- Four specimens from gill filaments of *Bagarius bagarius* (Ham.) and five specimens from the gill filaments of *Channa striatus* (Bloch) from river Gomati at Lucknow were collected and from amongst them were described two new species as *B. muelleri* and *B. tripathi*, respectively. Keys to the species is also given.
83. Gupta, S. P. and Sinha, N. 1982. Phosphatase activity in *Echinochasmus renio-vorus* (Trematoda). — *Indian J. Helminth.*, **33** (1) (1981) : 52-57.
84. Joshi, S. C. and Shah, H. L. 1982. A note on the occurrence of helminth parasites of goats in Madhya Pradesh. — *J. N. K. V. V. Res. J.*, **15** (4) (1981) : 179-180.
85. Kanwar, U., Agrawal, M. and Nath, V. 1981. Cytochemical studies on the vitelline glands of the trematodes *Gastrothylax crumenifer* and *Ceylonocotyle dawesi*. — *Res. Bull. Punjab Univ.*, **31** (1-4) (1980) : 97-104.

86. Kanwar, U., Agrawal, M. and Nath, V. 1982. Cytochemical studies on the egg-shell formation in the trematodes, *Gastrothylax crumenifer* and *Ceylonocotyle dawesi*. —*Res. Bull. Punjab Univ.*, **33** (1-2) : 41-45.
- Egg-shell formation in the trematodes and the significance of tanned eggs in these animals have been discussed.
87. Kharoo, V.K. and Dhar, R. L. 1982. On a new species of trematode *Leucochloridium gallinuli* n.sp. from the Indian Moorhen *Gallinula chloropus* from Kashmir. —*Indian J. Helminth.*, **33**(1) (1981) : 15-19.
88. Kharoo, V. K. and Dhar, R. L. 1982. A new species of the genus *Pleuropsolus* Mehra, 1935 from *Turdoides tericolor tericolor*. —*Indian J. Helminth.*, **33**(1) (1981) : 34-37.
- About five dozens birds *Turdoides tericolor tericolor*, commonly known as "Seven sisters" were examined for any trematode at Allahabad. Only one was found to be infected with about 27 specimens in small intestine. This is described as new to science.
89. Kishore, B., Shyamasundari, K. and Rao, K.H. 1982. Observations on the nervous system of *Euparacistomum herpestesi* (Trematoda : Dicrocoeliidae). —*Proc. natn. Acad. Sci. India*, **52B**(2) : 203-208.
- The nervous system of *E. herpestesi* has been traced here by using 5-bromoindoxyl acetate method.
90. Mishra, P.N. and Gupta, N.K. 1981. On two new and one already-known species of the genus *Uvulifer* Yamaguti, 1934 (Trematoda : Diplostomatidae) and a key to its species. —*Res. Bull. Punjab Univ.*, **31**(1-4) (1980) : 61-72.
- This paper deals with an account of two new species, *Uvulifer chandigarhensis* and *U. giriensis* and one already-known sp. *U. cochlearis* (Verma, 1936) Dubois (1944) recorded from different birds in Himachal Pradesh and Chandigarh.
91. Mukherjee, R. P. and Ghosh, R.K. 1982. Studies on the larval trematodes of West Bengal. Part I. *Cercaria esplanadensis* Mukherjee and Ghosh, 1975, a furcocercous Cercaria. —*Rec. zool. Surv. India*, **80**(1 & 2) : 111-116.
92. Mukherjee, R. P. and Srivastava, H. D. 1982. Studies on the life history of *Gigantocotyle explanatum* (Creplin, 1847) Nasmark, 1937, an amphistomatous parasite of bovines in India. —*J. zool. Soc. India*, **33**(1-2) (1981) : 111-130.
93. Pandey, K. C. and Tiwari, S. K. 1982. Infection of an encylometrid metacercaria in *Channa punctatus* (Bloch). —*J. zool. Soc. India*, **33**(1-2) (1981) : 150-153.
94. Sathyanarayana, M. C. 1982. Studies on the occurrence of *Paraplerurus sauridae* (Digenea : Hemiuridae) and the worm load in the marine fish, *Saurida undosquamis*. —*Comp. Physiol. Ecol.*, **7**(4) : 315-217.
95. Simha, S. S. and Rama Krishna, G. V. 1982. The neuroanatomy and distribution of esterases in different groups of helminth parasites. —*Indian Rev. Life Sci.*, **2** : 19-40.
- The unique feature of the work of Indian authors in this field is that the nervous system has been traced in whole mount preparations of the parasites facilitating the gross study of the system in detail.

96. **Simha, S. S., Ramkrishna, G. V. and Reddy, S.** 1982. Scanning electron microscopy of integumental surface of trematode *Encylometra colubrimurorum*. —*J. zool. Soc. India*, **31**(1-2) (1979) : 47-49.
97. **Srivastava, C. B.** 1982. Intraspecific variations in *Exotidendrium gharialii* Mehra, 1935 with a review of the family Exotidendriidae Mehra, 1935 status emended Srivastava, 1977 (Trematoda : Digenea). —*J. zool. Soc. India*, **33**(1-2) (1981) : 131-139.
98. **Tandon, V. and Bhutia, P. T.** 1982. Observations on the neurosecretory cells of the sheep's rumen fluke, *Paramphistomum epielitum* Fiscoeder. —*Indian J. Helminth.*, **33**(1) (1981) : 1-9.
- 98a. **Tandon, V. and Gupta, N. K.** 1982. On some blood flukes (Spirorchiiidae : Coeuritrematinae) from freshwaters chelonians in India. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91**(3) : 275-282.
Coeuritrema sutlejensis Mehrotra, 1973 and *C. sheilae* are described in detail and their validity is discussed.
99. **Varma, P. K.** 1982. On a new genus and new subfamily of the family Monorchiiidae Odhner, 1911 from an Indian marine fish. —*J. Biol. Res.*, **2**(2) : 179-182.
A large collection of digenetic trematodes of marine fishes of Kerala Coast was made some time back. The present n. sp. was collected from *Pristipoma furcatum*.
100. **Venkatanarsaiah, J.** 1981. New monogenetic trematodes of the genus *Dactylogyrus*, Diesing, 1850 from freshwater fishes of Andhra Pradesh, India. —*J. Anim. Morph. Physiol.*, **28**(1 & 2) : 15-20, pl. 1.
- (b) Cestoda
101. **Anantaraman, M.** 1982. The regulation of cestode parasite population. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (3) (1978) : 13-16.
102. **Balasubramanian, M. P., Nellaiappan, K. and Ramalingam, K.** 1982. Biochemical studies on non-specific phosphomonoesterases of *Moniezia benedeni* (Cestoda). —*Geobios*, **9**(2) : 54-57.
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This is the first report of a larva occurring in an economically important marine decapod, *Penaeus indicus*.
104. **Kadav, M. and Agarwal, S. M.** 1982. Amino acid picture (Qualitative & quantitative) of host serum of uninfected and infected *Clarias batrachus* parasitized with caryophyllids. —*Indian J. Helminth.*, **33**(1) (1981) : 79-86.
105. **Malhotra, S. K.** 1982. Studies on amino acids in *Raillietina (Raillietina) saharanpurensis* (Malhotra and Capoor, 1981) with a note on biochemical variation in cyclophyllidean cestodes. —*Comp. Physiol. Ecol.*, **7**(3) : 207-210.
106. **Malhotra, S. K. and Capoor, V. N.** 1982. Infection pattern and log-distribution of species abundance in helminthiasis of poultry in a sub-humid region. —*Indian J. Phys. nat. Sci.*, (A) **2** : 6-11.
The infection patterns of cestode population and dominance rarity relationships among cestode species of poultry at Allahabad were illustrated.

107. Nadakal, A. M. and Nair, K. V. 1982. A comparative study on the mineral composition of the poultry cestode *Raillietina tetragona* Malin, 1858 and certain tissues of its host. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (2) : 153-158.

108. Niyogi, A., Gupta, A. K. and Agarwal, S. M. 1982. Population dynamics of caryophyllid parasitizing *Clarias batrachus* at Raipur. —*Geobios News Rep.*, **1** (2) : 81-93.

An account of species-wise population dynamics of caryophyllids, including intensity, density, relative density, infestation index, dominance percentage and frequency distribution month-wise, sex-wise and age-wise was given.

109. Pathak, K. M. L., Gaur, S. N. S. and Sharma, S. N. 1982. The pathology of *Cysticercus tenuicollis* infection in goats. —*Vet. Parasitol.*, **11** (2) : 131-139.

The pathology of *C. tenuicollis* in goats was studied on days 7, 15, 30 and 60 post-infection.

110. Srivastav, A. K. and Capoor, V. N. 1982. On a new cestode *Volipora amethiensis* n. sp. —*J. zool. Soc. India*, **33** (1-2) (1981) : 33-36.

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6. ROTIFERA (ROTATORIA)

112. Das, N. G. and Bhuiyan, A. L. 1982. Studies on brachionid rotifers from Dacca city. —*J. zool. Soc. India*, **33** (1-2) (1981) : 95-109.

113. Nayak, T. R., Iyer, S. J. and Jaish, S. C. 1982. Seasonal variations of rotifers and certain physico-chemical factors of Matyatal, Panna (M. P.) India. —*Comp. Physiol. Ecol.*, **7** (3) : 165-169.

114. Patil, C.S. and Gouder, B. Y. M. 1982. Freshwater fauna of Dharwad (India) : II Rotifera. —*J. Karnatak Univ.*, **27** : 93-114.

The present work is an extensive survey of 54 species of rotifers belonging to 21 genera and 13 families recorded from 26 inland waterbodies in an area around Dharwad.

115. Rao, R. K. and Mohan, P. C. 1982. Studies on freshwater rotifers from Visakhapatnam, India. —*Rec. zool. Surv. India*, **79** (3 & 4) (1981) : 397-403.

7. ASCHELMINTHES

(a) Nematoda

116. Ahmad, I. and Jairajpuri, M. S. 1982. Locomotory characteristics of *Chiloplacus symmetricus* juveniles. —*Indian J. Nematol.*, **12** (1) : 175-177.

117. Ahmad, M. and Jairajpuri, M. S. 1982. Nygolaimina of India. —*Rec. zool. Surv. India Occ. Pap.*, No. 34 : 1-70.

The authors deal with nygolaim nematodes and have given detailed account of their morphology with particular reference to those characters which are of taxonomic importance.

Two new subfamilies have been described as Solididentinae and Paravulvinae under Nygolaimidae. Twenty spp. under 10 genera have been described and figured, including 3 new species.

118. Ahmad, N. and Jairajpuri, M. S. 1982. Detailed studies on the morphology and intraspecific variations of *Parahadronchus shakili* (Jairajpuri, 1969) Mulvey, 1978 with some observations on its juvenile stages. —*Rec. zool. Surv. India*, **80** (1 & 2) : 27-46.

The intra-specific variations, the musculature, the digestive and the reproductive organs are described and observations on different juvenile stages of this species have been made.

119. Ahmad, N. and Jairajpuri, M. S. 1982. Population fluctuations of predatory nematode, *Parahadronchus shakili* (Jairajpuri, 1969) Mulvey 1978 (Mononchida). —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (3) (1978) : 1-12.
- Population fluctuation, seasonal variations, vertical migration, breeding cycle and predatory—prey relationship of the species were discussed here.
120. Ahmad, N. and Jairajpuri, M. S. 1982. Effect of pH, mineral salts and fatty acids on the predatory nematode, *Parahadronchus shakili* (Jairajpuri, 1969). —*Indian J. Nematol.*, 12 (1) : 22-30.
121. Ahuja, S. 1982. The control of root-knot nematode, *Meloidogyne incognita* on tomato by rare root dip treatment. —*Indian J. Ent.*, 44 (3) : 289-290.
122. Ahuja, S. 1982. Susceptibility of root-knot nematode, *Meloidogyne incognita* to oxamyl and dazomet. —*Indian J. Ent.*, 44 (4) : 351-354.
123. Ali, S. S. and Koshy, P. K. 1982. A note on use of methyl bromide for control of root-knot nematodes in cardamom nurseries. —*Indian J. Nematol.*, 12 (1) : 147-150.
124. Atwal, A. S. and Bains, G. S. 1982. Sesamum orientale and African marigold as antagonistic plants in the control of root-knot nematode (*Meloidogyne incognita*) on okra (*Abelmoschus esculentus*). —*Indian J. Ecol.*, 9 (1) : 155-157.
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127. Bajaj, H. K. and Bhatti, D. S. 1982. Nematodes associated with cotton in Haryana and Punjab with description of two Leptonchid nematodes. —*Indian J. Nematol.*, 12 (1) : 6-13.
128. Bajaj, H. K., Kaushik, H. D. and Bhatti, D. S. 1982. *Psilenchus graminus* sp. n. and *Deladenus durus* (Cobb, 1922) Thorne, 1941, a new record from India. —*Indian J. Nematol.*, 11 (2) (1981) : 137-140.
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130. Baqri, Q. H. 1982. Characters to be observed and considered at the specific level in the taxonomy of Dorylaimina (Nematoda). —*J. zool. Soc. India*, 33 (1-2) (1981) : 141-148.
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133. Baqui, A. and Humaira Khatoon 1982. Histochemical changes in *Setaria cervi* caused by certain anthelmintics. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (2) : 135-141.
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136. Chhabra, H. K. and Kaul, V. K. 1982. Occurrence and control of *Aphelenchoides composticola* on mushrooms. —*Indian J. Nematol.*, **12** (1) : 191-192.
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- Two males and two females of this species were obtained from the heart of the Painted Partridge, *Francolinus pictus*.
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 156. Gupta, A. K. et al. 1982. Prevalence of human intestinal helminths in Sagar, M. P., India. —*Comp. Physiol. Ecol.*, **7** (4) : 253-255.
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- A brief description of *Pingus sinensis* Hsu, 1933 is given. Both males and females were found to be about double the original size. A new host and a new locality have been reported for this parasite.
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- Seven male and female specimens were collected from caecum of *Lepus nigricollis* and described as *P. buckleyi* n. sp. and several exs. of both sexes were collected from the intestine and caecum of squirrel, *Funambulus palmarum* Linn., and were described as *P. cameroni*. This paper gives a key to the species.
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This paper is the concluding part on the Strombidae of Indian Seas and the first comprehensive report on the species of this region. Fourteen species belonging to four genera are recorded from the Indian Ocean. Two species of *Rimella* are reported here for the first time from Indian Ocean.

290. Ramakrishna, G. V. and Simha, S. S. 1982. Post helminthic infectional changes in the ovotestis and fecundity rate of *Lymnaea luteola* (Lamarck). —*J. zool. Soc. India*, 31 (1-2) (1979) : 39-45.
291. Vijayan, P. K., Perigreen, P. A., Surendran, P. K. and Balachandran, K. K. 1982. Processing clam meat into pickles. —*Fishery Technol.*, 19 (1) : 25-28.

10. ANNELIDA

292. Bohra, M. H. and Gupta, A. N. 1982. Adenosine triphosphatase and its implications in the functional morphology of the earthworm spermathecae, *Eutyphoeus gammiei* (Beddard). —*Uttar Pradesh J. Zool.*, 2 (2) : 93-96.
293. Chandra, M. 1981. Occurrence of leech *Hemiclepsis marginata asiatica* Moore in Renuka Lake, Himachal Pradesh. —*J. Bombay nat. Hist. Soc.*, 78 (3) : 625.
294. Chandra, M. and Mukherjee, R. N. 1982. On the distribution of leeches in H. P., India. —*J. zool. Soc. India*, 29 (12) : 88.
295. Dalal, N. M. 1982. Observations on some aspects of ecology of polychaetes of Okhamandal Region. —*Comp. Physiol. Ecol.*, 7 (4) : 313-321.

Data collected on the polychaetes of the region with reference to topography, tide, currents, climate and hydrology are presented in this report.

296. Julka, J. M. 1982. Earthworm fauna of the Andaman and Nicobar Islands, India. —*Rec. zool. Surv. India*, 80 (1&2) 127-155.
297. Julka, J. M. and Rao, B. R. 1982. A new earthworm *Mallehulla indicol* gen. & sp. nov. (Oligochaeta : Octochaetidae) from Karnatak, India. —*J. Soil Biol. Ecol.*, 2 (2) : 67-72.
298. Kale, R. D., Bano, K. and Krishna-moorthy, R. V. 1981. Anachoresis of earthworms. —*J. Bombay nat. Hist. Soc.*, 98 (2) : 400-402, pl. 1.
299. Madan, M., Sharma, N., Singhal, A. and Patwardhan, S. V. 1982. Earthworm—the natural soil digger. —*Fmr's J.*, 2 (3) : 27-28.
300. Mishra, P. C. 1982. Biochemical changes during growth and development of *Perionyx millardi* (Oligochaeta). —*Comp. Physiol. Ecol.*, 7 (2) : 144-147.
301. Naidu, K. V. and Naidu, K. A. 1981. Some fresh-water Oligochaeta from Bombay city and environs. —*J. Bombay nat. Hist. Soc.*, 78 (3) : 524-538.

Twenty one species of freshwater Oligochaetes belonging to three families Aeolosomatidae, Naididae and Tubificidae are described here. Of these, 19 species are new to the Western region. With the addition of these, the total number of species known from the Western region has increased from 5 to 24 species. Geographical distribution in Indian Sub-continent and in the world is given.

302. Nanda, D. K. and Chaudhuri, P. S. 1982. The effect of cephalic transection on the micromorphological changes in the ventral nerve cord-neurosecretory system of earthworm, *Metaphire peguana* (Rosa, 1890) during anterior regeneration. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (4) : 381-389.
- An investigation was carried out to study the extent of histomorphologic changes in the neurosecretory system of the ventral ganglionic complements following anterior amputation. Sequential reactive response in the ganglia concerned was also assessed.
303. Rao, D. S. and Sarma, D. V. R. 1982. Sediment—polychaete relationship in the Vasishta Godavari estuary. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (2) : 199-206.
- The possible relationship between the abundance of polychaete fauna and the intertidal sediments in the Vasishta Godavari estuary was studied.
304. Sanjeeva Raj, P. J., Jayadev Babu, S. and Gladstone, M. 1982. Anatomical details of two freshwater leeches from the Pulicat Lake, South India. —*J. mar. biol. Ass. India*, **19** (1) (1977) : 35-43.
305. Sareen, M. L., Monga, V.K. and Babbar, K. K. 1982. Accumulation of heavy metals in *Pheretima posthuma*. —*Uttar Pradesh J. Zool.*, **2** (1) : 49-51.
306. Sareen, M. L., Tandon, K. K. and Sood, S. 1982. Cytochemical analysis of the integument of earthworm, *Pheretima robusta* Mehl. —*Proc. natn. Acad. Sci. India*, **52 B** (3) : 297-300.
307. Soota, T. D., Saxena, M. M. and Baskaran, S. 1982. Leeches of arid region around Jodhpur and their ecology. —*Geobios News Rep.*, **1** (2) : 136-138.
308. Vasisht, H. S. 1981. Comparative study of the digestive system of some freshwater oligochaetes. —*Res. Bull. Punjab Univ.*, **32** (1-4) : 73-77.
309. Vasisht, H. S. and Jhingan, V. 1981. A study of the digestive system of the freshwater oligochaete, *Aeolosoma headleyi* Beddard. —*Res. Bull. Punjab Univ.*, **32** (1-4) : 51-58, figs. 19.
310. Yadav, U. R. and Mishra, P. N. 1982. Studies on the freshwater leeches (Annelida : Hirudinea) of Kathmandu Valley, Nepal. —*J. nat. Hist. Mus.*, **6** (1-4) : 119-123.
- Four species of leeches, collected from Nepal, are described as new records.

11. SIPUNCULA

311. Manavalaramanujam, R. 1982. Mechanism of calcification of the anterior shield of *Oleosiphon aspergillus* (Sipuncula). —*J. Anim. Morph. Physiol.*, **29** (1-2) : 126-131.

12. ECHIURA

312. Singhal, R. N. 1982. The annual reproductive cycle of *Achaetobonellia maculata* Fisher (Echiura : Bonellidae). —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (6) : 569-576.

13. ARTHROPODA

(a) Arachnida

313. Adolph, C. and Haq, M. A. 1982. A new genus of oribatid mite (Acari : Oribatei) from Malabar. —*Entomon*, **7** (4) : 451-456.

314. Awate, B. G., Gandhale, D. N., Naik, L. M. and Patil, A. S. 1982. Chemical control of mite *Phytophagotarsonemus latus* Banks on chilli *Capsicum annum* L. —*Indian J. Pl. Prot.*, 9 (2) (1981) : 193-194.
315. Batra, R. C. and Bindra, O. S. 1982. Studies for the control of citrus pests in the Punjab. —*Indian J. Hort.*, 39 (3-4) : 284-285.
316. Behura, B. K. and Parida, G. B. 1982. A note on the aphidivorous spiders of Bhubaneswar, Orissa. —*J. zool. Soc. India*, 31 (1-2) (1979) : 93-94.
317. Bhattacharya, T., Joy, S. and Joy, V. C. 1982. Cryptostigmatid population of some cultivated and uncultivated soils. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (4) (1978) : 75-90.
318. Biswas, B. and Mazumder, S. C. 1981. Description of two new species of crab-spider of the genera *Diaea* and *Bomis* (family : Thomisidae) from India. —*Bull. zool. Surv. India*, 4 (3) : 271-275.
319. Chakrabarti, S., Ghosh, B. and Mondal, S. 1981. New and little known eriophyid mites (Acarina : Eriophyoidea) from India. —*Oriental Ins.*, 15 (2) : 139-144.
320. Chakrabarti, S. and Das, A. K. 1982. Studies on eriophyid mites (Acarina : Eriophyoidea) of India. VIII. Description of new species of *Calepitrimerus* Keifer from West Bengal and Bihar. —*Entomon*, 7 (1) : 31-35.
- Two new species from West Bengal and Bihar have been discussed. Relationship of these two species with the other known species of the genus and host-mite relationship have also been discussed.
321. Channabasavanna, G. P., Krishna Rao, N. S. and Raghunath, H. R. 1982. A new *Caloglyphus* (Astigmata : Acaridae) from Poultry litter in India, with taxonomic comments on the genus. —*Indian J. Acar.*, 6 (1 & 2) (1981) : 57-63.
322. Das, A. K. and Chakrabarti, S. 1982. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India. XII. Description of three new species from Bihar. —*Entomon*, 7 (3) : 297-302.
- Relationships of these new species with the other known species under the respective genera, distributions and host-mite relationships have also been discussed.
323. Dhooria, M. S. 1982. Studies on ovipositional preference, host-range and seasonal incidence of *Eutetranychus orientalis* (Acari : Tetranychidae) in Delhi. —*Indian J. Acar.*, 6 (1 & 2) (1981) : 77-88.
- The ovipositional preference of the mite on different hosts under laboratory conditions, host-range and seasonal incidence of the mite on various hosts during different months under field conditions in 1978-79 were studied.
324. Dhooria, M. S. and Butani, D. K. 1982. Relative toxicity of some pesticides against immature stages and adults of *Eutetranychus orientalis* (Acari : Tetranychidae). —*Indian J. Acar.*, 6 (1 & 2) (1981) : 84-91.
- As little information is available regarding the relative toxicity of commonly recommended pesticides against different developmental stages of this mite, the present investigations were undertaken to determine suitable chemical control of this mite.

325. Dhooria, M. S., Sandhu, G.S., Khangura, J. S. and Dhatt, A. S. 1982. Incidence of citrus mite, *Eutetranychus orientalis* (Klein) on different varieties of almond at Ludhiana. —*Punjab hort. J.*, **22** (1-2) : 110-112.
326. D'Souza, P. E. and Jagannath, M. S. 1982. A study on the biology of the feather mite *Pterolichus obtusus* (Robin, 1887) (Acari : Pterolichidae). —*Mysore J. agric. Sci.*, **16** (2) : 175-179.
327. D'Souza, P. E. and Jagannath, M. S. 1982. A new genus and species of Syringobiid mite (Acari) in the quill of domestic fowl (*Gallus gallus domesticus*) from South India. —*Indian J. Acar.*, **6** (1 & 2) (1981) : 51-56.
328. Ghosh, B. and Chakrabarti, S. 1982. A new genus and three new species of eriophyid mites (Acarina : Eriophyoidea) from West Bengal, India. —*Entomon*, **7** (4) : 435-440.
- A new genus and three new species of Eriophyid mites are described from Bankura district, West Bengal.
329. Gupta, S. K. 1981. A new genus and one new species under subfamily Gnoriminae Chaudhri from India (Acarina : Phytoseiidae). —*Bull. zool. Surv. India*, **4** (3) : 267-269.
330. Gupta, S. K. 1982. Phytoseiidae (Acari) of Kumaon and Garhwal Himalaya. —*Indian J. Acar.*, **6** (1 & 2) (1981) : 24-34.
331. Gupta, S. K. 1982. On a collection of Phytoseiidae (Acarina : Mesostigmata) from Madhya Pradesh and Uttar Pradesh with description of a new species of *Phytoselus* Ribaga. —*Rec. zool. Surv. India*, **79** (3 & 4) (1981) : 367-371.
332. Gupta, S. K., Dhooria, M. S. and Sidhu, A. S. 1982. Effect of food and temperature on the rate of development, fecundity and longevity of vegetable mite. —*Punjab hort. J.*, **22** (3-4) : 198-202.
- The effect of three different foods viz., horse-gram, castor and brinjal and three temperatures viz., 25°, 30° and 35°C on the rate of development, longevity and fecundity of vegetable mite, *T. cinnabarinus* was undertaken for study.
333. Haq, M. A. 1982. Feeding habits of ten species of oribatid mites (Acari : Oribatei) from Malabar, South India. —*Indian J. Acar.*, **6** (1 & 2) (1981) : 39-50.
- On the basis of food specificity of 10 species of oribatid mites from litter samples collected from the grass and forest soils of Kerala, these species were grouped into three major feeding categories, namely microphytophages, macrophytophages and panphytophages.
334. Jagadish, P. S. 1982. Ecology of *Typhlodromips tetranychivorus* Gupta (Acari : Phytoseiidae) and effect of pesticides on the predator and its prey *Tetranychus ludeni* Zacher. —*Mysore J. agric. Sci.*, **15** (2) (1981) : 354.
335. Kanwar, U. and Brar, N. K. 1982. Cytoarchitecture of the venom glands of the scorpion, *Palamnaeus bengalensis* —*Res. Bull. Punjab Univ.*, **33** (1-2) : 129-133.
336. Kanwar, U., Sharma, A. and Nagpal, N. 1981. Morphological and cytochemical studies on the venom secreting cells of the scorpion, *Buthus famulus*. —*J. Anim. Morph. Physiol.*, **28** (1 & 2) : 206-209.

The present study on the venom glands of another scorpion, *B. famulus* belonging to family Buthidae is undertaken to find some differences in the cytoarchitecture and cytochemistry in scorpions belonging to different families.

337. **Krishnamoorthy, A.** 1982. Effect of temperature on the development, survival and fecundity of the predatory mite, *Amblyseius tetranychivorus* (Gupta) (Acarina : Phytoseiidae). —*Entomon*, 7 (4) : 447-450.
338. **Krishnamoorthy, A.** 1982. Mass rearing technique for an indigenous predatory mite, *Amblyseius (Typhlordomips) tetranychivorus* (Gupta) (Acarina : Phytoseiidae) in the laboratory. —*Entomon*, 7 (1) : 47-49.
339. **Lahiri, S. C. and Nag Chaudhuri, A. K.** 1982. Action of the scorpion (*Heterometrus bengalensis* C.L. Koch) venom on smooth muscle. —*Indian J. exp. Biol.*, 20 (7) : 545-548.
340. **Maurya, K. R. et al.** 1982. Mass rearing of the mite *Caloglyphus berlesei* (Michael). —*Indian J. exp. Biol.*, 20 (8) : 637-638.
- A total of 45 media were tested for their efficacy of culturing this mite.
341. **Maya, M., Palaniswamy, M. and Karup-paswamy, S. A.** 1982. A study on the contact sex pheromone in *Crossopriza lyoni* (Blackwall) (Pholcidae). —*Comp. Physiol. Ecol.*, 7 (1) : 22-24.
342. **Mohanasundaram, M.** 1982. Four new species of Phyllocoptine mites (Eriophyidae : Acarina) from Tamil Nadu, India. —*Entomon*, 7 (1) : 23-30.
343. **Mohanasundaram, M.** 1982. Two new species of *Brevipalpus* (Tenuipalpidae ; Acarina) from Tamil Nadu. —*Entomon*, 7 (4) : 427-429.
- This paper presents the description of two new species of mites viz., *Brevipalpus cucurbitae* sp. nov. and *Brevipalpus euphorbiae* sp. nov. collected from Tamil Nadu.
344. **Mohanasundaram, M.** 1982. Two new species of eriophyids (Eriophyidae : Acarina) from India. —*Entomon*, 7 (4) : 431-433.
- This paper presents the descriptions of two new species of eriophyid mites viz. *Eriophyes delhiensis* sp. nov. and *Aculops kumari* sp. nov. collected from Delhi.
345. **Mohanasundaram, M.** 1982. Four new species of *Aculops* (Acari : Eriophyidae) from South India. —*Indian J. Acar.*, 6 (1 & 2) (1981) : 1-8.
346. **Mohanasundaram, M.** 1982. Two new species of *Abacarus* (Acari : Eriophyidae) on economic hosts in Tamil Nadu. —*Indian J. Acar.*, 6 (1 & 2) (1981) : 9-13.
347. **Mohanasundaram, M.** 1981. Record of Rhyncaphytoptid gall mites (Rhyncaphytoptidae ; Eriophyoidea) from South India. —*Oriental Ins.*, 15 (1) : 45-55, figs. 5.
348. **Mohanasundaram, M.** 1981. A new genus and first record of Nalepellidae (Eriophyoidea : Acarina) from South India. —*Oriental Ins.*, 15 (1) : 89-91.
- The family is recorded for the first time from the Indian region.
349. **Mohanasundaram, M.** 1981. New gall-mites of the subfamily Nothopodinae (Acarina : Eriophyidae) from India. —*Oriental Ins.*, 15 (2) : 145-166, fig. 12.

350. Mohanasundaram, M. 1981. New eriophyid mites (Acarina : Eriophyidae) from Tamil Nadu. —*Oriental Ins.*, **15** (2) : 167-174.
351. Mohanasundaram, M. 1982. Five new species of *Tenuipalpus* (Acarina : Tenuipalpidae) from South India. —*Oriental Ins.*, **15** (4) (1981) : 397-406, figs. 16.
352. Mohanasundaram, M. and Sivagami, M. 1982-83. Occurrence of the bud mite *Aceri mori* Keifer (Eriophyidae : Acari) on *Morus alba*, the mulberry plant in Tamil Nadu, its economic significance and control. —*Indian J. Seric.*, **21-22** : 75.
353. Mondal, S. and Chakrabarti, S. 1982. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India. XI. Descriptions of three new species from West Bengal. —*Entomon*, **7** (3) : 361-366.
- Three new species have been discussed along with their distribution, host-plant relationships and their affinities with other related known species.
354. Mondal, S. and Chakrabarti, S. 1982. Studies on eriophyid mites (Acarina : Eriophyoidea) of India. X. New genus and new species from West Bengal. —*Oriental Ins.*, **15** (3) (1981) : 313-319.
- The new species are described with their distribution and showing relationship with their host-plants and other related known species.
355. Mondal, S., Ghosh, B. and Chakrabarti, S. 1982. Three new species of eriophyid mites (Acari : Eriophyoidea) from West Bengal, India. —*Indian J. Acar.*, **6** (1 & 2) (1981) : 17-23.
356. Mondal, S., Ghosh, B. and Chakrabarti, S. 1982. Studies on the eriophyid mites (Acarina : Eriophyoidea) of India. XIII. Three new and some little known species from West Bengal. —*Oriental Ins.*, **16** (3) : 305-312, figs. 3.
- Besides the new species, 5 other species including *Scolocenus spiniferus* which is new to India are reported for the first time from Bengal.
357. Mondal, S., Ghosh, B. and Chakrabarti, S. 1982. A new genus and two new species of Rhyncaphytoptidae (Acarina : Eriophyoidea) from West Bengal, India. —*Oriental Ins.*, **15** (4) (1981) : 407-412.
358. Nassar, O. A. and Ghai, S. 1982. Taxonomic studies on tetranychoid mites infesting vegetable and fruit crops in Delhi and surrounding areas. —*Oriental Ins.*, **15** (4) (1981) : 333-396, figs. 21.
- Out of the 40 species occurring in Delhi, 11 species belonging to the family Tetranychidae and 2 species belonging to the family Tenuipalpidae are new to science. Six species belonging to 4 genera known from elsewhere are recorded for the first time from India.
359. Pammi Sujata and Reddy, T. G. 1982. Failure of parturition as a function of starvation in the scorpion, *Heterometrus fulvipes* (Koch.). —*Geobios*, **9** (1 & 2) : 271-274.
- The study was undertaken to gain an insight into the embryonic development of *H. fulvipes* during starvation and refeeding.

360. Pande, Y. D. and Reddy, A. A. 1982. Relative efficacy of some modern synthetic pesticides against *Tetranychus neocaledonicus* (Acarina : Tetranychidae). —*Indian Biologist*, **14** (1) : 27-30.
361. Pntel, C. B., Shah, A. H. and Patel, S. H. 1982. Effect of insecticides on the resurgence of two spotted spider mites, *Tetranychus telarius* Linn., in brinjal. —*Indian J. agric. Sci.*, **52** (11) : 774-776.
362. Purushothan, K. R., Raghupati, M. and Reddy, D. C. 1982. Effect of X-irradiation on the acid and alkaline phosphatase activities in the South Indian scorpion, *Heterometrus fulvipes* (C. L. Koch). —*Geobios*, **9** (5 & 6) : 286-288.
363. Puttaswamy and Channabasavanna, G. P. 1982. Influence of nitrogen fertilization of the plant on the population development of *Tetranychus ludeni* (Acari : Tetranychidae). —*Indian J. Acar.*, **6** (1 & 2) (1981) : 64-71.
- Presence of significantly higher mite populations on the plants grown on a higher nitrogen level (75 Kg. N. per acre) compared to the medium (50 Kg. N. per acre) and O level of nitrogen was observed.
364. Puttaswamy and Channabasavanna, G. P. 1982. Influence of host plants on the reproductive biology of *Tetranychus neocaledonicus* (Acari : Tetranychidae). —*Indian J. Acar.*, **6** (1 & 2) (1981) : 72-76.
- The effects of the host plants viz. mulberry, castor, tapioca and amaranthus on the development, fecundity and longevity of *T. neocaledonicus* were observed.
365. Rishi, N. D. and Rathor, A. 1982. Description of a new species of *Eriophyes* (Acari : Eriophyoidea) from Jammu and Kashmir. —*Indian J. Acar.*, **6** (1 & 2) (1981) : 14-16.
366. Ray, S. and Gupta, S. K. 1981. A new species of *Platyseiella* Muma (Acari : Phytoseiidae), with collection records of twelve other species. —*Bull. zool. Surv. India*, **4** (3) : 277-281.
367. Sadana, G. L. et al. 1982. Tetranychoid mites infesting fruit trees in the Punjab together with records of some new hosts and description of a new species. —*Entomon*, **7** (4) : 397-401.
- 17 species of Tetranychoid mites of fruit trees are reported and a new species of the genus *Tenuipalpus* Donnadien is described and illustrated.
368. Sanyal, A. K. 1981. Qualitative and quantitative composition of oribatei in gangetic delta of West Bengal in relation to edaphic factors. —*Bull. zool. Surv. India*, **4** (3) : 295-307.
- The present work deals with the results of synecological study involving influence of edaphic factors like temperature, moisture, organic carbon, pH, electrical conductivity and available phosphate on soil dwelling oribatid mites extracted by modified Macfadyen expedition funnel at Bakkhali, 24-Parganas, West Bengal.
369. Sanyal, A. K. 1982. Soil oribatid mites and their relationship with soil factors in West Bengal. —*J. Soil Biol. Ecol.*, **2** : 8-17.

370. Sanyal, A. K. and Bhaduri, A. K. 1982. Seasonal changes in the density of soil oribatid mites in relation to temperature and water content of soil at Sagar Island, 24-Parganas, West Bengal. — *Proc. Symp. Ecol. Popul. zool. Surv. India*, (3) (1978) : 119-126.
371. Sanyal, A. K. and Bhaduri, A. K. 1982. A new species of the genus *Hoplophorella* (Acari : Oribatei) from West Bengal, India. — *Indian J. Acar.*, 6 (1 & 2) (1981) : 35-38.
372. Sareen, M. L. and Khullar, R. C. 1981. Morphological and cytochemical studies of lipids in the ovary of the dog-tick, *Rhipicephalus sanguineus* (Latreille). — *Res. Bull. Punjab Univ.*, 32 (1-4) : 131-137.
373. Sharma, D. D. and Rahman, M. F. 1982. Control of litchi mite *Aceria litchii* (Keifer) with particular reference to evaluation of prebloom and postbloom application with different insecticides. — *Entomon*, 7 (1) : 55-56.
374. Singh, B. U., Rana, B. S. and Rao, N. G. P. 1981. Host plant resistance to mite (*Oligonychus indicus* Hirst) and its relationship with shoot fly (*Atherigona soccata* Rond.) resistance in sorghum. — *J. ent. Res.*, 5 (1) : 25-30.
- The reaction of several sorghum cultivars and experimental hybrids and varieties of exotic X Indian origin to mite (*O. indicus* Hirst) and the possible relationship between the mite and shoot fly (*A. soccata* Rond.) reactions were studied.
375. Singh, J. P. and Bajaj, K. 1982. A list of spiders from Patiala (Punjab) India. — *Life Sci. Adv.*, 1 (2) : 193-194.
376. Sinha, S. R. P., Deb, A. R. and Sahai, B. N. 1982. Sarcoptic mange in goats and its treatment. — *Indian J. Anim. Hlth.*, 21 (1) : 75-77.
377. Sivaraman, S. 1982. Chelal growth in three species of South Indian pseudoscorpions and their taxonomic relevance. — *Entomon*, 7 (2) : 187-195.
378. Tewari, R. K., Avasthy, P. N. and Prakash, O. 1982. Incidence of web mite, *Schizotetranychus andropogoni* Hirst on sugarcane. — *Indian J. Ent.*, 44 (2) : 194.
379. Tikader, B. K. 1981. Studies on spiders of the genus *Castianeira* Keyserling (Family : Clubionidae) from India. — *Bull. zool. Surv. India*, 4 (3) : 257-265.
- A revisionary study of Indian spiders of genus *Castianeira* Keyserling (Family : Clubionidae) is given with illustrations, description and key. Only five spp. of this genus are known so far from India.
380. Tikader, B. K. and Bal, A. 1981. Some observations on orb-weaving mechanism of Indian Araneid spiders. — *Bull. zool. Surv. India*, 4 (3) : 365-384, figs. 49.
- Orb-weaving mechanism of Indian Araneid spiders is described with full illustrations and their two types of primary web-building operations and patterns of orb-weaving of some genera of the family Araneidae (=Argiopidae) have been discussed.
381. Venugopal Rao, Sanyal, A. K. and Ramamohan Rao, T. 1982. Mites infesting lice in Visakhapatnam district, Andhra Pradesh, India. — *I. R. R. N.*, 7 (1) : 11.

382. Verma, A. N., Kashyap, R. K. and Singh, H. V. 1982. Chemical control of citrus brown mite, *Eutetranychus orientalis* (Klein) on sweet orange (*Citrus sinensis* Osbeck). —*Haryana J. hort. Sci.*, **11** (3 & 4) : 159-162.
383. Yellamma, K., Subhashini, K., Mohan, M. and Sasira Babu, K. 1982. Micro-anatomy of the 7th abdominal ganglion and its peripheral nerves in the scorpion *Heterometrus fulvipes*. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (3) : 225-234.
- (b) Crustacea
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An attempt was made to collect baseline data on the insecticide susceptibility of laboratory reared *Mesocyclops leuckarti* (Claus), vector of *Dracunculus medinensis* in India.

The paper deals with the caprellid Amphipoda collected from the Tamil Nadu and Kerala coast. Descriptions and figures of nine species and keys to the families and Indian species are given. Notes on the ecology, distribution and evaluation of Indian Caprellidea are also given.

The results of investigations on the fishery and biology of *Hippolyasmata ensirostris* during 1970-75 at Bombay are presented. The average growth rate recorded of this species is 5.3 mm. per month.

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480. Shah, N. K., Garg, D. K. and Tandon, J. P. 1982. Insect-pests of barnyard millet. —*Indian Fmg.*, **32** (7) : 36-38.
481. Sharma, S. K. and Chaudhury, J. P. 1982. Management of insect pests of sugarcane and latest pest control technology. —*Indian Sug.*, **32** (9) : 587-592.
482. Sharma, V. K. 1982. Understanding insecticides—III. Some basic aspects of insecticides. —*Indian Fmr's Dig.*, **15** (4) : 52-59.
483. Sharma, V. K. 1982. These pests may damage your maize crop. —*Indian Fmr's Dig.*, **15** (10) : 25-29 & 37.
484. Simwat, G. S. and Chahal, B. S. 1982. Multiplication of some stored grain pests and extent of loss to wheat grains at constant environment. —*Indian J. Ecol.*, **9** (1) : 125-129.
485. Singh, G. 1982. Vegetable insect pest management for better returns. —*Indian Fmr's Dig.*, **15** (10) : 35-37.
486. Singh, G. 1982. Insect pest constraints in groundnut cultivation. —*Indian Fmr's Dig.*, **15** (10) : 23-24.
487. Singh, G. 1982. Insect pest management in fruits. —*Indian Fmr's Dig.*, **15** (11) : 7-10.
488. Singh, P., Fasih, M. and Prasad, G. 1982. Insect pests of exotic pines in India. —*Indian Forester*, **108** (1) : 93-107.
489. Singh, S. 1982. Microclimate and the nival insect communities of N. W. Himalaya. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (3)(1978) : 33-43. An attempt is made here to discuss some of the factors which have led to the formation of isolated and overcrowded units of insect populations in the higher reaches of the Northwest Himalaya.
490. Srivastava, S. P. and Wattal, B. L. 1981. Parasitic arthropods of some vertebrates in Gulmarg and Tangmarg areas of Kashmir State (India). —*J. ent. Res.*, **5** (2) : 121-126. Studies were undertaken in the valleys of Gulmarg and Tangmarg during September, 1970 to record the composition of ectoparasitic fauna, their association with small mammals and other vertebrate hosts and the terrain relationship in the area. A total of 393 ectoparasites belonging to different groups were recovered from the trapped mammals. 209 ixodid ticks and 25 lice were recorded from cattle.

491. **Subbaratnam, G. V. and Butani, D. K.** 1982. Chemical control of insect pest complex of brinjal. —*Entomon*, 7 (1) : 97-100.
492. **Thomas, J., Visalakshi, A. and Mohandas, N.** 1982. Contamination of water in rice fields sprayed with Carbaryl for insect control.—*Entomon*, 7(3) : 379-380.
493. **Verma, J. S.** 1982. Lest these rob your forage legumes. —*Indian Fmr's Dig.*, 15 (10) : 30-34.
494. **Verma, J. S.** 1982. Biological control of insects through weeds.—*Indian Fmr's Dig.*, 15 (11) : 5-6.

B. Insect Orders

(i) Thysanura

495. **de Roca, C.B.** 1982. Studies on a collection of Microcoryphia (Apterygota) from the world present in the British Museum (Natural History). —*Oriental Ins.*, 15 (3) (1981) : 295-311, figs. 43.

Twenty one taxa are dealt with here, of which 9 genera and 9 species belong to Machilidae and 4 genera and 3 species to Meinertellidae.

(ii) Collembola

496. **Kurup, N. C. and Prabhu, N. R.** 1982. Influence of food quality on reproduction and longevity of *Cryptopygus thermophilus* (Isotomidae : Collembola).—*Entomon*, 7 (4) : 481-485.

(iii) Ephemeroptera

497. **Deshpande, S.B. and Pathan, K.M.** 1982. On the pregenital abdominal muscular system in nymphal and adult *Heptagenia diabasia*, Burks (Ephemeroptera). —*J. Anim. Morph. Physiol.*, 29 (1-2) : 272-279.

498. **Roy, S.P. and Sharma, U.P.** 1982. Studies on the food and feeding biology of may-fly nymphs (Insecta : Ephemeroptera) and their role in aquatic ecosystem.—*Entomon*, 7 (2) : 145-149.

(iv) Odonata

499. **Jain, S. K. and Baijal, H. N.** 1982. On the wing venation of subfamily Lestinae (Zygoptera : Odonata) with remarks on its taxonomic value.—*J. ent. Res.*, 6 (1) : 68-72.
500. **Kumar, A.** 1982. An annotated list of Odonata from Pithoragarh Dist, West Himalayas, U.P., India.—*Notul. Odontol.*, 1 (9) : 145-147.
501. **Kumar, A.** 1982. An annotated list of Odonata of Himachal Pradesh. —*Indian J. Phys. & nat. Sci.*, 2 (A) : 55-59.
502. **Mitra, T. R.** 1982. *Epiophlebia laidlawi* Tillyard in Schedule I. —*Selysia*, 11 (2) : 28-29.
503. **Prasad, M. and Thakur, R. K.** 1981. Further addition to the Odonata (Insecta) fauna of Rajasthan. —*Jantu*, 1 : 6-11.
504. **Ram, R., Srivastava, V. D. and Prasad, M.** 1982. Odonata (Insecta) fauna of Calcutta and surroundings. —*Rec. zool. Surv. India*, 80 (1 & 2) : 169-196.
505. **Shukla, G.S., Mishra, P.K. and Upadhyaya** 1982. Effect of sumithion in the rectal gill basket of the nymphs of dragonfly *Brachythemis contaminata* (Fabricius, Part 1). —*Envir. Awareness*, 5 (1 & 2) : 9-14.
506. **Talwar, N. and Baijal, H. N.** 1981. Central nervous system of *Bradinopyga geminata* (Rambur) (Odonata : Libellulidae). —*J. ent. Res.*, 5 (1) : 55-59.

507. **Tyagi, B. K.** 1982. Cytotaxonomy of the Indian dragonflies. —*Indian Rev. Life Sci.*, **2** : 149-161.

A review is given of the main data on the chromosomal cytology, viz. haploid chromosome number, karyotypic differences between geographic populations, peculiarities in chromosome behaviour and mode of sex determination of all species hitherto studied in India.

(v) Plecoptera

508. **Zwick, P.** 1981. The South Indian species of *Neoperla* (Plecoptera : Perlidae). —*Oriental Ins.*, **15** (2) : 113-126, figs. 6.

Out of the 8 families of Plecoptera known from the mountainous north of India only one, Perlidae, is present in India, south of the Ganges river. A key to the south Indian genera of Neoperlini and to the species of *Neoperla* is provided.

(vi) Orthoptera

509. **Ali, S.** 1982. Effect of temperature and humidity on the development and fertility—fecundity of *Acrida exaltata* Walk. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (3) : 267-273.
510. **Ali, S.** 1982. Effect of temperature on the hatching of the eggs of Bombay locust, *Patanga succinata* Linn. (Orthoptera : Acrididae). —*Comp. Physiol. Ecol.*, **7** (2) : 78-80.
511. **Banerjee, S.** 1982. Histochemistry of the fat body of castrated *Poecilocerus pictus* Fabr. (Orthoptera : Acrididae). —*J. scient. Res.*, **4** (1) : 5-8.

Implantation of testes in ovariectomised females and ovaries in castrated males, affect accumulation or depletion of metabolites in fat cells.

512. **Bhargava, R. N.** 1982. A note on the ecology of the crickets *Homoeogryllus cincticornis* (Walker) with extension of its range. —*Geobios News Rep.*, **1** : 42-43.
513. **Bhargava, R. N.** 1982. A new species of the cricket *Loxoblemmus* (Orthoptera : Gryllidae) from North-west India. —*Geobios News Rep.*, **1** : 48-49.
514. **Chattoraj, A. N. and Dwivedi, K. P.** 1982. Effect of specific and mixed feeding on the postembryonic development and productive potential of *Catantops pinguis innotabilis* Walk (Catantopinae : Orthoptera). —*Indian J. Ecol.*, **9** (1) : 95-98.
515. **Chattoraj, A. N. and Dwivedi, K. P.** 1982. Population structure and organic production of *Tylotropidius varicornis* Walk. (Orthoptera : Acrididae) in the grassland ecosystem of Mohanbhata, M. P. —*Indian J. Ecol.*, **9** (2) : 218-222.
516. **Choudhuri, D. K. and Ghosh, B.** 1982. Studies on the neurosecretory system of *Schizodactylus monstrosus* D. (Schizodactylidae : Orthoptera). —*Nucleus*, **25** (3) : 148-152.
517. **Deshpande, S. B.** 1982. The thoracic functional myology of the grasshoppers—a study of the pattern found in *Sathrophyllia femorata* Fabr. (Acrididae—Orthoptera). —*J. Anim. Morph. Physiol.*, **29** (1-2) : 30-41.
518. **Dixit, A. and Sinha, K. M.** 1982. *Homoeogryllus japonicus* (Orthoptera : Gryllidae) from Hanthi—Gumpha cave (Udaipur : Aambikapur) of M. P. —*Uttar Pradesh J. Zool.*, **2** (2) : 104-105.

- 518a. **Dutt, M. K.** 1982. A new rapid method for the study of grasshopper chromosomes in fixed testicular material. —*J. biol. Res.*, **2** (2) : 87-90.
519. **Hazra, A. K., Barman, R. S., Mukherjee, T. K., Dey, A. and Mandal, S. K.** 1981. Ecology of grasshoppers in two grasslands of West Bengal in relation to some physical factors. —*Bull. zool. Surv. India*, **4** (3) : 309-317.
- This observation presents the results of distribution of grasshoppers in two grasslands of West Bengal during May-December 1979. Higher population of grasshoppers was observed in Botanics grassland 72.7%. The number of spp. occurred from both the sites were also varied (16 spp. from Bethuadahari and 9 spp. from Botanics). Fluctuation of population per month showed two peaks, one in Oct. and other in August, at Botanics grassland and during August and Sept. at Bethuadahari.
520. **Joseph, K. J.** 1982. The reflex forth-discharging behaviour in the coffee locust (*Aularches miliaris* L.) as an antipredator defensive mechanism.—*Entomon*, **7** (4) : 407-409.
521. **Julka, J. M., Tandon, S. K., Halder, P. and Shishodia, M. S.** 1982. Ecological observations on grasshoppers (Orthoptera : Acrididae) at Solan, Himachal Pradesh, India. —*Oriental Ins.*, **16** : 63-75.
522. **Kalode, M. B., Bentur, J. S., Sain, M., Prasad Rao, U. and Srinivasan, T. E.** 1982. An improved method of field screening of rice cultures against brown plant hopper. —*Oryza*, **19** (3 & 4) : 167-171.
523. **Kapoor, K. N., Dhamdhare, S. V., Singh, O. P. and Misra, U. S.** 1982. Efficacy of dust formulations against rice grasshopper, *Hieroglyphus banian* Fabricius infesting pearl millet. —*Indian J. Pl. Prot.*, **9** (2) (1981) : 183-186.
524. **Kudagamage, C. and Nugaliyada, L.** 1982. Laboratory and field investigations of brown plant hopper (*Nilaparvata lugens* Stal) resistance in rice varieties. —*Trop. Agric.*, **138** : 149-157.
- The study was undertaken to evaluate the performance of Bg 379-2 variety against Bph (Brown plant hopper).
525. **Majeed, Q. and Aziz, S. A.** 1982. Food preference of different stages of *Gastri-margus transversus* Thunberg (Orthoptera : Acrididae) under controlled conditions of temperature and relative humidity. —*J. ent. Res.*, **5** (1) : 60-65.
526. **Manchanda, S. K., Sachan, G. C. and Rathore, Y. S.** 1982. Growth and development of *Schistocerca gregaria* Forskal on various host plants. —*Indian J. Ent.*, **44** (3) : 273-279.
527. **Mondal, S. K. and Shishodia, M.S.** 1982. Population fluctuation of grasshoppers fauna in a field near Calcutta. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, **3** : 127-132.
528. **Murugesan, S. and Chelliah, S.** 1982. Influence of plant age on population build-up of brown planthopper and damage in rice varieties. —*Oryza*, **19** (3 & 4) : 200-202.
529. **Murugesan, S. and Chelliah, S.** 1982. Differential damage by constant population of brown planthopper in susceptible, moderately resistant and resistant rice varieties. —*Oryza*, **19** (3 & 4) : 203-204.

530. Nath, A. and Guleri, K. 1982. Fate of orally applied DDT in desert locust *Schistocerca gregaria* Forsk. (Orthoptera : Acrididae). —*Entomon*, 7 (2) : 137-139.
531. Nath, A. and Mehrotra, K. N. 1982. Binding of 14 Cp. p'-DDT with haemolymph protein of the desert locust *Schistocerca gregaria* F. —*Indian J. exp. Biol.*, 20 (9) : 701-703.
532. Pal, S. G. and Ghosh, D. 1982. Electron microscopic study of the spermatheca of *Gesonula punctifrons* (Acrididae : Orthoptera). —*Proc. Indian Acad. Sci. (Anim. Sci.)*, 91 (1) : 99-112.
- A comprehensive description of the spermathecal epithelium of *G. punctifrons* as seen under the TEM has been provided.
533. Prasad, O. and Srivastava, V. K. 1982. Effect of DDT on brain neurosecretory cells of adult *Poeciloceris pictus* (Orthoptera : Acrididae). —*Proc. Indian Acad. Sci. (Anim. Sci.)*, 91 (3) : 305-315.
534. Rauf, A. and Aziz, A. 1982. Sound production in *Grylloides sigillatus* Walker. —*J. ent. Res.*, 6 (1) : 48-50.
535. Roy, S. 1982. C-Bands and interlocking of bivalents in certain grasshoppers. —*Proc. natn. Acad. Sci. India*, 52B (2) : 227-233.
- The author has made a comparative study of C-banding patterns of five related species of grasshoppers.
536. Sahai, Y. N. and Agnihotri, S. 1982. Morphology of the ovary of the *Poeciloceris pictus* Fabr. (Acrididae : Orthoptera). —*J. scient. Res.*, 4 (1) : 25-27.
537. Samal, P., Misra, B. C. and Lodh, S. B. 1982. Biochemical basis of resistance in rice to brown planthopper. —*Oryza*, 19 (1) : 58-59.
538. Saxena, S. C. and Trivedi, T. U. 1982. An unreported morphological abnormality in antennae of *Chrotogonus trachyp-terus* (Blanch.) treated with a new chitin synthesis inhibitor. —*Indian Biologist*, 14 (1) : 36-37.
539. Singh, O. P. and Dhamdhare, S. V. 1982. Studies on mating and ovipositional behaviour of rice grasshopper. —*Oryza*, 19 (3 & 4) : 205-207.
540. Singhal, R. N. 1982. Assimilation and growth efficiency of *Poeciloceris pictus* Fabr. in relation to food intake. —*Indian J. Ecol.*, 9 (2) : 223-227.
541. Sinha, K. M. 1982. Sexual dimorphism in the abdominal tergites of *Kempiola shankari* Sinha and Agarwal (Orthoptera : Phalangopsidae). —*Indian Forester*, 108 (11) : 715-718.
542. Sinha, K. M. and Agarwal, S. M. 1982. Pterothoracic muscles of the Cave-crick- et *Kempiola shankari* Sinha and Agarwal (Orthoptera : Phalangopsidae). — *Indian Forester*, 108 (12) : 757-762.
543. Shishodia, M. S. and Dey, A. 1982. Population dynamics and biological studies on *Oxya fuscovittata* (Marschall) (Orthoptera : Agrididae), a major crop pest. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (4) (1978) : 63-73.
544. Singh, O. P., Budhraj, K., Misra, U. S. and Dhamdhare, S. V. 1982. Note on the efficacy of some new insecticides against the rice grasshopper, *Hieroglyphus banian* Fabricius, infesting sorghum. —*Indian J. agric. Sci.*, 52 (12) : 882-883.

545. Srivastava, C. N. and Baijal, H. N. 1982. On the digestive physiology of *Gryllotalpa gryllotalpa* (Linn.) (Orthoptera : Gryllotalpidae).—*J. ent. Res.*, 6(1) : 22-24.
546. Vidya, G. R. and Kalode, M. B. 1982. Studies on biology and varietal resistance of white backed planthopper *Sogatella furcifera* (Harvath) in rice. — *Indian J. Pl. Prot.*, 9 (1) (1981) : 3-12.
- The investigations were carried out to confirm resistant reaction of some of the varieties reported earlier and also identify new sources of resistance to insect and to study the mechanism of resistance in selected resistant varieties so that such donors could be utilised more effectively in the breeding programme. Various aspects of biology of the pest and its alternate host plants were also studied.
547. Yadav, J. S. and Yadav, A. S. 1982. Breakdown of meiotic stability in *Tristria pulvinata* Uvarov (Acrididae : Orthoptera).—*J. Anim. Morph. Physiol.*, 29 (1-2) : 202-210.
- (vii) Dermaptera
548. Srivastava, G. K. 1982. On some Dermaptera from north west province and salt ranges, Pakistan. —*Rec. zool. Surv. India*, 79 (3 & 4) (1981) : 463-468.
549. Srivastava, G. K. 1982. On a new species of the genus *Chaetospania* Karsch (Dermaptera : Labiidae) with a key to species from the Indian subregion.—*Rec. zool. Surv. India*, 79 (3 & 4) (1981) : 475-481.
550. Srivastava, G. K. 1982. Studies on some Borman's material of Dermaptera (Insecta). —*Annali Mus. civ. Stor. nat.*, 84 : 97-107, figs. 12.
- The present study is based on some material from Burma, determined by Bormans, which contains types of two species. A new subfamily Titanolabinae is erected for its reception with *Titanolabis* Burr as the type genus.
551. Srivastava, G. K. 1982. Notes on some Dermaptera in the collections of Instiut Royal des Sciences Naturelles de Belgique. —*Bull. Inst. r. Sci. nat. Belg.*, 54 (11) : 1-9, figs. 13.
- The present paper is based upon a small collections of Dermaptera which comprises 17 species, mostly from Oriental region, (including 3 unidentified upto generic level which are represented either by females or nymphs only) under 14 genera.
552. Srivastava, G. K. 1982. Notes on a collection of Dermaptera (Insecta) present in the Natural History Museum, Basel. —*Entomologica Basiliensia*, 7 : 61-76, figs. 27.

Altogether eight species are recorded, out of which five and one species are reported exclusively from Chitral and Salt Ranges respectively and the remaining species are common to both these areas.

Altogether 132 examples belonging to 24 species from Himalayas of India, Bhutan, Nepal, Pakistan and Saudi Arabia including two new species have been treated.

553. Steinmann, Henrik 1982. Synopsis of Dermaptera of the World Part 1: Family Pygidicranidae (1). —*Ent. Abh. Mus. Tierk. Dresden*, 45 (8) : 195-211.

(viii) Dictyoptera

554. Agrawal, O. P. and Bahadur, J. 1982. Effect of salivarectomy on the feeding of *Periplaneta americana* L. —*Proc. natn. Acad. Sci. India*, 52B (2) : 145-148.

Role of salivary glands in the feeding of *P. americana* had been demonstrated by their surgical removal and studied.

555. Aswathanarayana, N. V., Aswath, S. K. and Manjunathan, K. R. 1982. Distribution of constitutive heterochromatin in *Periplaneta americana* (Linnaeus) (Dictyoptera : Blattinae). —*Entomon*, 7 (2) : 163-165.

556. Mohan, P. M. et al. 1982. Influence of solar eclipse on neuro-physiological rhythms in the Cockroach, *Periplaneta americana* L. —*Comp. Physiol. Ecol.*, 7 (4) : 274-279.

557. Nanda, D. K. and Sinha (Miss), M. 1982. Influence of cauterization on the cephalic neurosecretory system of *Periplaneta americana* (Dictyoptera : Blattidae). —*J. zool. Soc. India*, 33 (1-2) (1981) : 37-44.

558. Reddy, G. S. and Rao, A. P. 1982. Biochemical studies on the haemolymph and heart muscle of normal and insecticide treated cockroach *Periplaneta americana* L. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, 91 (5) : 481-486.

The effect of certain insecticides on basic metabolite content of cockroach haemolymph and heart muscle and its significance in the poisoning of the insects were studied.

559. Satija, R. C., Taneja, S. K. and Rana, S. 1981. Comparative studies on the protein content of the malathion and DDT treated brain and leg muscles of Cockroach, *Periplaneta americana*. —*Res. Bull. Punjab Univ.*, 32 (1 & 2) : 45-49.

The present report records the alteration of acid protein and histones in the brain and leg muscles of cockroach, *Periplaneta americana*.

560. Saxena, S. C. and Saxena, P. N. 1982. Cuticular damage by insecticide solvents in *Periplaneta americana* L. —*Geobios*, 9 (1) : 6-8.

561. Saxena, Y. and Raizaday, D. N. 1982. Effect of different food on the susceptibility of *Periplaneta americana* (L) to some insecticides. —*J. env. Biol.*, 3 (1) : 43-45.

(ix) Isoptera

562. Basalingappa, S. 1982. Degeneration of thoracic muscles in sexual forms of *Odontotermes assmuthi* Holmgren (Termitidae : Isoptera) following swarming and colony establishment. —*Entomon*, 7 (1) : 63-64.

563. Bose, G. and Das, B. C. 1982. Termite fauna of Orissa State, Eastern India. —*Rec. zool. Surv. India*, 80 (1 & 2) : 197-213.

564. Mishra, S. C. and Sen-Sarma, P. K. 1981. Movement of food in the digestive tract of *Neotermes bosei* Snyder and *Odontotermes distans* Holmgren (Insecta : Isoptera). —*J. ent. Res.*, 5 (1) : 66-68.

The rate of transit of food material in the gut of two species of termites, viz. *N. bosei* Snyder and *O. distans* Holmgren was investigated.

565. **Mugali, R. N. and Basalingappa, S.** 1982. Total body lipid from different castes of termites, *Odontotermes walloniensis* and *O. feae* (Termitidae : Isoptera). —*Comp. Physiol. Ecol.*, **7**(2) : 148-150.
566. **Roonwal, M.L.** 1982. The termite *Heterotermes indicola* as a pest of the vegetable, karela or bitter gourd (*Momordica charantia*), in the Indian desert. —*Ann. Arid Zone*, **21** (3) : 131-134.
567. **Roonwal, M. L.** 1982. The identity of two economically important termites, *Heterotermes gertrudae* and *H. indicola* (Rhinotermitidae) from India. —*Bull. Ent.*, **23** (1-2) : 1-4.
The author has established distinctness of the two species and thus made clear the confusion in these economically important species which seriously damage wood-work everywhere.
568. **Roonwal, M. L. and Rathore, N. S.** 1982. Evolution and systematic significance of wing microsculpturing in termite (Isoptera) XII. Sculpturing on wing scales. —*Proc. Indian natn. Sci. Acad.*, **48B** (3) : 322-342.
569. **Sen-Sarma, P. K. and Mishra, S. C.** 1982. Population of soldiers in termite colonies (Insecta : Isoptera). —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (4) (1978) : 23-30.
570. **Singh, G.** 1982. Insect pest problems in potato. —*Indian Fmr's Dig.* **15** (8) : 37 & 39.
571. **Singh, S. B., Singh, A. K. and Totay, N. G.** 1982. Studies on changes in soil properties in termites (*Odontotermes obesus*) galleries developed on different tree species. —*Indian Forester*, **108** (12) : 751-756.
572. **Thakur, M. L.** 1982. Origin, dispersion and distribution of subfamily Macrotermitinae (Isoptera : Termitidae). —*J. ent. Res.*, **5** (1) (1981) : 79-89.
573. **Varma, R. V.** 1981. Studies on the neurosecretory system of *Postelectrotermes nayari* (Isoptera : Kalotermitidae). —*J. Anim. Morph. Physiol.*, **28** (1 & 2) : 180-185.
574. **Verma, S. C. and Thakur, P. K.** 1982. Termites from Madhya Pradesh, India with new distributional records (Insecta : Isoptera). —*Rec. zool. Surv. India*, **79** (3 & 4) (1981) : 311-318.
- (x) Mallophaga
(Phthiraptera)
575. **D'Souza, P. E. and Jagannath, M. S.** 1982. A note on the incidence of lice on fowls in and around Bangalore. —*Curr. Res. mon. Newsl.*, **11** (3-4) : 40-41.
576. **Lakshminarayana, K. V.** 1982. Addenda & corrigenda to the synoptic list of mallophaga *sens. lat.* (Phthiraptera : Insecta). —*Rec. zool. Surv. India*, **80** (1 & 2) : 61-83.
577. **Lakshminarayana, K. V.** 1982. Notes on the type collections of the chewing-lice (Phthiraptera, Mallophaga : Insecta) in the collections of Zoological Survey of India. —*Rec. zool. Surv. India Occ. Pap.*, No. 33 : 1-37, pls. 7.
- In this paper, the type material of Kellogg and Paine (1914) and such other donations to Z.S.I., made by specialists like Hopkins and Clay, etc. not only are listed, their relative status and comments on the species are outlined, but also attention is invited to some of the more recent papers wherever necessary.

(xi) Hemiptera

(a) Suborder : Homoptera

578. Agarwala, B. K., Mondal, P.K. and Roychaudhuri, D. N. 1932. One new subgenus, three new species and one new subspecies of aphids (Homoptera) from Sikkim, North East India. —*Entomon*, 7 (1) : 37-45.
579. Agarwala, B. K. and Raychaudhuri, D. N. 1982. Hitherto unknown alate male of *Periphyllus aesculi* HRL from Uttar Pradesh. —*Entomon*, 7 (3) : 325-326.
580. Ananthasubramanian, K. S. 1982. Taxonomic notes on a new species of *Tricentrus* Stal (Membracidae : Homoptera) and its immature stages. —*Entomon*, 7 (4) : 475-479.
581. Arora, R. and Sidhu, H. S. 1982. Effect of plant water deficit on the fecundity of the mustard aphid (*Lipaphis erysimi* Kalténbach). —*Indian J. Ecol.*, 9 (2) : 346-347.
582. Basavanagoud, K., Kulkarni, K. A. and Thontadarya, T. S. 1982. Estimation of crop loss in safflower due to the aphid, *Dactynotus compositae* Theobald (Hemiptera : Aphididae). —*Mysore J. agric. Sci.*, 15 (2) (1981) : 279-282.
583. Basu, R. C. and Ghosh, L. K. 1982. Studies on the fluctuation of population density of *Macrosiphoniella sanborni* (Gillette) (Homoptera : Aphididae) infesting Chrysanthemum. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (3) (1978) : 103-106.
584. Bahattacharya, D. K. and Chakrabarti, S. 1982. The genus *Rhopalosiphoninus* (Homoptera : Aphididae) from India. —*Oriental Ins.*, 15 (3) (1981) : 287-293.
- The new species is described from Garhwal Range of North-west Himalaya. A key for separating the Indian species is provided.
585. Bhumannavar, B. S. and Thontadarya, T. S. 1981. Biology of the safflower aphid, *Dactynotus compositae* Theobald on safflower (*Carthamus tinctorius* Linnæus) in Karnataka. —*J. ent. Res.*, 5 (2) : 163-168.
- Studies on the biology of *D. compositae* Theobald revealed that the mode of reproduction was by viviparity. The detailed morphological descriptions of first, second, third and fourth instar nymphus, apterate and alate adult have been given. Three parasitoids and six predators were recorded on this aphid.
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602. Ghosh, A. K. 1981. Review of *Kaltenbachiella* Schoutedon (Homoptera : Aphididae). —*Oriental Ins.*, 15 (2) : 127-138, figs. 32.
- Kaltenbachiella*, a small aphid genus with 5 species, *carpinicola*, *elsholtriae*, *japonica*, *pallida* and *ulmifusa* known from the Oriental and Holarctic Regions has been reviewed and redescribed.
603. Ghosh, A.K. 1982. Cervaphidini (Homoptera : Aphidoidea) of the world. —*Oriental Ins.*, 16 (1) : 77-97.
- A review of tribe Cervaphidini of the world is given alongwith a key to 9 genera. The text includes a discussion of the species under each genus. Information on type species and their deposition and on generic distribution is also included. A host—plant index lists those species for which the host is known.
604. Ghosh, A. K., Chakrabarti, S. and Bhattacharya, D. K. 1981. Galls of Pemphiginae (Homoptera : Aphidoidea) in the Indian region with description of a new species. —*Bull. zool. Surv. India*, 4 (3) : 319-330.

An account of gall aphids and aphid galls of the subfamily Pemphiginae is given here. Host association, gall record and biological knowledge of such species in the region have also been discussed. A total of 27 species including 8 newly recorded ones under this subfamily are known to produce galls in the area.

605. Ghosh, A. K. and Raychaudhuri, D. N. 1982. Ecology of natural enemy complex of Aphidoidea (Homoptera) in some areas of eastern India. —*Proc. Symp. Ecol. Anim. Popul. zool. Surv. India*, (3) (1978) : 56-69.

Natural enemies of aphids includes hymenopteran parasites and coccinellid predators, besides some dipteran, neuropteran insects and spiders. Observations on the population trend, host-parasite relation, host-specificity, predator-prey relation, seasonal fluctuation for aphidiid parasites in Khasi hills, Meghalaya and coccinellid predators in Kalimpong-Sikkim region are reported.

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A survey of chromosmes in natural populations of *Dysdercus koenigii* (cotton

insect), *Tylotropidus voricornis*, *Poecilocerus picta* (grass-hoppers), *Passer domesticus* (house sparrow), *Bandicota bengalensis* and *Canis familiaris* (dog) has been undertaken with a view to investigating inherent and operative genetic mechanism among species.

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(b) Suborder : Heteroptera

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Fifteen species of the family were subjected to two different numerical taxonomic techniques viz. ordination and cluster analysis which yielded similar results.

The efficacy of four insecticides under Saurashtra conditions against groundnut aphid in relation to their toxicity to coccinellid predator which is one of the most important biocontrol agents against aphids have been evaluated.

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- Detailed account of external male and female genitalia of two subfamilies (Aphaninae and Oxycareninae) and their inter-relationship within Lygaeidae by the help of typical representatives the *Naudarensia* sp.—Aphaninae and *Oxycarenus laetus* Dist., Oxycareninae have been studied.
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- Effect of moment of inertia is studied by mutilating the wings. The frequency is inversely proportional to the cube root of moment of inertia of the wings. Reduced pressure, temperature and fatigue have no considerable effect on frequency of the flight sound.
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- Fourteen species of the genus *Poecilocoris* including 3 new species from Bangladesh and Nepal are described with special reference to their meta-thoracic scent gland ostioles and male and female genitalia.
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- The physio-chemical features of water, qualitative and quantitative estimation and the seasonal abundance of aquatic bugs in Oligotrophic Naukuchiatl lake of Kumaon and its ecological balance are discussed. The importance of aquatic Hemiptera in lake ecology has also been discussed.

684. Bisht, R. S. and Das, S. M. 1981-1982. Observations on the breeding ecology of aquatic Hemiptera and Coleoptera of Kumaon Lakes, India. —*Johsard*, 5-6 (1981) : 55-58.
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- The distributional pattern, physiochemical parameters, seasonal fluctuations of population and breeding habits of saxicoline *H. vicinus* have been studied.
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- The ecology of *M. merope*, comprising the food and feeding habit, habitat etc. and the life history was studied and presented here.
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- Monotype genus *Potamiaena* and its type sp. *P. aurifera* Distant are redescribed and illustrated.
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tera : Leucospidae). —*Oriental Ins.*, **15**
(1) : 1-15.
- The leucospid wasps of the Indian
sub-continent now comprise 11
species of the genus *Leucospis* F.
including a new one. Two additional
species from the north western border
areas are added and all species are
treated in an illustrated key.
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their association. —*Entomon*, **7** (3) :
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Mahabal, A. S.** 1982. Observations
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logy of the paper wasp *Ropalidia*
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findings on the cycle of population
growth in the colonies of these wasps
and attempts to relate this population
cycle to the social structure of the
R. marginata colonies.
1178. **Ghorpade, S. A., Jadhav, S. S. and
Ajri, D. S.** 1982. Records of *Tricho-
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—A parasitoid of Rhizome fly, Mac-
quart in Maharashtra. —*J. Maharash-
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nat. Hist. Soc.*, **79** (1) : 125-134.
- In the present catalogue 46 species
and 12 other undetermined species or
species complex, belonging to 14
genera out of 30 genera known from
the world and three subfamilies, have
been listed along with their aphid
hosts, aphid host-plants, period of
incidence, distribution and references.
A separate host parasite index is
added.

1180. Husain, T. and Agarwal, M. M. 1981. Systematic studies on Indian Dirhinae (Hymenoptera : Chalcididae). — *Oriental Ins.*, 15 (2) : 179-193, figs. 24.
- Keys to species of the subgenera *Hontalia* Cam. and *Dirhinus* Dalman are revised and enlarged to accommodate world species. A key to the species of subgenus *Dirhinoidea* Masi is also proposed.
1181. Husain, T. and Agarwal, M. M. 1982. Taxonomic studies on Indian Epitraninae (Hymenoptera : Chalcididae). — *Oriental Ins.*, 15 (4) (1981) : 413-432, figs. 56.
1182. Husain, T. and Agarwal, M. M. 1982. Taxonomic studies on Haltichellinae of India (Hymenoptera : Chalcididae). Part I. Haltichellini. — *Oriental Ins.*, 16 (3) : 313-336, figs. 54.
1183. Husain, T. and Agarwal, M. M. 1981. A new species of the genus *Tropimeris* Steffan (Hymenoptera : Chalcididae) from India. — *J. ent. Res.*, 5 (1) : 36-38.
- T. indicus* sp. nov. is described along with a key to the species of *T. excavata* Steffan 1948 and *T. monodon* Boucek, 1956.
1184. Husain, T. and Agarwal, M. M. 1981. A new species of the genus *Narayanella* Subba Rao (Hymenoptera : Mymaridae) from India. — *J. ent. Res.*, 5 (2) : 118-120.
- N. nigriclavata* has been described as a new species from India. It differs from *N. thornypoda* and *N. pilipes* in having its hind coxa shorter than petiole and with a single pair of short setae.
1185. Husain, T. and Agarwal, M. M. 1982. Studies on some Aphelinid (Hym. : Chalcidoidea) parasites of hemipterous insects in India. — *J. Bombay nat. Hist. Soc.*, 79 (1) : 155-162.
- Three new Aphelinid species viz., (1) *Eretmocerus hydrabadensis* sp. nov., (2) *Azotus aleuroides* sp. nov. and (3) *Physcus oriensis* sp. nov. have been described. *Prospaltella clypealis* Silvestri has been redescribed in greater detail. Keys to Indian species of *Eretmocerus* and *Physcus* have also been proposed.
1186. Jadhav, L. D. 1982. Effect of solar eclipse on the foraging activity of honey bees. — *Biovigyanam*, 8 (2) : 157-161.
- The paper deals with the effect of normal weather conditions in comparison with the abnormal situation like the solar eclipse which was to extent of 85% in Maharashtra on February 16, 1980.
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1189. Joseph, K. J. 1982. The roosting behaviour of *Chalybion bengalense* Dahlbom (Sphecidae : Hymenoptera). — *Entomon*, 7 (4) : 403-405.

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- The morphological adaptations of the female for the penetration and the different stages of oviposition are discussed.
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1196. Kshirsagar, K. K., Saxena, V. C. and Chauhan, R. M. 1982. Occurrence of Sac brood disease in *Apis cerana indica* F. in Bihar, India. —*Indian Bee J.*, 44 (1): 8-9.
1197. Kshirsagar, K. K., Singh, B. P. and Chauhan, R. M. 1982. Queen cells and queen bees in *Apis dorsata* F. —*Indian Bee J.*, 43 (4) (1981): 129.
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- This review presents a critical, annotated and illustrated catalogue, which brings together and summarises all the available information on the taxonomy of Proctotrupeoidea from India. Over 170 species, belonging to 69 genera, and a series of undescribed species of these genera are dealt with. Synoptic keys to families, subfamilies, tribes, genera and species, with notes on diagnostic characters and distribution are included.
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1201. Maninder and Varma, G. C. 1982. Record of a hyperparasitoid *Eupteromalus* sp. near *Parnarae* Gahan (Hymenoptera: Pteromalidae) from the Panjab, India. —*Entomon*, 7 (3): 335-336.
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- A new genus and species of Anomaloniinae *Indagrypon raoi*, collected from Maharashtra, are described. The relationships of the genus are discussed.
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- Eight *Aphidius* species, available in India as parasites of aphids, have been considered in this paper.
1217. Roy, C. S. and Farooqi, S. I. 1981. A new species of *Dirhinus* Dalman (Hymenoptera : Chalcididae) along with a key to the available Indian species. —*J. ent. Res.*, 5 (1) : 12-15.
- D. glabratus* sp. n. is unique in having a highly flattened body not found in any of the species of the genus *Dirhinus* Dalman. A key has been provided to distinguish the seven Indian species of *Dirhinus* available in National Pusa Collection, I.A.R.I., N. Delhi.
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- The new species differs from the only known species of *A. niger* Papp in having (i) Occiput not margined, (ii) pterostigma twice longer than wide, (iii) 3rd segment of M absent, (iv) coxae yellow and (v) petiole with spiracles slightly posterior to middle. The genus is discovered for the first time in India.
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14. CHORDATA

Subphylum A. : Urochordata (Tunicata)

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Subphylum B. : Vertebrata

(a) Pisces

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The marine catfish genus *Arius* of the family Ariidae comprising 21 species have been divided into six complexes and three groups based on interspecific relationships and morphometric affinities. In this paper 'maculatus' complex which has four species *A. maculatus*, *A. arius*, *A. Gagora* and *A. jella* have been analysed to determine their interspecific affinities and systematic status.

1289. **Dhulkhed, M. H. and Kumari, K. U.** 1981. Relative abundance of age groups of oil sardine and its effect on fishery of Mangalore area. —*Indian J. Fish.*, **26** (1 & 2) (1979) : 40-46.
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- The present work was carried out to study the toxic effects of Cadmium, introduced in aquatic medium, on the kidney of *Channa punctatus*. Histopathological studies revealed that, in general, the process of destruction was the function of dosages and period of exposure. The cells of proximal tubules of the kidney were the first to be affected. Soon thereafter the injury spread to the glomerulus, hematopoietic tissue and other parts of the tubules.
1293. **Dutta, T. and Dasgupta, S.** 1982. The comparative activity of acid and alkaline phosphatase in some metabolically active tissues of *Tilapia mossambica* (Peters). —*Geobios*, **9** (5 & 6) : 219-222.
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Mackerel and sardines chilled in CSW immediately after catch and stored at 0-5°C, were rated as good for 3 days, fair upto 6 days and acceptable upto 8 days.
1308. Indra, T. J. 1982. A note on the occurrence of *Nemipterus metopias* from Madras coast.—*Indian J. Fish.*, **28** (2) : 290-291.
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1291. **Dubale, M. S. and Awasthi, M.** 1982. Biochemical changes in the liver and kidney of a catfish *Heteropneustes fossilis* exposed to dimethoate. —*Comp. Physiol. Ecol.*, **7** (2) : 111-114.
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An investigation of the fish resources of the Cauvery river system in S. India has revealed the occurrence of 142 spp. of fishes. The river by virtue of its natural physiography is divisible into three zones ; mountainous, plateau and plains. Each zone is characterised by diverse ecological features which is reflected in the composition of the fish fauna also. The faunal distribution is analysed and the causative factors of the patterns are discussed.
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1318. Jayaram, K. C. and Dhanze, J. R. 1981. Siluroid fishes of India, Burma and Ceylon. 24. The systematic status of *Arius satparanus* Chaudhuri (Ariidae : Siluriformes). —*Bull. zool. Surv. India*, **4** (3) : 395-398.
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The authors have studied 142 spp. occurring in the river and believe that each zone of the river i. e. mountainous, plateau and plains, have different characteristic fish fauna.
Besides a new sp. by Jayaram (*P. coorgensis*), distributional records, collection of topotypes, given in the paper, the authors suggest establishing a suitable Fish Sanctuary in the plains.
1321. Johal, M. S. and Dhillon, K. S. 1981. Ichthyofauna of Ganganagar district, (Rajasthan), India. —*Res. Bull. Punjab Univ.*, **32** (1-4) : 105-110.
The fishes of the Ganganagar district of Rajasthan have been described. In all 57 species belonging to 30 genera are dealt with in this paper. Nineteen species are being reported for the first time from the State of Rajasthan. The Ganga canal, the Rajasthan canal, the Bhakra canal and the river Ghaggar are the main fishery resources of this district.
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- The paper describes a dichotomous key for the fishes of Panjab. As many as 114 species and 4 subspecies have been identified.
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1330. **Joshi, V. R. and Saralaya, K. V.** 1982. Studies on the effect of precooking in sardine canning : V. Factors influencing the precooking effect. — *Mysore J. agric. Sci.*, **16** (3) : 338-345.
1331. **Kalyani, M.** 1981. Sugars linked with fish scale proteins. — *Indian J. Fish.*, **26** (1 & 2) (1979) : 228-229.
1332. **Kaviraj, A. and Konar, S. K.** 1982. Acute toxicity of mercury, chromium and cadmium to fish, plankton and worm. — *Geobios*, **9** (3) : 97-100.
1333. **Khera, S., Kaushik, S. and Bali, N. P.** 1982. Studies on acute toxicity of acetylsalicylic acid on gastrointestinal tract and liver of *Ophiocephalus punctatus* (Bloch). — *Proc. natn. Acad. Sci. India*, **52B** (1) : 117-120.
- A single oral dose of 50/100 gm. of acetylsalicylic acid produces severe histopathological lesions and ulcers in all the regions of alimentary canal of *O. punctatus*.
1334. **Kulkarni, C. V.** 1982. Mahaseer in danger, needs protection. — *Cheetal*, **23** (4) : 24-27.
1335. **Kusuma, M. S. and Neelakantan, B.** 1981. On an abnormal specimen of white fish, *Lactarius lactarius* (Sch) without a pelvic fin. — *J. Anim. Morph. Physiol.*, **28** (1 & 2) : 232-233.
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A study of the monthly anchovy fishery data from the eleven fishery survey zones along the southwest coast of India lying between Cape Comorin and the northern border of Kerala Coast has revealed that the southern region lying between Cape Comorin and Quilon is most productive for the anchovies, landing annually a little over 10,000 tonnes.

1337. **Luther, G.** 1982. New characters for consideration in the taxonomic appraisal of Grey Mulletts. —*J. mar. biol. Ass. India*, **19** (1) (1977) : 1-9.

A study of some osteological characters, namely, the parapophysial stay on the trunk vertebra, second vertebral processes, basi-occipital processes and post-zygapophysial hooks as basic characters for the general consideration of grey mullets has revealed that these parameters can be used to separate the genera *Liza*, *Valamugil* and *Ellochelon*.

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Depletion of glycogen, total lipids, phospholipids and IN NaOH extractable acidic proteins has been studied in red and white muscle of *Heteropneustes fossilis* subjected to induced starvation for a maximum period of 28 days.

1340. **Malhotra, S. K.** 1982. Bionomics of hill-stream cyprinids. III. Food, parasites and length—weight relationship of Garhwal mahaseer, *Tor tor* (Ham.). —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (6) : 493-499.

829 specimens of *T. tor* (Ham.) were examined for food habits, parasites and length—weight relationships.

1341. **Manna, G. K. and Som, R. C.** 1982. Effect of X-rays on the somatic chromosomes of the exotic fish, *Tilapia mossambica*. —*Proc. Indian Acad. Sci. (Anim. Sci.)*, **91** (2) : 121-133.

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- The muscles of the freshwater fish, *Cyprinus carpio* were analysed for their protein, fat and water content over a period in which the different maturity stages of the fish were obtained. The variations in the above mentioned body constituents were seen to be related to the reproduction cycle.
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- Glucovariation have been investigated in a common freshwater catfish in thermal stress.
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- The frozen storage characteristics of fish fingers made out of two different species ; differing in lipid content for a period of six months are outlined.
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II. LIST OF NEW TAXA

Note: All new taxonomic categories except new species have been indicated by suffixing appropriate terms such as subfam.n., gen. n., subgen. n., subsp. n. etc.

The numbers in bracket appearing on the right side refer to the serial number of the main title.

I. PHYLUM : PROTOZOA

(a) Sub-Phylum : Sarcomastigophora

Class : Mastigophora

Order : Kinetoplastida

(i) Family : Cryptobiidae

1. *Trypanoplasma atti* Joshi (57)
2. *Trypanoplasma mysti* Joshi (57)

(ii) Family : Trypanosomatidae

3. *Trypanosoma aori* Joshi (57)

(b) Sub-Phylum : Sporozoa

Class : Telosporea

(1) Order : Gregarinida

Family : Actinocephalidae

4. *Menospora coenagrii* Sarkar & Halder (67)
5. *Menospora enallagmae* Sarkar & Halder (67)

(2) Order : Haemosporidia

Family : Haemoprotidae

6. *Haemoproteus himalayanus* Pal & Dasgupta (61a)

II. PHYLUM : PLATYHELMINTHES

I. Class : Trematoda

(a) Sub-Class : Monogenea

(i) Family : Dactylogyridae

7. *Bifurcophaptor muelleri* Gupta & Sharma (82)
8. *Bifurcophaptor tripathi* Gupta & Sharma (82)

9. *Dactylogyryrus circumphallus* Venkatanarsaiah (100)

10. *Dactylogyryrus macrogaster* Venkatanarsaiah (100)

11. *Dactylogyryrus manairensis* Venkatanarsaiah (100)

(ii) Family : Leucochloridiidae

12. *Leucochloridium gallinuli* Kharoo & Dhar (87)

(b) Sub-Class : Digenea

(i) Family : Diplostomatidae

13. *Uvulifer chandigarhensis* Mishra & Gupta (90)
14. *Uvulifer giriensis* Mishra & Gupta (90)

(ii) Family : Lecithodendriidae

15. *Pleuropsoles charkhii* Kharoo & Dhar (88)

(iii) Family : Monorchiiidae

Neoopisthomonorchinae Varma (sub fam. n.) (99)

Neoopisthomonorchis Varma (gen.n.) (99)

16. *Neoopisthomonorchis pristipomatis* Varma (99)

(iv) Family : Opecoelidae

17. *Opedunculata sapani* Dwivedi & Dwivedi (78a)

(v) Family : Strigeidae

18. *Neascus chauhani* Agrawal & Khan (76)
19. *Neascus hanumanthai* Agrawal & Khan (76)
20. *Neascus moghei* Agrawal & Khan (76)
21. *Neascus simhai* Agrawal & Khan (76)
22. *Tetracotyle pandei* Agrawal & Khan (75)
23. *Tetracotyle ramalingi* Agrawal & Khan (75)
24. *Tetracotyle srivastavai* Agrawal & Khan (75)

II. Class : Cestoda

Family : Dilepididae

25. *Valipora amethiensis* Srivastava & Capoor (110)

III. PHYLUM : ASCHELMINTHES

I. Class : Nematoda

(1) Family : Cephalobidae

26. *Cephalobium aodus* Jagannath Rao (166)

(ii) Family : Criconematidae

27. *Hemicriconemoides cassiae* Kumar (188)

28. *Hemicriconemoides sunderbanensis* Ganguly & Khan (152)

Nenocriconema Darekar & Khan (gen.n.) (137)

29. *Nenocriconema dorgeski* Darekar & Khan (137)

(iii) Family : Discolaimidae

Latocephalus Patil & Khan (gen.n.) (204)

30. *Latocephalus gracile* Patil & Khan (204)

Neodiscolaimium Patil & Khan (gen.n.) (204)

(iv) Family : Dorylaimidae

31. *Calodorylaimus andrassyi* Baqri & Jana (131)

32. *Calodorylaimus simplex* Baqri & Jana (131)

33. *Laimydorus baldus* Baqri & Jana (131)

34. *Laimydorus siddiqii* Baqri & Jana (131)

(v) Family : Hemiuridae

35. *Lecithocladium elongatus* Gupta & Puri (163)

36. *Lecithocladium manteri* Gupta & Puri (163)

37. *Lecithocladium psettodi* Gupta & Puri (163)

38. *Lecithocladium sciani* Gupta & Puri (163)

39. *Lecithocladium srivastavai* Gupta & Puri (163)

40. *Lecithocladium stromateusi* Gupta & Puri (163)

(vi) Family : Heterakidae

41. *Paraspidodera buckleyi* Gupta & Trivedi (162)

42. *Paraspidodera cameroni* Gupta & Trivedi (162)

(vii) Family : Hoplolaimidae

43. *Orientylus basiri* Khan & Khan (178)

44. *Orientylus elegans* Khan & Khan (178)

45. *Orientylus peculiaris* Khan & Khan (178)

46. *Rotylenchus ranapori* Darekar & Khan (140)

47. *Scutellonema conicaudatum* Sivakumar & Selvase Karan (234)

48. *Scutellonema conicephalum* Sivakumar & Selvase Karan (234)

(viii) Family : Leptonchidae

49. *Basirotyleptus minimus* Jana & Baqri (168)

50. *Dorylaimoides filicaudatus* Jana & Baqri (168)

51. *Dorylaimoides subhasi* Jana & Baqri (168)

52. *Funaria indica* Bajaj & Bhatti (127)

53. *Leptonchus dissipularis* Bajaj & Bhatti (127)

54. *Morasia bengalensis* Jana & Baqri (168)

(ix) Family : Longidoridae

Inagrei Khan (gen. n.) (176)

55. *Inagrei* gloriosus Khan (gen. n.) (176)

56. *Longidorus paramirus* Darekar & Khan (139)

57. *Siddiqia indicus* Phukan & Sanwal (208)

58. *Xiphinema mammillocaudatum* Khan (176)

59. *Xiphinema nagarjunensis* Khan (176)
60. *Xiphinema neodimorphicaudatum* Khan (176)
61. *Xiphinema tugewari* Darekar & Khan (139)
- (x) Family : Mononchidae
62. *Itonchus shamimi* Patil & Khan (207)
Sporonchuloides Mohandas & Prabhoo (gen. n.) (197)
63. *Sporonchulus grandis* Patil & Khan (207)
- (xi) Family : Mylonchulidae
64. *Mylonchulus neocontractus* Patil & Khan (206)
- (xii) Family : Nordiidae
65. *Enchodorella jagannathi* Patil & Khan (205)
66. *Longidorella suviswa* Patil & Khan (205)
- (xiii) Family : Nygolaimidae
Solididentinae Ahmad & Jairajpuri (subfam. n.) (117)
Paravulvinae Ahmad & Jairajpuri (subfam. n.) (117)
67. *Aquatides christicki* Ahmad & Jairajpuri (117)
68. *Clavicaudoides tenuicaudatum* Ahmad & Jairajpuri (117)
69. *Paravulus papillatus* Ahmad & Jairajpuri (117)
- (xiv) Family : Pratylenchidae
70. *Pratylenchus manohari* Quraishi (210)
- (xv) Family : Psilenchidae
71. *Basiria asaraensis* Khan (177)
Neobasiria Javed (gen. n.) (169)
72. *Neobasiria citri* Javed (169)
- (xvi) Family : Quadianematidae
Mammillonema Darekar & Khan (gen. n.) (138)
73. *Mammillonema mammillatus* Darekar & Khan (138)
(xvii) Family : Radopholidae
74. *Hirschmanniella kaverii* Sivakumar & Khan (233)
(xviii) Family : Tripylidae
75. *Tobrilus kherai* Soni & Nama (235)
(xix) Family : Tylenchidae
76. *Cephalenchus cephalodiscus* Sultan & Jairajpuri (238)
77. *Cephalenchus cylindricus* Sultan & Jairajpuri (238)
Duotylenchus Saha & Khan (gen. n.) (216)
78. *Duotylenchus bilineatus* Saha & Khan Bhatti (216)
79. *Hirschmanniella telanganensis* Maharaju (192)
80. *Psilenchus graminus* Bajaj, Kaushik & Bhatti (128)
- (xx) Family : Tylenchorhynchidae
Tylenchorhynchus Saha & Khan (gen. n.) (216)
81. *Tylenchorhynchus badhiensis* Saha & Khan (216)
82. *Tylenchorhynchus goldeni* Rashid & Singh
- IV. PHYLUM : MOLLUSCA
Family : Kossamaticeratidae
83. *Karapadites (Karapadites) madhukari* Chiplonkar, Ghare & Oka (249)
84. *Karapadites (Karapadites) mettalensis* Chiplonkar, Ghare & Oka (249)
85. *Karapadites (Karapadites) shaligrami* Chiplonkar, Ghare & Oka (249)
Sastryceras Chiplonkar, Ghare & Oka (gen. n.) (249)
86. *Sastryceras mullurensis* Chiplonkar, Ghare & Oka (249)

87. *Sastryceras purvai* Chiplonkar, Ghare & Oka (249)
88. *Sastryceras sastryi* Chiplonkar, Ghare & Oka (249)
89. *Sastryceras sillakudensis* Chiplonkar, Ghare & Oka (249)
90. *Sastryceras sphenodiscoides* Chiplonkar, Ghare & Oka (249)
- V. PHYLUM : ANNELIDA
 Class : Oligochaeta
 Family : Octochaetidae
- Mallehulla* Julka & Rao (gen. n.) (297)
91. *Mallehulla indica* Julka & Rao (297)
- VI. PHYLUM : ARTHROPODA
 I. Class : Arachnida
 (1) Order : Araneae
 (i) Family : Clubionidae
92. *Castineira indica* Tikader (379)
 (ii) Family : Thomisidae
93. *Bomis calcuttaensis* Biswas & Mazumder (318)
94. *Diaea bengalensis* Biswas & Mazumder (318)
 (2) Order : Acarina
 (i) Family : Acaridae
95. *Caloglyphus caroli* Channabasavanna, Krishna Rao & Raghunath (321)
 (ii) Family : Eriophyidae
96. *Abacarus gossypii* Mohanasundaram (346)
97. *Abacarus anacardiae* Mohanasundaram (346)
98. *Abacarus arjunalis* Mondal, Ghosh & Chakrabarti (356)
99. *Abacarus asiaticae* Mohanasundaram (350)
100. *Acalitus hibisei* Mondal & Chakrabarti (353)
101. *Aculops acanthae* Mohanasundaram (345)
102. *Aculops betonicae* Mohanasundaram (350)
103. *Aculops boerhaeviae* Mohanasundaram (345)
104. *Aculops excoecaria* Mondal, Ghosh & Chakrabarti (355)
105. *Aculops kumari* Mohanasundaram (344)
106. *Aculops leguminae* Mohanasundaram (345)
107. *Aculops pittosporae* Mohanasundaram (345)
108. *Aculops xanthocarpus* Mondal, Ghosh & Chakrabarti (355)
109. *Anothopoda deviarensis* Mohanasundaram (349)
110. *Anothopoda wightianae* Mohanasundaram (349)
111. *Anthocoptes glycosmis* Mondal & Chakrabarti (354)
112. *Calacarus millingtoniae* Mohanasundaram (342)
113. *Calepitrimerus antedasmae* Chakrabarti & Das (320)
114. *Calepitrimerus cordiae* Chakrabarti & Das (320)
115. *Calepitrimerus massanjoris* Das & Chakrabarti (322)
116. *Colopodacus bengalensis* Mohanasundaram (349)
117. *Colopodacus combretus* Ghosh & Chakrabarti (328)
118. *Colopodacus eugeniae* Mohanasundaram (349)
119. *Colopodacus gynalaxtae* Mohanasundaram (349)
120. *Colopodacus walayarensis* Mohanasundaram (349)

121. *Cosella ichnocarpasia* Mondal & Chakrabarti (354)
122. *Disella tectona* Das & Chakrabarti (322)
Epicecidophyes Mondal & Chakrabarti (gen. n.) (354)
123. *Epicecidophyes clerodendris* Mondal & Chakrabarti (354)
124. *Epicecidophyes indica* Mondal, Ghosh & Chakrabarti (356)
125. *Epitrimerus azimae* Mohanasundaram (342)
126. *Eriophyes antidotalae* Mohanasundaram (350)
127. *Eriophyes delhiensis* Mohanasundaram (344)
128. *Eriophyes ladakhensis* Rishi & Rathar (365)
129. *Eriophyes viddhagiriensis* Mohanasundaram (350)
130. *Floracarus eugenifoliae* Mohanasundaram (349)
131. *Floracarus salvifoliae* Mohanasundaram (349)
132. *Floracarus siruwaniensis* Mohanasundaram (349)
133. *Floracarus sivakumarii* Mohanasundaram (349)
134. *Gammaphytoptus litseasis* Mondal, Ghosh & Chakrabarti (355)
Indonotolox Ghosh & Chakrabarti (gen. n.) (328)
135. *Indonotolox sudarsani* Ghosh & Chakrabarti (328)
136. *Monotrimacus quadrangulari* Mohanasundaram (342)
Neocosella Mohanasundaram (gen. n.) (349)
137. *Neocosella ichnocarpae* Mohanasundaram (349)
138. *Neotegonotus indicus* Mondal & Chakrabarti (353)
139. *Nothopoda kallarensis* Mohanasundaram (349)
140. *Netastrix flabelliferae* Mohanasundaram (342)
141. *Tegolophus gelonis* Mondal & Chakrabarti (353)
142. *Tegolophus kalyanii* Chakrabarti, Ghosh & Mondal (319)
143. *Tegonotus bassius* Das and Chakrabarti (322)
144. *Tegonotus jambolensis* Mondal, Ghosh & Chakrabarti (356)
145. *Tetra lanneansis* Chakrabarti, Ghosh & Mondal (319)
- (iii) Family : Haplozetidae
Pelokylla Adolph & Haq (gen. n.) (313)
146. *Pelokylla malabarica* Adolph & Haq (313)
- (iv) Family : Nalepellidae
Neophantacrus Mohanasundaram (gen. n.) (848)
147. *Neophantacrus mallotus* Mohanasundaram (848)
- (v) Family : Phthiracaridae
148. *Hoplophorella sundarbanensis* Sanyal & Bhaduri (371)
- (vi) Family : Phytoseiidae
Garhwalicus Gupta (gen. n.) (329)
149. *Garhwalicus himalayensis* Gupta (329)
150. *Phytoseius (Phytoseius) jaunpurensis* Gupta (331)
151. *Platyseiella mumai* Ray & Gupta (366)
152. *Proprioseius kumaonensis* Gupta (330)
153. *Typhlodromus garhwalicus* Gupta (330)

- (vii) Family : Rhyncaphytoptidae
154. *Diptilomiopus artocarpae* Mohanasundaram (347)
155. *Diptilomiopus camerae* Mohanasundaram (347)
156. *Diptilomiopus cocculae* Mohanasundaram (347)
157. *Diptilomiopus integrifoliae* Mohanasundaram (347)
- Diptilorhynacus* Mondal, Ghosh & Chakrabarti (gen. n.) (357)
158. *Diptilorhynacus sinusetus* Mondal, Ghosh & Chakrabarti (357)
- Neorhynacus* Mohanasundaram (gen. n.) (347)
159. *Neorhynacus combretis* Ghosh & Chakrabarti (328)
160. *Neorhynacus rajendrani* Mohanasundaram (347)
161. *Rhyncaphytoptus shoreacola* Mondal, Ghosh & Chakrabarti (357)
- (viii) Family : Syringophilidae
- Gallilichus* D'Souza & Jaganannath (gen. n.) (327)
162. *Gallilichus hiregoudari* D'Sauza & Jaganannath (327)
- (ix) Family : Tenuipalpidae
163. *Brevipalpus cucurbitae* Mohanasundaram (343)
164. *Brevipalpus euphorbiae* Mohanasundaram (343)
165. *Tenuipalpus coimbatorensis* Mohanasundaram (351)
166. *Tenuipalpus ghaii* Mohanasundaram (351)
167. *Tenuipalpus laminasetae* Mohanasundaram (351)
168. *Tenuipalpus malligai* Mohanasundaram (351)
169. *Tenuipalpus persicae* Mohanasundaram (367)
170. *Tenuipalpus tectonae* Mohanasundaram (351)
171. *Tenuipalpus yousefi* Nassar & Ghai (358)
172. *Terminalichus serratus* Nassar & Ghai (358)
- (x) Family : Tetranychidae
173. *Eotetranychus bilobotus* Nassar & Ghai (358)
174. *Eotetranychus caricae* Nassar & Ghai (358)
175. *Eotetranychus irregularensis* Nassar & Ghai (358)
176. *Eotetranychus maximae* Nassar & Ghai (358)
177. *Eotetranychus nagai* Nassar & Ghai (358)
178. *Eotetranychus phaseoli* Nassar & Ghai (358)
179. *Eotetranychus rajouriensis* Nassar & Ghai (358)
180. *Eotetranychus rohilae* Nassar & Ghai (358)
181. *Tetranychus afrindicus* Nassar & Ghai (358)
182. *Tetranychus papayae* Nassar & Ghai (358)
183. *Tetranychus zaheri* Nassar & Ghai (358)
- II. Class : Crustacea
Sub-Class : Copepoda
(1) Order : Arguloida
Family : Argulidae
184. *Argulus mangalorensis* Natarajan (404)
- (2) Order : Lernaeopodoida
Family : Lernaeopodidae
185. *Brachiella cybii* Pillai, Prabha & Balaraman (407)

186. *Brachiella malabarica* Pillai, Prabha & Balaraman (407)
187. *Thysanote nudibrachiata* Pillai, Prabha & Balaraman (407)
- III. Class : Insecta
- (1) Order : Thysanura
- (i) Family : Machilidae
188. *Graphitarus surindicus* de Roca (495)
- (ii) Family : Meinertellidae
189. *Machilontus lawrencei* de Roca (495)
- (2) Order : Plecoptera
- Family : Perlidae
190. *Neoperla obscura* Zwick (508)
191. *Neoperla ochracea* Zwick (508)
192. *Neoperla schmidiana* Zwick (508)
- (3) Order : Orthoptera
- Family : Gryllidae
193. *Loxoblemmus timliensis* Bhargava (513)
- (4) Order : Dermaptera
- (i) Family : Carcinophoridae
- Titanolabinae Srivastava (sub-fam. n.) (550)
- Paratitanolabis* Srivastava (gen. n.) (550)
194. *Par. titanolabis bormansi* Srivastava (550)
- (ii) Family : Forficulidae
195. *Forficula cristata* Srivastava (552)
196. *Forficula wittmeri* Srivastava (552)
- (iii) Family : Labiidae
197. *Chaetospania shillongensis* Srivastava (549)
- (5) Order : Isoptera
- Family : Termitidae
198. *Angulitermis ramani* Bose & Das (563)
- (6) Order : Hemiptera
- (a) Sub-Order : Homoptera
- (i) Family : Aphididae
199. *Aleurodaphis antennata* Chakrabarti & Maity (587)
200. *Dysaphis sharmai* Stroyan (663)
- Indoregma* Chakrabarti & Maity (gen. n.) (587)
201. *Indoregma bambusae* Chakrabarti & Maity (587)
202. *Kaltenbachiella carpinicola* Ghosh & Chakrabarti (604)
203. *Impatientinum (Neoimpatientinum) similaceti* Agarwala, Mondal & Roychaudhuri (sub gen. n.) (578)
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205. *Mollitrichosiphum nigriabdominalis* Agarwala, Mondal & Roychaudhuri (578)
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2. PLATYHELMINTHES		Dermaptera	4
Trematoda	18	Isoptera	1
Cestoda	1	Hemiptera	22
3. ASCHELMINTHES		Thysanoptera	5
Nematoda	57	Neuroptera	1
4. MOLLUSCA	8	Coleoptera	31
		Diptera	17
5. ANNELIDA	1	Hymenoptera	71
6. ARTHROPODA		7. CHORDATA	
Arachnida	92	Pisces	2
Crustacea	4	Aves	1
Insecta		Mammalia	1
Thysanura	2		
Plecoptera	3	TOTAL :	<u>349</u>

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| 2. Protozoa | 11. Sipuncula |
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(a) Urochordata
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Faunistics & Zoogeography : 691, 693, 696, 697.

(xii) Thysanoptera

Systematics : 725, 730.

Economic value & Control : 610, 647, 721, 724, 727, 731.

Ecology & Behaviour : 666, 722, 724, 726, 728, 731.

Faunistic & Zoogeography : 723, 725, 728, 729, 780.

(xiii) Neuroptera

General : 734.

Systematics : 732.

Ecology : 733.

Development : 733.

(xiv) Coleoptera

General : 794.

Systematics : 743, 764, 765, 780, 781, 782, 783, 784, 787, 788, 789, 829, 830, 844.

Physiology & Biochemistry : 735, 738, 742, 759, 779, 802, 808, 812, 813, 814, 816, 821, 822, 828, 834, 841, 845, 1058.

Cytology : 757, 758.

Histology & Histochemistry : 81, 831, 836.

Morphology & Anatomy : 95, 96, 755, 774, 815, 820, 830, 831.

Economic value & Control : 736, 737, 738, 740, 744, 746, 747, 748, 749, 750, 751, 752, 753, 754, 761, 762, 763, 769, 770, 776, 793, 795, 796, 798, 799, 800, 801, 802, 804, 805, 806, 809, 810, 811, 814, 823, 824, 825, 826, 827, 828, 835, 837, 838, 840, 842, 843, 846, 1024, 1088.

Ecology & Behaviour : 605, 684, 685, 745, 756, 760, 766, 768, 771, 773, 755, 778, 790, 797, 803, 808, 817, 832, 833, 839, 1159.

Biology & Development : 81, 741, 745, 766,
767, 768, 785, 786, 807.

Faunistic & Zoogeography : 97, 743, 772,
775, 776, 781, 782, 791, 792, 819,
823, 844.

Parasitology : 667, 739, 777.

(xv) **Diptera**

General : 856, 857, 867, 868, 877.

Systematics : 864, 869, 874, 876, 881, 882,
884, 891, 906, 907, 908, 909, 912,
917, 942,

Physiology & Biochemistry : 849, 854, 870,
873, 899, 902, 915, 921, 933, 937,
953, 954.

Cytology & Cytochemistry : 870, 875, 880,
896, 919, 925, 930, 947, 955.

Histology & Histochemistry : 897, 937, 952.

Anatomy & Morphology : 920, 929, 952.

Economic value & Control : 809, 847, 849,
850, 857, 858, 859, 861, 862, 863,
865, 872, 879, 886, 888, 892, 893,
894, 895, 900, 901, 903, 904, 905,
910, 913, 914, 918, 922, 923, 927,
928, 931, 932, 934, 935, 936, 938,
939, 940, 944, 946, 948, 949, 950,
956, 958, 959, 960, 962, 963, 1178,
1574.

Ecology & Behaviour : 374, 811, 848, 852,
853, 855, 862, 866, 867, 871, 877,
879, 883, 884, 885, 887, 889, 890,
898, 911, 916, 924, 935, 941, 943,
944, 945, 957, 963.

Biology & Development : 853, 878, 898, 916,
920.

Biometric : 875.

Genetic : 859, 860, 899, 902, 953.

Faunistics & Zoogeography : 889, 890, 908,
911, 961.

Parasitology & Pathology : 926, 951.

(xvi) **Lepidoptera**

General : 965, 1000, 1040, 1042, 1086, 1093,
1147.

Systematics : 971, 973, 1027, 1028, 1097,
1098, 1099.

Physiology & Biochemistry : 968, 974, 975,
976, 980, 984, 988, 995, 1001,
1002, 1003, 1011, 1018, 1055,
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1076, 1077, 1078, 1082, 1083,
1088, 1101, 1106, 1108, 1109,
1113, 1114, 1115, 1116, 1117,
1119, 1120, 1138, 1142, 1143,
1145, 1160, 1161.

Cytology & Cytochemistry : 976, 981, 1058,
1072.

Histology & Histochemistry : 1049, 1139.

Anatomy & Morphology : 1026, 1032, 1049,
1050, 1051, 1052, 1097, 1098,
1129, 1139.

Economic value & Control : 570, 653, 835,
842, 905, 913, 922, 966, 970, 977,
978, 982, 985, 986, 987, 994, 996,
997, 998, 1004, 1007, 1008, 1015,
1016, 1017, 1019, 1020, 1021,
1022, 1023, 1024, 1029, 1030,
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1063, 1065, 1067, 1068, 1071,
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1079, 1080, 1084, 1085, 1087,
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1126, 1128, 1130, 1131, 1132,
1134, 1135, 1140, 1141, 1150,
1152, 1156.

Ecology & Behaviour : 803, 969, 979, 998, 999, 1009, 1010, 1012, 1013, 1025, 1026, 1037, 1038, 1039, 1044, 1048, 1061, 1064, 1069, 1070, 1081, 1083, 1090, 1100, 1103, 1118, 1122, 1123, 1124, 1125, 1127, 1136, 1146, 1148, 1149, 1151, 1153, 1154, 1155, 1157, 1158, 1159.

Biology & Development : 967, 968, 983, 984, 988, 1002, 1005, 1009, 1018, 1025, 1031, 1034, 1054, 1056, 1078, 1087, 1090, 1091, 1092, 1096, 1109, 1116, 1124, 1133, 1137, 1149, 1157.

Genetics : 1072, 1143.

Faunistics & Zoogeography : 964, 972, 973, 989, 990, 991, 992, 993, 1043, 1087, 1102.

Parasitology & Pathology : 599, 1006, 1069, 1070, 1089.

(xvii) Hymenoptera

General : 1170, 1171, 1174, 1191, 1197, 1202, 1203, 1212, 1223, 1226, 1230, 1241, 1247.

Systematics : 1167, 1169, 1172, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1188, 1193, 1195, 1199, 1204, 1206, 1207, 1216, 1217, 1219, 1220, 1221, 1227, 1228, 1231, 1232, 1234, 1240.

Physiology & Biochemistry : 1162, 1163, 1165, 1173, 1235, 1236, 1246.

Histology : 1238.

Anatomy & Morphology : 1218, 1231, 1238, 1239.

Economic value : 1202, 1203, 1226, 1230, 1243, 1244.

Ecology & Behaviour : 605, 1175, 1176, 1177, 1186, 1187, 1189, 1190, 1198, 1205, 2111, 1214, 1215, 1222, 1224, 1225, 1229, 1237, 1241, 1245, 1248.

Reproduction : 1209.

Biology & Development : 1163, 1165, 1166, 1177, 1211, 1215, 1242.

Faunistics & Zoogeography : 1172, 1176, 1178, 1179, 1200, 1201, 1234.

Parasitology & Pathology : 1164, 1166, 1168, 1196, 1208, 1210, 1212, 1242, 1249.

14. CHORDATA

Sub phylum : Urochordata (Tunicata)

(a) Pisces

General : 1256, 1258, 1263, 1272, 1278, 1283, 1289, 1294, 1295, 1298, 1299, 1307, 1315, 1329, 1330, 1334, 1336, 1353, 1375, 1379, 1380, 1391, 1392, 1397, 1407, 1414, 1419, 1420.

Systematics : 1288, 1304, 1317, 1318, 1319, 1320, 1322, 1337, 1350, 1408, 1422, 1437, 1439, 1449.

Physiology & Biochemistry : 104, 414, 415, 416, 417, 1252, 1255, 1259, 1260, 1262, 1265, 1266, 1268, 1269, 1270, 1271, 1273, 1274, 1276, 1280, 1282, 1286, 1287, 1290, 1291, 1293, 1297, 1300, 1301, 1303, 1309, 1310, 1313, 1314, 1323, 1324, 1325, 1328, 1331, 1332, 1333, 1339, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1351, 1354, 1355, 1357, 1358, 1365, 1369, 1370, 1371, 1372, 1377, 1382, 1383, 1384, 1385, 1386, 1388, 1389, 1394, 1396, 1398, 1401, 1404, 1406,

- 1413, 1415, 1416, 1425, 1433,
1435, 1442, 1444, 1445, 1446,
1448, 1951.
- Cytology & Cytochemistry : 1261, 1296,
1341, 1376, 1378, 1383, 1400,
1409.
- Histology & Histochemistry : 1253, 1254,
1259, 1279, 1290, 1292, 1305,
1403, 1411, 1418, 1432, 1951.
- Morphology & Anatomy : 1309, 1312, 1319,
1326, 1327, 1335, 1361, 1363,
1405, 1410, 1422, 1424, 1426,
1427, 1434, 1438, 1440.
- Economic value : 1256, 1267, 1272, 1277,
1302, 1334, 1353, 1387, 1412.
- Ecology & Behaviour : 414, 415, 1251, 1258,
1264, 1271, 1281, 1284, 1285,
1298, 1316, 1340, 1342, 1349,
1356, 1359, 1366, 1369, 1381,
1390, 1397, 1421, 1429, 1443,
1447, 1448,
- Embryology & Reproduction : 1257, 1364,
1367, 1368, 1387, 1394, 1399.
- Biology & Development : 1281, 1310, 1340,
1342, 1343, 1344, 1354, 1393,
1402, 1423, 1428, 1431, 1450.
- Biometrics : 1288, 1441.
- Faunistics & Zoogeography : 1251, 1264,
1267, 1275, 1289, 1304, 1306,
1308, 1316, 1318, 1320, 1321,
1322, 1336, 1352, 1359, 1360,
1361, 1362, 1367, 1368, 1373,
1374, 1391, 1395, 1412, 1417,
1422, 1430.
- Pathology : 1280, 1311, 1340, 1346, 1436,
1447.
- (b) **Amphibia**
- General : 1452.
- Systematic : 1468.
- Physiology & Biochemistry : 1451, 1456,
1457, 1458, 1459, 1464, 1465,
1466, 1467, 1469, 1470, 1472,
1473, 1474.
- Histochemistry : 1465.
- Morphology : 1455.
- Ecology & Behaviour : 1451, 1453, 1454,
1460, 1461.
- Biology & Development : 1462, 1463, 1469.
- Pathology : 1471.
- (c) **Reptilia**
- General : 1476, 1478, 1486, 1492, 1494, 1499,
1502, 1504, 1511, 1512, 1520,
1521, 1522, 1525, 1527, 1528,
1533, 1534, 1535, 1537, 1539,
1540, 1542.
- Systematics : 1489, 1510, 1513, 1514, 1524.
- Physiology & Biochemistry : 1479, 1481,
1482, 1483, 1484, 1498, 1501,
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1532.
- Cytochemistry : 1409, 1482.
- Histology & Histochemistry : 1479, 1484,
1500, 1530.
- Morphology : 1506, 1525, 1526.
- Ecology & Behaviour : 1475, 1480, 1481,
1485, 1490, 1491, 1493, 1496,
1499, 1503, 1507, 1521, 1524,
1541.
- Biology & Development : 1490, 1491, 1495,
1543, 1544.
- Biometrics : 1544.
- Reproduction : 1494, 1536.
- Economic value : 1511.
- Faunistic & Zoogeography : 1477, 1488, 1491,
1508, 1509, 1514, 1538, 1540.
- Pathology : 1487, 1497.

(d) Aves

General : 1549, 1550, 1551, 1552, 1553, 1554,
1556, 1565, 1567, 1569, 1570,
1584, 1585, 1588, 1589, 1596,
1598, 1599, 1600, 1601, 1604,
1614, 1620, 1621, 1625, 1631,
1632, 1647, 1650, 1651, 1654,
1659, 1660, 1663, 1664, 1665,
1666, 1667, 1673, 1677, 1681,
1687, 1688, 1690, 1835.

Systematics : 1545, 1546, 1547, 1644.

Physiology & Biochemistry : 1560, 1561,
1562, 1563, 1564, 1578, 1594,
1597, 1609, 1611, 1615, 1634,
1636, 1637, 1638, 1639, 1641,
1642, 1643, 1656, 1657, 1662,
1672, 1675, 1682, 1684, 1694,
1696, 1698.

Cytology & Cytochemistry : 1409, 1593, 1602,
1655, 1698.

Histology & Histochemistry : 1557, 1579,
1586, 1605, 1640, 1676.

Economic value & Control : 1553, 1555, 1571,
1572, 1573, 1574, 1575, 1576,
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Ecology & Behaviour : 1556, 1557, 1559,
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1686, 1689, 1691, 1692, 1697.

Biology & Development : 1548, 1620, 1668,
1670, 1675.

Reproduction : 1653.

Genetic : 607.

Faunistics & Zoogeography : 1558, 1568,
1608, 1616, 1618, 1619, 1630,
1652, 1674, 1678, 1692, 1695.

Pathology : 61a, 1487, 1581, 1587, 1623,
1680, 1725.

(e) Mammalia

General : 1699, 1700, 1710, 1711, 1712, 1718,
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1900, 1901, 1903, 1908, 1909,
1913, 1926, 1931, 1934, 1947,
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1995, 1996, 1997, 2003, 2013,
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Systematics : 1706, 1707, 1800, 1806, 1868,
1957.

Physiology & Biochemistry : 180, 1662, 1701,
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1842, 1848, 1852, 1856, 1861,
1862, 1863, 1875, 1876, 1878,
1880, 1882, 1883, 1889, 1890,
1893, 1894, 1897, 1902, 1904,
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1961, 1962, 1963, 1965, 1967,

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- Cytology & Cytochemistry : 1409, 1769,
1819, 1842, 1852, 1859, 1880,
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1989, 2030.
- Histology & Histochemistry : 1754, 1836,
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- Morphology & Anatomy : 1709, 1735, 1754,
1849, 1855, 1891, 1892, 1907,
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- Economic value & Control : 1658, 1704,
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1884, 1899, 1904, 1916, 1928,
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- Ecology & Behaviour : 1702, 1703, 1712, 1713,
1718, 1731, 1733, 1740, 1748, 1756,
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1800, 1803, 1806, 1807, 1812,
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1911, 1916, 1917, 1918, 1920,
1932, 1935, 1953, 1956, 1988,
2003, 2005, 2010, 2011, 2012.
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1969, 2000.
- Biology & Development : 1736, 1742, 1745,
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- Genetic : 607, 1730, 1736, 1809, 1844, 1895,
1925, 1948, 2032.
- Faunistic & Zoogeography : 1706, 1707, 1747,
1763, 1784, 1801, 1827, 1831,
1837, 1838, 1846, 1857, 1865,
1867, 1887, 1911, 1926, 1993,
1998, 2005.
- Pathology : 60, 66, 68, 79, 1487, 1725, 1751,
1753, 1760, 1761, 1773, 1804,
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- Arabian Sea : 6, 289.
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- BURMA** : 4, **550**, 1318, **1439**, 1857, 1998, 2033.
- Chandigarh : **90**, 160, 372, 559, 782, **784**, 1259, 1260, 1438.
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- Gujarat : 19, 264, 295, 667, 790, 791, 940, 1005, 1034, 1208, 1248, 1277, 1290, 1291, 1292, 1328, 1343, 1432, 1479, 1501, 1505, 1524, 1532, 1595, 1596, 1605, 1623, 1640, 1643, 1715, 1716, 1717, 1759, 1789, 1949.
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- Himachal Pradesh : 10, 11, **117**, **176**, **178**, 226, 280, 293, 294, 501, 521, 530, 600, 609, 650, 652, **780**, 781, 782, 847, **864**, 894, **971**, 1130, 1141, 1207, **1240**, 1243, 1417, 1592, 1603, 1722.
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- Bay of Bengal : 289, 1367, 1430, 1489.
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- North-east India/North West India : 830, 1099, 1294.

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- Cytology & Cytochemistry : 1409, 1769,
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- Morphology & Anatomy : 1709, 1735, 1754,
1849, 1855, 1891, 1892, 1907,
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1884, 1899, 1904, 1916, 1928,
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- Pathology : 60, 66, 68, 79, 1487, 1725, 1751,
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