AUDIO-VISUAL EDUCATION IN INDIA

THIRD REVISED and ENLARGED EDITION

By

SUJIT K. CHAKRABARTI

WITH A FOREWORD

By

PREM KIRPAL,
Secretary and Educational Adviser to the Government of India.

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FOREWORD

The use of audio-visual techniques in both formal and informal education has already been introduced in our country. These media have great potentialities and we have to accelerate the progress already made in this direction. Along with new equipment, we need suitable books for the use of teachers and instructors so that they can realise the importance of audio-visual education and employ the best ways of imparting it. To this end Shri Sujit K. Chakrabarti's book on AUDIO-VISUAL EDUCATION IN INDIA is timely and the third edition, which is being presented now, should be of benefit to all concerned in this field.

I would like to commend strongly the use of this publication in schools and educational centres. The rapid expansion of educational facilities in India has to be matched by an equal concern for improving the quality of education. There is no better and cheaper way of improving the quality of education than the audio-visual education. It is specially relevant in our present situation, because of the large and increasing numbers of students and adults for whom educational facilities are to be provided.

In the past the cultural forms and values have been carried to the Indian people through the use of sound and image in the form of traditional drama, pageantry and verbal instruction. With the development of modern techniques of audio-visual education, the possibilities of reaching large number of people in a more effective way are within our reach. I hope that this publication will contribute to the increased use of audio-visual techniques in education.

(PREM KIRPAL)
Educational Adviser and Secretary
to the Government of India

New Delhi :
August 10, 1967

ABOUT THIS EDITION

The reception accorded to the second edition of the book proves once more the growing interest of our teachers and social workers in the field of audio-visual education. Indeed, the continued use of the publication encourages the author to undertake another revision.

With the aim of making the book more helpful, the old material has been revised and updated. A new chapter has been added and the number of illustrations has been increased from 165 to 171.

In the preparation of this edition, Miss S. Rehman, Professor of Visual Communication, Indian Institute of Mass Communication, has rendered considerable assistance. She not only read critically the entire manuscript, but also read the final proof of the book. The author is indebted to her for this invaluable help. The author is thankful also to Shri P. N. Kohli and Shri D. Bakshi, Research Officer and Chief Artist respectively of the Department of Audio-Visual Education, NCERT, for help in supplying information with regard to certain topics in the book.

For the new illustrations used, grateful acknowledgement is made to the Television Unit of the All India Radio, the Department of Audio-Visual Education of the NCERT, the P.V.T.D. College of Education for Women, Bombay, Indian Institute of Mass Communication, the Department of Audio-Visual Education, Rajasthan, and South Point School, Calcutta.

Thanks are also due to the Rev. Father H. Rosner, S.J., of the Little Flower Press and to his staff for their great interest in the book and for many valuable suggestions.

Finally, the author wishes to thank his wife, Mukul Chakrabarti, now Welfare Officer but earlier a teacher, for many helpful comments.

S. K. C.

November, 1967

PREFACE AND ACKNOWLEDGEMENT

(Second Edition)

The revision has been prompted by the need to incorporate, in the text many new developments that have taken place in the field of Audio-Visual Education since the publication of the first edition. The book has, therefore, been practically re-written and re-illustrated. Many new aids have been described some perhaps for the first time in this country—the Tachistoscope, the Ceiling Projector, and the Overhead Projector. Equal importance has, however, been given to simple aids and traditional media which teachers and students can make themselves inexpensively. These simple and traditional media have certain points that cannot be satisfied by the modern scientific aids.

Many school teachers and training college lecturers, from Porbondar to Perianaickenpalayam, have used the first edition. The author is thankful to them. It is hoped the revised edition enlarged, re-illustrated, and brought up-to-date will prove more helpful to them.

The author wishes to thank the following persons and institutions for assistance in obtaining the illustrations for the new book: Shri G. Ghosh, Librarian, Geological Survey of India Library, Calcutta; Shri J. Ghosh, Secretary, Institute of Art in Industry, Calcutta; Shri G. K. Athalye, Director, National Institute of Audio-Visual Education, New Delhi; Shri M. B. Vajifdar, Deputy Librarian, Tata Institute of Fundamental Research, Bombay; Dr R. K. Panka, S. S. Karnani Memorial Hospital, Calcutta; Shri B. Banerjee Chaudhury, Assistant Librarian, National Library, Calcutta; Shri Samar Chatterjee, C.L.T., Calcutta; Shri Pran Krishna Pal, Asutosh Museum, Calcutta University; Shri Amiya Sen Gupta, Standard Vacuum Oil Company, Calcutta; Shri Mahendra Nath, General Secretary, Children's Film Society, New Delhi; Shri D. Bakshi, Senior Artist, National Institute of Audio-Visual Education, New Delhi; Shri Y. P. Khanna, Photographer, National Institute of Audio-Visual Education, New Delhi; Shri D. Chatterjee, Art Teacher, Hindi High School, Calcutta; Shri M. Vivekananda, Co-ordinator, Department of Extension Services, Thiagarajar College of Preceptors, Madurai; Shri K. P. Damodaran Nambissan, Co-

ordinator, Department of Extension Services, Government Training College, Calicut; Social Education Board, Government of Bihar; Tourist Office, Government of India; Central Institute of English, Hyderabad; Alliance Francaise, Calcutta; Philips India Ltd, Calcutta; Shri S. Kar, Imperial Chemical Industries (India) Private Ltd, Calcutta; Dunlop Rubber Co. (India) Ltd; National Cultural Association, Calcutta; Shri P. Das Gupta, Manager, Films Division, Calcutta; Shri Ananda Mukherjee, Clarion Advertising Services (P.) Ltd; Lake View High School, Calcutta; Lee Memorial Girl's School, Calcutta; Sen Raleigh Industries of India Limited, Calcutta; Pure Drug Co., Calcutta; Institute of Art in Industry, Calcutta; Statesman, Calcutta; Indian Museum, Calcutta; Asutosh Museum, Calcutta University; New York Graphic Society; Electro Engineering and Manufacturing Co., Detroit, U.S.A.; Weber Costello Co., Chicago Height, U.S.A.; Aero Service Corporation, Philadelphia, U.S.A.; Keystone View Company, Meadville, U.S.A.; Projected Books Inc., Ann Arbor, U.S.A.; Sawyers Inc., Portland, U.S.A.

The author is indebted to Miss S. Rahman, Assistant Educational Adviser, Ministry of Education, Shri J. S. Nanda, Section Officer Unesco Unit, Ministry of Education, Dr Kalyan Ganguli of the University of Calcutta, and Shri G. M. Primlani of the Oxford Book Co. for valuable suggestions. He especially remembers Mr G. E. Hamilton, President, Keystone View Co., U.S.A. who very kindly explained through correspondence certain points with regard to the use of Tachistoscopic materials.

Thanks are due to Shri N. K. Gossain, Director of N. K. Gossain & Co. and to his staff, especially Shri P. Ghosh and Shri Bejoy Banerjee for their great interest in the book. Thanks are also due to Shri R. C. Kapoor of the Children's Film Society, New Delhi for his critical reading of the manuscript.

Finally, the author wishes to thank his wife, Mukul Chakrabarti, for her co-operation in all aspects of the preparation of this book.

S.K.C.

NEW DELHI,
July, 1961

MINISTER,
SCIENTIFIC RESEARCH AND
CULTURAL AFFAIRS, INDIA,
NEW DELHI

FOREWORD

(Second Edition)

Audio-visual aids have been used in education from the earliest times It is, however, only in recent years that their use has been undertaken in an organised and conscious way. The enormous expansion of education and increase in the number of pupils have compelled the use of all known devices for making education simpler and at the same time more attractive and effective.

Shri Sujit K. Chakrabarti wrote one of the first manuals on Audio-Visual Education in India. I am glad that within a short time it has become necessary to issue a revised and enlarged edition. Shri Chakrabarti is familiar with the theory and the practice of audio-visual education in other countries, but has based his book largely on experience within India. He has also included in his study an account of some of the most ancient as well as some of the most modern media of audio-visual education. This should make the book of special value to our schools and teachers at all levels.

Humayun Kabir

(Humayun Kabir)

NEW DELHI,
April 1, 1962

FOREWORD

(First Edition)

Audio-Visual Education is a comparatively new movement in our country but it has a very valuable contribution to make in developing good educational techniques. In recent years, its concept as well as its scope have been widened considerably and new instruments have been pressed into its service. Many of our teachers, however, are not fully aware either of what is being done or what can be done, through these aids, to make the process of learning more intelligent, interesting, and firm. This book by Mr. Chakrabarti, who was a valued colleague in the Ministry for a short period, provides a brief introduction to the whole field, explaining the objectives of audio-visual education, the various types of aids employed, their special role and the conditions under which they can be used with maximum advantage. It is not a book for the specialist but for the ordinary teacher who would like to have a general view of the movement so as to participate intelligently in working it out in his or her own institution. I hope it will receive a well deserved welcome.

I should like to add a word of special commendation for the excellent get-up of the book. It is a welcome oasis in a desert of many drab, undistinguished publications.

Ministry of Education
New Delhi
15th April, 1957

K. G. SAIYIDAIN,
Educational Adviser
to the Government of India

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PART ONE

DEVELOPMENT

AND

INTRODUCTION

CHAPTER 1

Development of Audio-visual Education in Modern India

The case for an increased use of audio-visual aids in all levels of education, pre-primary, primary, secondary, university, and adult has been established beyond a doubt. They are being recognized as effective tools in other fields as well such as health, agriculture, and community development. Many good schools now possess bulletin boards, flannel boards, film projectors, filmstrip projectors, and radio sets. Some schools in Delhi have acquired television sets also. A Department of Audio-Visual Education and an Institute of Mass Communication have been set up by the Central Government. Some teachers' training colleges have introduced Audio-Visual Education as one of the compulsory subjects of study and have experimented also in the production of both simple and scientific audio-visual aids.

The recent development of audio-visual education in modern India can be given briefly. The subject was considered for the first time by the

All-India Educational Conference held in January, 1948 and a few months later the Government of India appointed a Committee to examine the problems of visual education in different levels of education. In April, 1949 a Press Note was issued encouraging the production of educational films. About 1950 film societies and visual education centres were also organized by private institutions. In September 1950 the "Visual Education" (the magazine of the National Committee for Visual Aids in Education in Great Britain) published the activities of the Gosaba Visual Education Centre in West Bengal. It reported: "A Visual Education Centre recently started at Gosaba, the headquarters of a model agricultural estate set up by the late

After a special show for women at the Gosaba Visual Education Centre (The Centre was organized by the author in 1949.)

Sir D. M. Hamilton in Bengal, screened about 60,000 feet of British, American, and Indian films in four months. Films shown included Fenlands, Home and School, Your Children and You, Instruments of the Orchestra, and Student Nurse. The Visual Education Centre hopes shortly to be able to provide films on geography, science, and hygiene for the school children

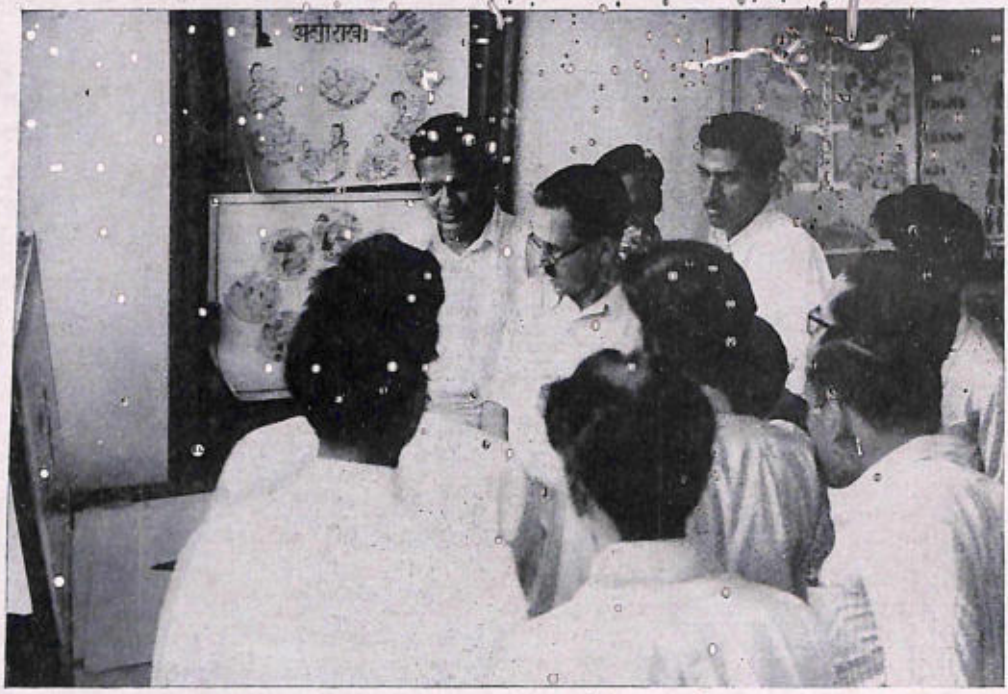
About 5,000 families are settled on the Estate which covers 30,000 acres. The children are being educated at a central high school and a number of junior schools on the Estate. The education of the parents, however, is a more difficult problem. Instruction must be arranged so that it does not interfere with their occupations and home duties and it must be attractive enough to interest them after a day's work in the fields. Visual aids have been the most successful solution so far. Special shows are given for the women regularly. These are usually preceded by explanatory talks as very few members of the audience have a knowledge of English".

The National Board for Audio-Visual Education—its first meeting

In 1951 an All-India Conference on Audio-Visual Education was organized on the occasion of the visit of the famous audio-visual expert Prof. T. L. Green. The Conference examined the various aspects of audio-visual education and showed the lines for subsequent development of the subject. The National Board for Audio-Visual Education was set up in 1952 and its first meeting was held in May 1953. Amongst its important recommendations were the establishment of State Visual Boards, the production of educational films by the Films Division of the Government of India, the production of non-projected visual aids, and the use of aural aids in schools.

Two Seminars Organised by the Government of India

Two seminars were organized in implementation of the Audio-Visual Scheme of the First Five-Year Plan. The first, organized by the Ministry of Education, was held at Delhi in 1954. Thirty educationists from different State Governments studied and discussed the theory and practice of audio-visual education. The second seminar on similar lines, organized jointly by the Governments of India and Australia under the Colombo Plan, was held at Lucknow in November, 1955



The author showing Shri K. G. Saiyidain charts and posters prepared by the trainees in the Audio-Visual Education Seminar, 1954 (Courtesy of the Ministry of Education, Govt of India)

The Audio-Visual Education Seminar—1954—staff and trainees
(Courtesy of the Ministry of Education, Govt of India)

The National Board for Audio-Visual Education—its second meeting

Audio-visual education in India took a big stride forward as a result of the Second Five-Year Plan in both quantitative and qualitative senses. The Plan included schemes not only for greater supply of equipment and expansion of film and filmstrip libraries but also the training of teachers in the making of simple aids and in the proper use of these aids as well as of the scientific ones.

The National Board for Audio-Visual Education in India in its second meeting held in May, 1955 under the chairmanship of Shri K. G. Saiyidain, Additional Secretary to the Government of India, Ministry of Education, examined the following schemes for the development of audio-visual education under the Second Five-Year Plan and approved them :

(i) establishment of State Audio-Visual Boards
(ii) establishment of film and filmstrip libraries on a State-wise basis
(iii) introduction of Audio-Visual Education in Teachers' Training Institutes
(iv) supply of radio sets to High/Higher Secondary Schools
(v) supply of Audio-Visual Education mobile vans to all districts
(vi) publication of a periodical on Audio-Visual Education
(vii) production of 35 mm. filmstrips
(viii) research in the evaluation of films in education in co-operation with some select institutions
(ix) encouragement to private producers in the production of audio-visual aids and equipment

Four more meetings of the National Board for Audio-Visual Education

The third meeting was held in New Delhi in January, 1959 under the chairmanship of Shri R. P. Naik, Joint Secretary, Ministry of Educa-

Shri R. P. Naik (centre) presiding over the third meeting of the National Board for Audio-Visual Education. (Courtesy of the Ministry of Education, Govt of India)

tion, Government of India. The Board examined the reports of the State Governments regarding the implementation of the schemes under the Second Five-Year Plan. Those State Governments which had not set up State Audio-Visual Boards were asked to do so without further delay.

The Board approved the proposal to establish a National Institute of Audio-Visual Education. This institute was to train teachers in the making and proper use of audio-visual materials and to carry out evaluation and research in the effectiveness of these materials.

The Board decided to set up an Advisory Standing Committee of the National Board for Audio-Visual Education consisting of seven members. This Committee was to meet once in three months.

The fourth meeting of the Board was held in December, 1959 to review the progress in the implementation of the recommendations made in its earlier meetings.

The Board had two more meetings in New Delhi, one in May, 1961 and the other in December, 1963, under the chairmanship respectively, of Shri R. P. Naik and Shri R. R. Singh, both Joint Secretary to the Government of India, Ministry of Education.

Amongst the important recommendations of these meetings were :

(i) the mass production of instructional aids be entrusted to private producers quoting lowest rates to ensure distribution of aids at cheaper prices

(ii) a sub-committee consisting of specialists be set up to help and advise the National Institute in the production of audio-visual aids

(iii) possibility be explored of providing audio-visual aids to all schools in the country by collecting small contributions from children

(iv) training-cum-production centres be set up at each of the four Regional Training Colleges of the National Council of Educational Research and Training

(v) short training courses be organized by the National Institute on the production of inexpensive visual aids on the lines of the UNESCO workshop conducted in the Institute during 1961-62

(vi) technical training courses on the repairing and maintenance of audio-visual equipment be organized

(vii) a sub-committee be formed to advise the National Institute on the production of filmstrips on various science topics

(viii) universities be approached for the establishment of Audio-visual Departments

The National Board for Audio-Visual Education was dissolved in May, 1964 as a result of the decision taken by the Ministry of Education to rationalize the existing committees and boards.

The National Institute of Audio-Visual Education (now called the Department of Audio-Visual Education of the National Council of Educational Research and Training)

The National Institute of Audio-Visual Education started functioning in its new building in New Delhi from the 1st of April, 1959. The Institute held its first Short Term Training Course on audio-visual education in January,

The National Institute of Audio-Visual Education, New Delhi (Courtesy of the NIAVE)

1960. Dr K. L. Shrimali, then Union Minister of Education, inaugurated the Course. In all 27 trainees mostly deputed by State Education Departments attended the course which consisted of lectures, demonstrations, practical work, and field trips.

Another course of training in the proper use of audio-visual aids was organized by the Institute for the Co-ordinators of the Depart-

Inauguration of the first short term training course in the National Institute of Audio-Visual Education (Courtesy of the NIAVE)

Trainees preparing audio-visual aids in the National Institute of Audio-Visual Education (Courtesy of the NIAVE)

Trainees preparing audio-visual aids in the National Institute of Audio-Visual Education (Courtesy of the NIAVE)

ment of Extension Services soon after the conclusion of the first training course. Twenty-four Co-ordinators received this training.

The Second Short Term Course on audio-visual education was conducted by the Institute during the period July-September, 1960. Thirty-two trainees from different States of India attended the course. They attended 45 lectures in the theory of audio-visual education and did about 200 hours of practical work in the making of non-projected audio-visual aids and in the operation of scientific appliances.

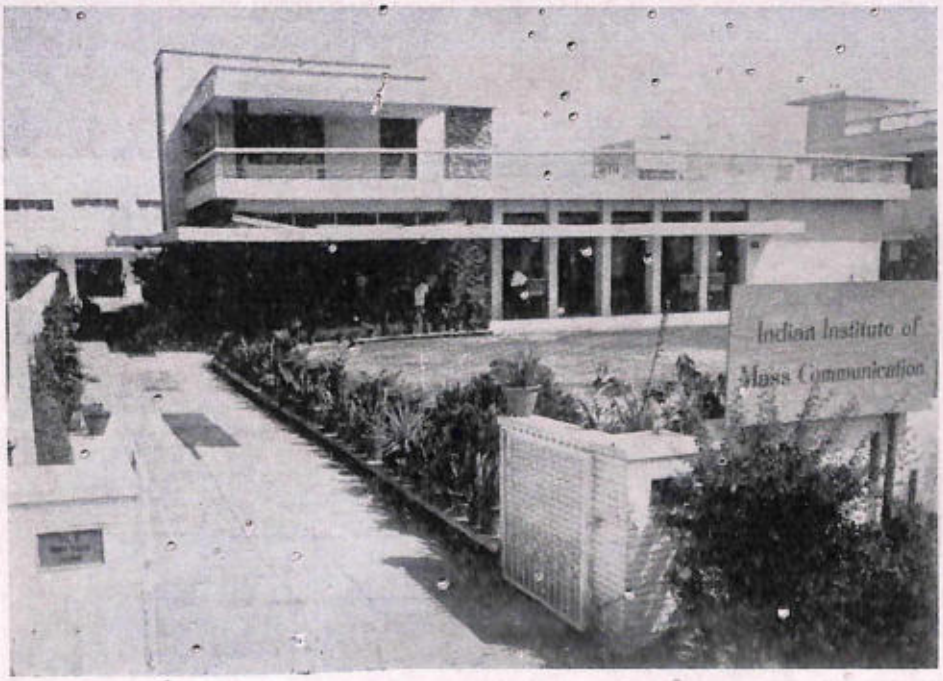
After the Second Short Term Course the Institute conducted from time to time as recommended by the National Board for Audio-Visual Education a number of courses on audio-visual education which included training in the

operation and maintenance of audio-visual equipment and in the making of inexpensive audio-visual aids and materials.

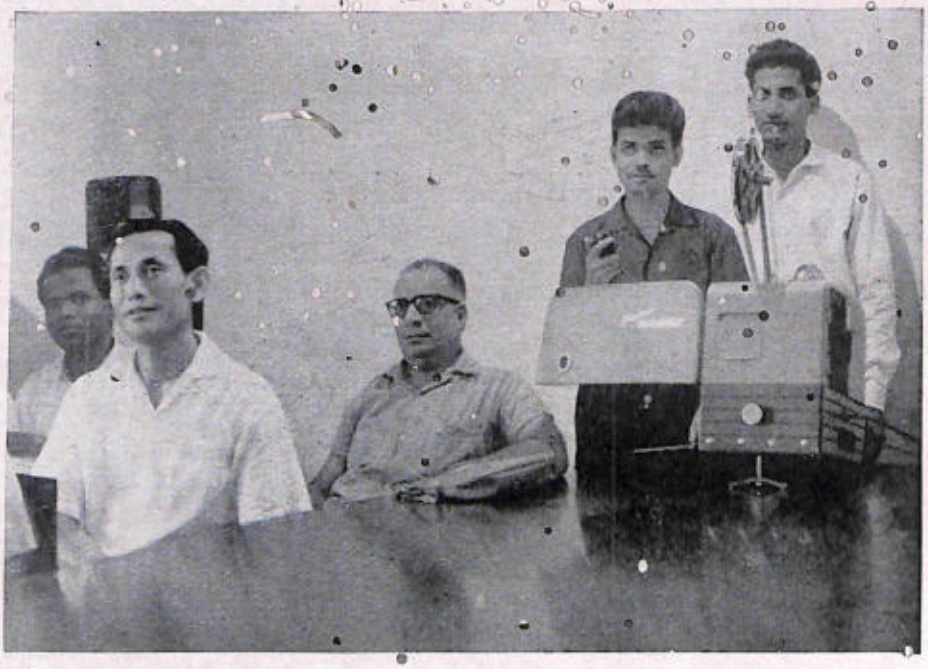
During the past session the Department conducted a course on audio-visual education for 16 members of the staff of the Regional Colleges of Education of the National Council of Educational Research and Training. A nine-month Diploma Course on audio-visual education, the first of its kind, was also conducted. Ten trainees mostly Audio-Visual Education Officers of different States participated in the course.

The Indian Institute of Mass Communication

Realizing the importance of mass communication in national development the Ministry of Information and Broadcasting set up in New Delhi in August, 1965 the Indian Institute of Mass Communication. It offers instruction in the skills and background needed by information personnel in Central and



The Indian Institute of Mass Communication on Ring Road in New Delhi (Courtesy : Indian Institute of Mass Communication)



Trainees of the Indian Institute of Mass Communication seeing a film One of the trainees is giving a running commentary. (Courtesy : Indian Institute of Mass Communication)

Trainees of the Indian Institute of Mass Communication looking at the latest news-pictures (Courtesy : Indian Institute of Mass Communication)

State Governments, in public sector undertakings, and in other statutory organizations. This training includes instruction in audio-visual techniques for effective mass communication. The Institute is registered as a Society and is administered by an Executive Council with the Minister of Information and Broadcasting as its Chairman. At present the Institute is located on 2, Ring Road, Kilokri, but in course of time it will move to its own premises in the campus of the Nehru University to which it will be affiliated.

A seminar on the role of documentary films in national development, the first of its kind in this country, was organized by the Institute in May last. It stressed the importance of the proper use of the film in the education of the illiterate masses. In this connexion it was suggested that a study should be made to find out if TV could in the long run be a cheaper medium than maintaining a huge number of mobile and stationary film units throughout the country.

Another important point which the seminar stressed was the need for associating the private sector with Government effort in film production. It recommended that an appeal should be made to big commercial and industrial organizations to sponsor the production of an increasing number of films for the education of adult masses. It was also recommended that private producers should be given a large share in the production of short films and that they should be provided with necessary foreign exchange for essential equipment and raw materials.

The seminar felt the need also for the production of well-planned films of the following categories :

(i) Instructional films on agriculture for rural use

(ii) Instructional films to aid the learning of specific topics in the classroom

(iii) Children's films to develop a scientific outlook in children

The seminar recommended the following measures for fuller utilization of documentary films produced in the country :

(i) creation of an effective non-theatrical exhibition circuit embracing factories, hospitals, commercial houses, etc.

(ii) opening of 16 mm. theatres in smaller towns and bigger villages

(iii) establishment of film libraries in each district

(iv) screening of films in halls of universities and colleges with the co-operation of the University Grants Commission

(v) provision of adequate facilities for servicing and maintenance of projection equipment

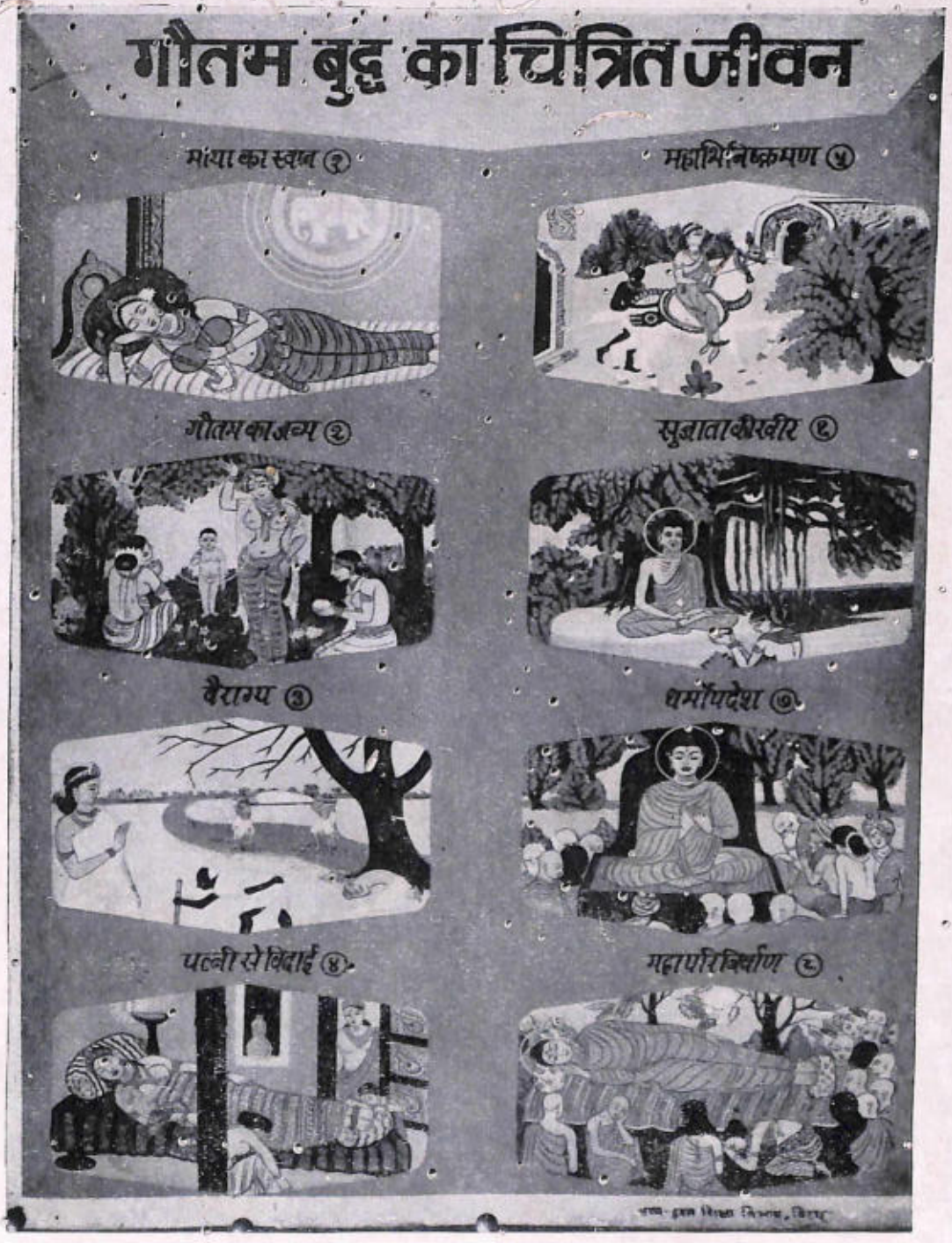
The seminar recommended also the need for scientific evaluation of documentary films and for proper training of film users and greater training facilities for film makers.

It is hoped the Institute of Mass Communication will see that these important recommendations of the seminar are implemented at an early date.

Progress of Audio-Visual Education in Different States of India

As a result of the Second and the Third Five-Year Plans most of the States have made considerable progress in the field of Audio-Visual Education. Film and filmstrip libraries have been established by most of the States. Some of the States have also set up Audio-Visual Boards.

In Bihar State in addition to the film library a workshop has been started for the production of inexpensive audio-visual aids like charts, posters, models, slides, and filmstrips. Some excellent charts, posters, and pictures on useful subjects produced by this workshop have been supplied to schools and social education centres in the State. The films of the State film library are loaned to authorized exhibitors of educational films and also to those institutions which possess projectors of their own. The State Government



This excellent picture on the life of the Buddha produced by the Audio-Visual Workshop in Bihar can be effectively used in classrooms.
(Courtesy of the Department of A-V Education, Bihar)

A poster on Female Education produced by the Audio-Visual Workshop, in Bihar. (Courtesy of the Dept of Audio-Visual Education, Bihar)

Film shows on educational subjects are regularly arranged for children at different centres in Bihar. (Courtesy of the Dept of Audio-Visual Education, Bihar)

has supplied a large number of radio sets, slide projectors, and slides to different institutions in the State.

The State of Orissa is also getting on with the work of audio-visual education. A State Board for Audio-Visual Education has been set up and a film library has been established. Posters, filmstrips, and gramophone records on useful subjects have been produced in large numbers for use in Community Development Blocks in different parts of the State. Film shows and dramas were arranged at important centres in all the districts by a number of mobile vans maintained by the department.

In Madras training courses have been organized by the Education Department to train teachers in the making and use of audio-visual aids. Short courses on audio-visual education were also organized by the Department of Extension Services of the Thiagarajar College of Preceptors for

Trainees preparing audio-visual aids in the course on audio-visual education organized by the Dept of Extension Services of the Thiagarajar College of Preceptors, Madurai. (Courtesy of the Thiagarajar College of Preceptors, Madurai)

teachers of Secondary Schools. The trainees in these courses produced a variety of slides, filmstrips, and specimen cases for use in the teaching of General Science.

In Maharashtra the Department of Audio-Visual Education organized several short courses on the making and use of audio-visual aids for secondary school teachers. Exhibitions and seminars were also held at several places in the State. The State Film Library has now a large number of films and

filmstrips. Several films and filmstrips have also been produced by the Department.

In Himachal Pradesh an Audio-Visual Education Officer has been appointed to be in charge of the Audio-Visual Section of the Department of Education. This section organized several training courses for teachers of High Schools in the State. The trainees received training in the making of a variety of non-projected aids and also in the handling of scientific equipment. An Audio-Visual Library has been opened and training colleges at Solan and Nahan, have been provided with film and filmstrip projectors and epidiascopes. Radio sets have also been supplied to many High and Higher Secondary Schools in the State.

In Madhya Pradesh an Audio-Visual Education Section was established under the Directorate of Public Instruction (now known as the Directorate of Education) in 1955. This Section which is now under the charge of an Assistant Director of Education made considerable progress in the uses of audio-visual aids in different institutions in the State. The State Audio-Visual Board was set up in 1960 with the Education Secretary as Chairman. The film library was opened a year later. The library has now 127 instructional films and 329 filmstrips. According to a survey made by the Audio-Visual Section there are at present 584 radio sets, 62 16 mm. film projectors, 47 filmstrip projectors, 43 epidiascopes, and 41 tape recorders in different educational institutions in the State. The Audio-Visual Section gave great importance to the use of radio broadcasts and arranged from November 1964 in collaboration with the All-India Radio special programmes on English Civics, and Physics for schools at Bhopal, Indore, and Ujjain. Another remarkable achievement of the Audio-Visual Section is the large number (62 so far) of training courses it has arranged for the teachers of the State.

In West Bengal a Regional Audio-Visual Board and a State Council for School Broadcasting have been set up and many High and Higher

Secondary Schools have been supplied with radio sets. Short courses on Audio-Visual Education for teachers of High and Higher Secondary Schools have been organized by the Extension Department of David Hare Training College, Calcutta.

A view of the Exhibition of Audio-Visual materials organized by the Dept of Extension Services, Govt Training College, Calicut. (Courtesy of the Govt Training College, Calicut)

In Andhra Pradesh the State Government has supplied radio sets to many High and Higher Secondary Schools in the State on fifty per cent grant basis. In most of these institutions radio clubs have been organized.

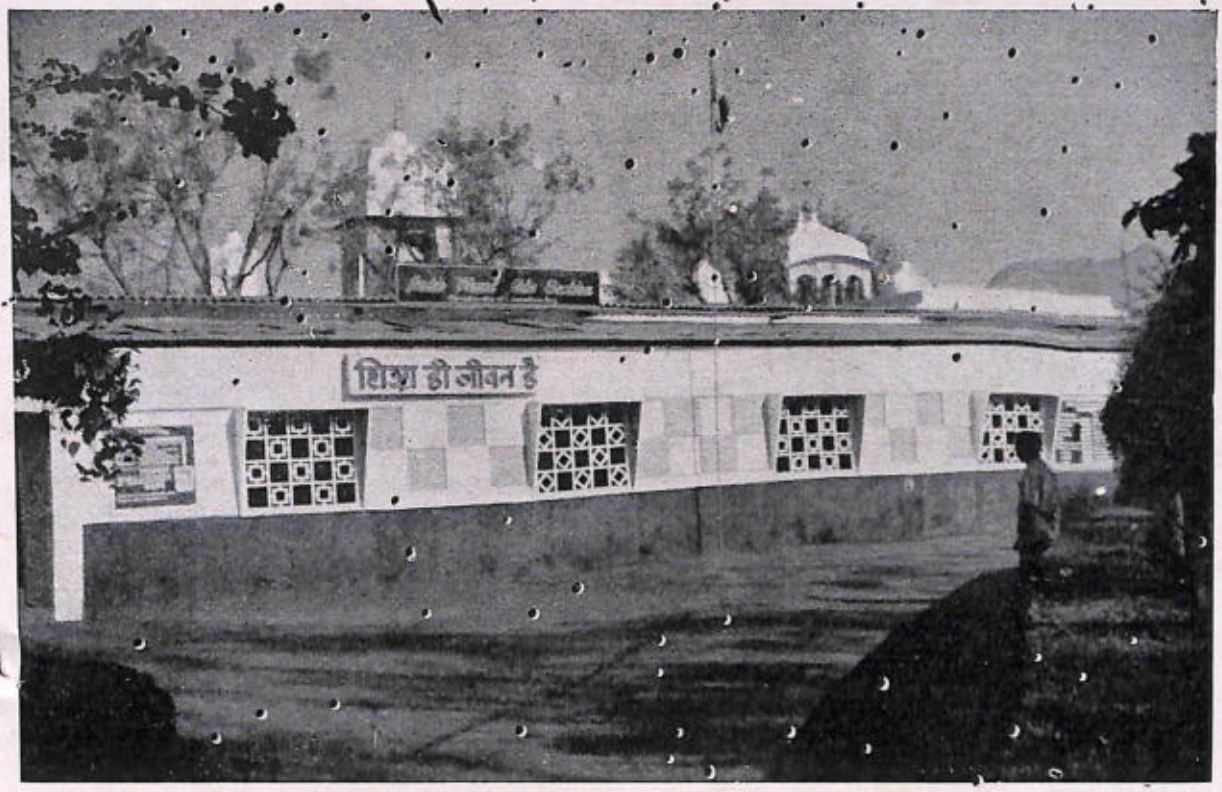
In Kerala the State Government has established two Audio-Visual Units, one at Trivandrum and the other at Ernakulam. These units are equipped with all kinds of audio-visual equipment. At Calicut the Department of Extension Services of the Government Training College organized a number

of training courses and a very interesting and useful exhibition of audio-visual materials for teachers of secondary schools.

In Uttar Pradesh a State Board for Audio-Visual Education has been set up and seminars and courses on audio-visual education have been organized for teachers. Several mobile vans are maintained by the Education Department for giving film shows in schools and social education centres.

A view of the Exhibition of Audio-Visual materials organized by the Dept of Extension Services, Govt Training College, Calicut. (Courtesy of the Govt Training College, Calicut)

In Rajasthan audio-visual education has made a remarkable progress. A whole-time officer is in charge of the Audio-Visual Department in this State. The film library which had only a few hundred films when it was opened has now 2,656 films, 696 filmstrips, and 1,302 2″ × 2″ slides.



The office building at Ajmer of the Department of Audio-Visual Education, Rajasthan (Courtesy : Department of Audio-Visual Education, Rajasthan)

These films, filmstrips, and slides cover almost every important subject and field of education. The library has now a total number of 361 members which includes schools, colleges, universities, agricultural colleges, training

A view of the Film Library (Courtesy : Department of Audio-Visual Education, Rajasthan)

The Chief Minister of Rajasthan visits an exhibition of audio-visual aids organized by the Department of Audio-Visual Education of the State (Courtesy : Department of Audio-Visual Education, Rajasthan)

schools, Panchayat Samities, and Government offices. The Department has acquired almost all kinds of equipment and also six mobile vans for arranging film shorts at different places in the State. At Ajmer an auditorium has been opened in which 148 film shows were arranged during the past year. Exhibitions of audio-visual materials were also held at several places such as Ajmer, Jaipur, Kotah, and Mount Abu. The All-India Radio, Jaipur

School children seeing a film in the auditorium of the Department of Audio-Visual Education, Rajasthan (Courtesy : Department of Audio-Visual Education, Rajasthan)

broadcasts programmes regularly for Higher Secondary, Middle, and Primary classes. The Department gave considerable importance to the utilization of these programmes and supplied as many as 558 free radio sets to different institutions in the State.

CHAPTER 2

Visual Aids in Ancient Indian Education

Illustrated Manuscripts on Palm Leaves and Paper

Although audio-visual education in the modern sense of the expression is a movement of recent growth, visual aids, though not the modern scientific aids, were in use in the old days in India as well as in other countries. Primitive men certainly knew how to convey their ideas through drawings and symbols long before they developed a vocabulary to express them orally. Even in formal education in ancient India visual aids played their part. In Vedic schools diagrams drawn on palm leaves were used by teachers to explain to the pupils the rules for the construction of altars. Story books written on palm leaves contained plentiful illustrations. This tradition of drawing pictures on palm leaves which can be traced from the 10th century A.D. continued for a long time in India. A Ramayana on palm leaves written

A pictorial Ramayana on palm leaves found in Orissa (Courtesy : Asutosh Museum, Calcutta University)

in the eighteenth century has been found in Orissa. This book which shows illustrations only on one side has twelve hundred leaves. Old Indian manuscripts on paper which are in existence today also show beautiful illustrations in colour. The colours used in the pictures came from things like flowers, plants, minerals, and the soot of lamps.

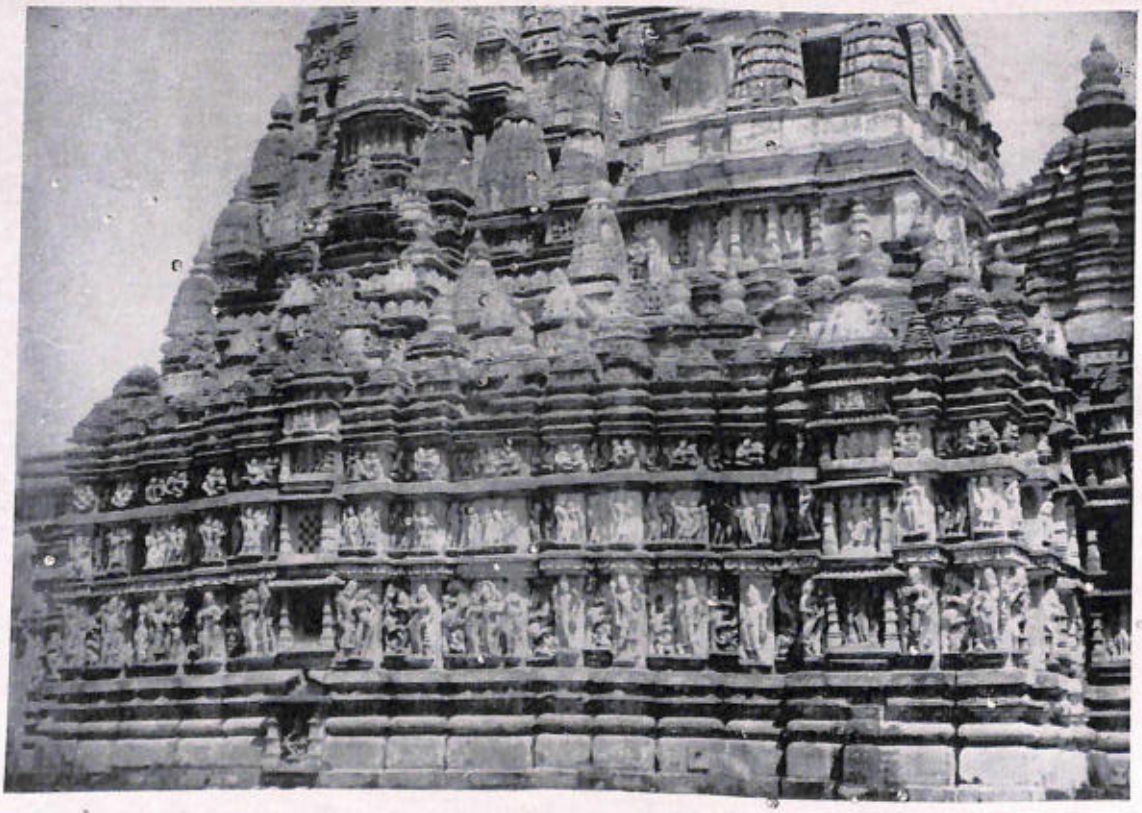
A page from an illustrated manuscript found in Western India (Courtesy : Indian Institute of Art in Industry, Calcutta)

Carvings and Mural Paintings

The beautiful carvings which we find in ancient buildings and temples throughout the country also show clearly the importance which Indian educators attached to visual aids in those days. Amongst the ruins of Takshashila, the well-known centre of learning in ancient India, some rooms have been found with carvings illustrating some incidents of the history of the country. Similar carvings illustrating the life and teachings of the Buddha have been discovered amongst the ruins of the ancient Indian University of Nalanda. The carvings in frames on the life of the Buddha which we find in order even today on the gateway ('torana') pillars of the Stupa at Sanchi and the beautiful carvings in the temples of Khajuraho and Ellora and the mural paintings in the caves of Ajanta are also typical examples of the educational uses of visual aids in ancient India.

'Patas' and Picture Sets

Another remarkable instance of the use of audio-visual aids in ancient India is to be met with in 'Harshacharita', the well-known literary masterpiece of the 7th century A.D. It has been mentioned in this book that king Harshabardhana of Thaneswar while entering the city from outside on one occasion noticed a group of people near the city gate viewing with great interest a painted scroll shown by a man who holding the scroll in his left hand and with a stick in his right was explaining the



Carvings illustrating the birth and early life of Mahavira on Parsvanatha Temple, Khajuraho (Courtesy : Shri J. Ghosh, Indian Institute of Art in Industry)

A painting depicting a palace scene in the Ajanta caves (Courtesy : "India", UNESCO

Ravana shaking the mount Kailash—wonderful carvings in the Kailashnatha temple, Ellora (Courtesy : Tourist Office, Govt of India)

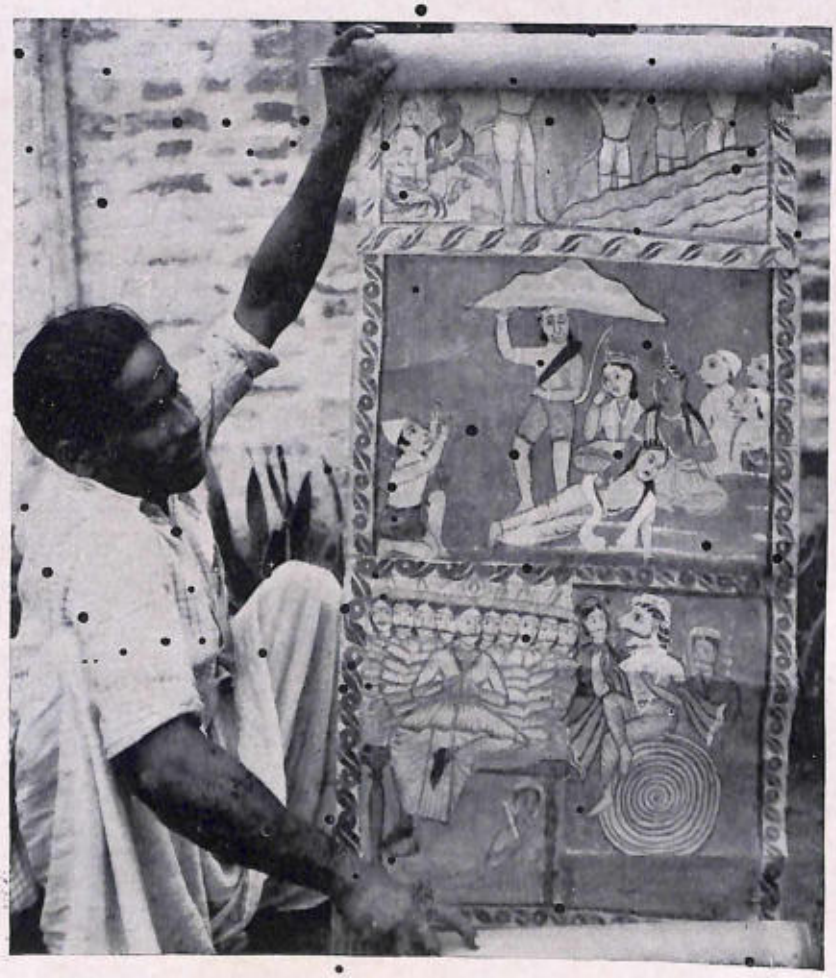
On the gateways of Sanchi artists depicted episodes in sequences from the popular Jataka stories with explanatory notes. These may be called the precursors of graphic art in India. (Courtesy : Indian Institute of Art in Industry, Calcutta)

subject matter as depicted in the paintings. The subject was of considerable importance to those people as it dealt with severe punishments given by Yama, the Lord of Death, for evil acts done in life. These Yama pictures or 'Patas'[1] enjoyed popularity in villages in different parts of

The traditional Yama Pata showing punishments after death to women for evil acts done in life. The woman in the chariot escapes punishment for her pious life. (Courtesy : Asutosh Museum, Calcutta University)

[1] The word 'pata' is a Sanskrit word of considerable antiquity. It has two meanings : (i) a beautiful cloth and (ii) a picture painted on cloth. In old Sanskrit literature it was often used in the latter sense.

India till recent times. The objectives of these scenes of punishment in the other world were undoubtedly to impress on a class of people the great need for leading a good life, but to what extent these were fulfilled is not known.



A typical Bengal scroll illustrating an interesting story from the Ramayana. To the accompaniment of light background music the showmen, who happened also to be the painters of these scrolls, used to exhibit and explain the frames in strict sequence. (Courtesy : Indian Institute of Art in Industry, Calcutta)

It is not true that the picture showmen of the past always painted the city of the dead. They had pictures also of religious stories such as the Ramayana and the Mahabharata and these were no less popular in villages. The latest researches of some scholars in this field reveal the existence in Bengal

Part of a scroll painting depicting episode from Krishnalila (Courtesy : Indian Institute of Art in Industry, Calcutta)

of a strong tradition of picture showing. The 'Chitrakaras' or 'Patuas' (painters) of Bengal were painters and showers of Yama 'patas' as well as 'patas' based on the Ramayana such as 'Sindhu Badha', 'Sita Harana', and 'Ravana Badha'. The 'patuas' were generally found to live together in certain areas in important centres of Bengal. In Dacca (now in East Pakistan) a part of the town is still known as Potuatuli and in Calcutta the well-known Patuatola Street recalls an old settlement of 'Patuas'. Two other castes also in Bengal, 'Sutradharas' (wood carvers) and 'Karmakaras' (engravers), used to paint scenes from both the Ramayana and the Mahabharata and exhibit them to people in different parts of Bengal.

The painters of old days used cotton cloth for their scrolls though from the fifteenth century onwards hand-made paper was generally used. There is no mention of paintings on paper in Visnudharmottarm, the oldest Indian work dealing with the techniques of painting.

A similar tradition of picture showing existed in Maharashtra. There a small community known as the 'Chitrakathis' living mostly in Ahmednagar district used to earn their livelihood through the exhibition of pictures which like the 'Chitrakaras' of Bengal they used to paint themselves. There was a strict discipline amongst the members of this caste which compelled each family to maintain at least one set of pictures. The Chitrakathis used to carry their sets of pictures from place to place in the countryside and show them to interested villagers. There was generally a light background music when they narrated their story and showed the frames to the assembled men, women, and children. Two of the favourite stories of the Chitrakathis were 'Nala and Damayanti' and 'Babhrubahana'. The pictures of the Chitrakathis were generally popular with illiterate people in rural areas for whom the visual aids were of greater importance. These showmen are rarely found in Maharashtra today as they have changed their occupation to

earn better wages, but the pictures which they painted will ever find a place in the artistic tradition of the country. Many of these were in no way inferior to the mediaeval mural paintings of rare beauty.

Puppets

Puppetry was a popular art in villages in ancient India. In many old Indian texts there is mention of the use of marionette-like figures known as 'Panchafika'. The use of giant puppets manipulated by a combination of rods and strings was also very common in villages in old days. These puppets used to have attractive dresses and ornaments. Shows were generally given in 'melas' and in houses of rich people on important occasions. The plays

Traditional giant puppets of Bengal used in the play of "Harish Chandra"

were generally based on the Ramayana and the Mahabharata. Although the use of puppets has considerably decreased of late in India on account of the popularity of theatres and cinemas, interesting puppets shows are still held on special occasions in villages in Bengal and Rajasthan. Even up to the end of the last century quite a number of families in these provinces used to earn their livelihood through puppet-plays. Even today many old people

in Rajasthan recollect the 'Putliwalas' with boxes of puppets on their heads moving from door to door, inquiring if anyone was interested in their performances. Their plays were interesting and were usually based on well-known events in the history of Marwar unlike the South Indian and Bengal plays based on religious stories; 'Putliwalas' or 'Putulnachwalas' are rarely found in Rajasthan or Bengal today as their art has ceased to give them a living.

Traditional Rajasthan puppets
(Courtesy: Indian Institute of Art in Industry, Calcutta)

Shadow-play

Another variety of audio-visual education in ancient India was shadow-play with thin cut-out puppets made from a fine piece of cow or buffalo hide rendered translucent through scraping. In earlier days gods and goddesses were made of deer skin only as it was a sacred skin according to the Hindu religion. In later days groups of manipulators known as 'Godavaritiravasis' began to employ cow or buffalo hide. Translucent puppets were used with a view to securing different colour combinations of dresses and ornaments. The figures which were considered almost sacred were handed down from generation to generation.

These 'Wayangs' with their shadows help us form an idea of traditional cut-out puppets of India (Courtesy : Asutosh Museum, Calcutta University)

The shadow-play had its origin in Maharashtra though later it spread practically to the whole of South India. It was particularly popular in Andhra and in Kerala. The plays which were generally based on religious stories were very enjoyable owing to good background music and the skill of the manipulators and their trained voices. The shadow-puppets were used also to tell news stories because in those days there were no such things as newspapers or magazines.[4] It is indeed strange for us to know that this type of shadow play which went to Bali and Java from the eastern coast of South India is still in use in Indonesia to give illiterate villagers an idea of important events of the world. To cite an interesting example, the Bandung Conference—the meeting of leaders of all the Asian people after World War II—was presented through 'wayang' (the name for shadow-puppet in Indonesia) to villagers in distant parts of the country.

The shadow-play is now rarely seen in villages of South India except on rare occasions in Kerala and in Godavari and Tanjore districts of Madras.

CHAPTER 3

The Mass Media in the Modern Age

Today the mass media of communication reach millions of people living in different parts of the world. In old days there were no such things, though, as we have already seen, there was some system of communication for the interchange of ideas and knowledges.

The first mechanical device by which man could exchange his thoughts and knowledge with others on a wide scale was the printing press. With it the monopoly of knowledge by the selected few ended. Pamphlets, newspapers, and magazines began to appear though not immediately after the invention of printing. For centuries the printed material alone in one form or another performed the functions which we expect all the modern means of communication to share today. "The printed media informed and enlightened the public, interpreted events and issues, challenged capricious

authority, entertained the populace, and even to a limited degree, brought together the buyers and sellers of goods and services".[1]

The communications[2] revolution of the nineteenth and twentieth centuries brought amongst others, the film, radio, and television. These audio-visual media spread information, ideas, and entertainment in a much more quick and entertaining manner and as such they appeal to a mass audience. Indeed, one characteristic of either radio or television is instantaneous transmission. It will be wrong, however, to think that these audio-visual devices can replace the printed media or that they have affected the circulation of newspapers and magazines. The circulation of the printed media has increased tremendously on account of technical improvements. Newspapers which within the memory of people still living had a very limited circulation now reach almost every educated person in important cities in our country. Magazines are read regularly by at least two-thirds of the people in America and Britain. Radio and television can announce a happening immediately to millions, but because they are swift, they miss details which newspapers and magazines supply. The writers of books like producers of informational films have greater leisure and opportunity to draw full-bodied portraits. Each of the mass media thus has a distinctive role and each plays an important part in our modern society.

Our economic life is dependent upon modern communications. In the old days life was a much simpler affair. Food could be easily grown or found for the limited number of people. The position today is quite different. Agriculture must be practised on scientific lines to meet the requirements of the increasing population. Tractors and other scientific equipment are to be used along with improved seeds and manures. The information about

[1] Peterson, Jensen, and Rivers—The Mass Media and Modern Society.

[2] It may be noted that 'communications' is not the plural form of the word 'communication'. Communication is the process of communicating whereas communications is the technical means by which this process is carried out.

scientific agriculture can be passed on quickly and easily with the help of the modern media. Thousands of films, pictures, and posters on modern farming methods are in use today throughout the world. The broadcasting stations are daily passing on useful information about agriculture. In the old days the need for smaller family was never felt as life was easy and food was plentiful. Today conditions are different. The growth in population must be checked to ensure food and comforts for all. Films and radio are of invaluable help to impress on people the great need for planning families The primitive people used to produce and consume all that they required. They never bothered over the marketing of goods as production was seldom above the subsistence level. Today when factories are turning out products on a mass scale, there must be advertizing campaigns for sale. Cooking equipment, refrigerators, food products, toilet products, dresses, and a host of other articles are advertized daily with the help of the printed media and the film.

As in our economic life, so in the political, the modern communications system plays an important part. Today we can hardly think of elections without the mass media. In new democracies such as ours people must be educated in the democratic way of life. Films and radio broadcasts are often used in this connexion. In times of national emergencies again the modern media are of invaluable help. In our recent conflict with China and Pakistan the Government made extensive use of the mass media to impress on the people the great need for forgetting differences and to work as a unified force. The entire concept of war has now changed completely on account of the modern communications system. The army and the air force now move or operate with the full knowledge of the enemy's strength and supplies.

The greatest influence of the mass media is felt in our social life. The magazine, the film, radio and television all entertain us and as such they

help us forget for a while the cares and anxieties of our daily life. But, we should not look upon these simply as means for escaping from the realities of life. They are of help in a number of ways. In a comprehensive study of the effects of the mass media, Joseph T. Klapper[3], says that people sometimes use entertainment to escape from feelings of inferiority by identifying themselves with successful characters in stories, films, and broadcasts. Some psychologists again think that the media which entertain offer a safety valve for undesirable impulses and as such they perform a useful social function. Comic books, for example, which depict all kinds of violence are justified on the ground that they serve the emotional needs of children. Material rich in sex they say serve a similarly useful purpose. One authority has concluded that "contrary to popular misconception, people who read salacious literature are less likely to become sexual offenders than those who do not for the reason that such reading often neutralizes what aberrant sexual interests they may have".[4]

The above view, however, has been strongly criticized by leading educationists and researchers today. According to them certain types of entertainment media do seduce the weak-willed and the immature into lives of crime and immorality. Books or films they contend should never portray crimes or vice attractively or contain situations in which criminals and the wicked go unpunished. The mass media are a great influential force on our ways of thinking and doing and as such great care should be taken to ensure that they do not influence people in any harmful manner. Indeed this risk of harmful influence is the only reason why legislations exist throughout the world providing for film censorship.

The mass media have other dangers. Some films may not endanger public morals, but may fail to portray things as they really are. They may

[3] "American Scholar"—Autumn 1948.

[4] Peterson, Jensen, and Rivers—The Mass Media and Modern Society.

give a false picture of a nation's life and culture. A general complaint about feature films in our country is that they do not give a correct picture of our culture. About American films, a member of the British Parliament once said, "Anyone who suggests that the American films portray the American way of life is an enemy of the United States."

Finally, we come to the most important point, the role of mass media in the field of education. The film, radio, and television are invaluable in India and other developing countries where a large proportion of the population is illiterate. With the help of the mass media the adult masses without any knowledge of reading and writing not only understand what is happening in the outside world but, what is more important, they learn things which help them improve conditions of health and hygiene, develop agriculture and industries, and attain a higher social standard. The modern mass media or audio-visual aids are invaluable also in formal education. 'In the old days pupils could learn the few things they were to learn through direct experience or through very simple aids which their teachers provided. The modern world is quite a different one on account of the development of science and the growth in population. There is so much more to be learnt today. The variety of learning situations in educational institutions can be made meaningful and interesting with the help of audio-visual aids and materials which science and ingenuity have placed at our disposal.

The purpose of the chapters that follow is to discuss in detail, after a brief introduction, the variety of aids that can be employed in learning situations and the conditions under which they can be used with maximum advantage.

CHAPTER 4

What are Audio-visual Aids ?

The Expression 'Audio-visual'.

Audio-visual aids are those aids other than the printed or written word which help us form a clear concept of a thing. The best way, of course, to form a clear concept of a thing is to experience it directly. We understand a mango best by seeing, touching, smelling, and tasting a real mango. Not everything, however, in this vast and complex world can be learnt through direct experience in this manner. We must take the help of substitutes. Audio-visual aids provide these substitutes and they are called audio-visual, because they become effective mainly through the two senses—hearing and sight.

Elimination of some Misconceptions about Audio-visual Aids

It would be well now to remove a number of misconceptions about audio-visual aids.

(i) *Audio-Visual Aids are not concerned only with Films and Filmstrips.*

First, it should be noted that audio-visual aids are not concerned only with films or filmstrips. These aids are no doubt of great importance but they are by no means the only ones. There are many other audio-visual aids besides them as shown in the list below :

the school journey

the chalkboard, the magnetic chalkboard, the bulletin board, the flannel board

charts, posters, diagrams, graphs, cartoons, maps, globes

photographs, pictures, paintings, flash cards, models, mock-ups, objects, specimens, dioramas

dramatizations : plays, pageants, tableaux, pantomimes, puppet-shows, shadow-plays

slides, filmstrips, films

projections with the episcope, the tachistoscope, the stereo-projector, the overhead projector, the ceiling projector, and the micro-projector

tape recordings, radio broadcasts, television, gramophone records.

It should be noted, however, that the list above is not a complete list of audio-visual aids. Indeed, it is impossible to prepare a complete list as every day that passes brings new materials and new devices to make learning more meaningful and effective.

There is another point. The importance to be given to films and filmstrips should not dwarf the simple aids mentioned in the list above, e.g., the chalkboard, the bulletin board, pictures, charts, maps or models which to many teachers may be of far greater importance and of easier manipulation. Proper use of these aids should, therefore, form an important part in the training of teachers.

(ii) Audio-visual aids are not a new thing in education

Audio-visual education is not a new development in the field of education. As already noted, pictures, diagrams, and other visual materials, though not the modern scientific aids, were in use even in ancient days in our country to make learning meaningful and effective. Even in the 10th century A.D. when palm leaves were in use in our country in place of paper, books had plentiful illustrations. In Western countries the beginning of visual education can be traced from the 15th century A.D. The Dutch scholar Erasmus (1466-1536) was against memorization as a learning method and he urged that children should learn through pictures and other methods. Johann Amos Comenius (1592-1670), a bishop and teacher in Poland, prepared an illustrated text-book *Orbis Sensulium Pictus* (the world of sense objects—usually known as *Orbis Pictus*). About a hundred and fifty pictures make up the book, each being the topic of a lesson. Most of the topics deal with the practical aspects of everyday life such as gardening, making bread, and so on.

Jean Jacques Rousseau (1712-1778) was against the memorizing of words without understanding them and he advocated the use of sensory materials in learning situations. Rousseau's advice was followed by Johann Heinrich Pestalozzi (1756-1827) who strongly advocated that instruction should be based on sense perception. Arithmetic should be connected with the realities of life. In every occupation of life Pestalozzi insisted on an intelligent observation of common objects of nature.

(iii) Audio-Visual Aids are Aids to Learning rather than to Teaching.

Secondly, it should be known that audio-visual aids are aids to children rather than to teachers—aids to learning, rather than to teaching; but this does not mean that audio-visual aids lighten the work of teachers. When a teacher uses these aids he needs more planning and preparation than when

he takes a lesson without them, but his additional efforts are always rewarded with more meaningful learning on the part of his pupils.

(*iv*) *Audio-Visual Aids are but Means to an End*

Thirdly, it is stressed that audio-visual aids are but means to an end. "The educative process is a spiritual interaction between personalities and not merely a matter of communication by a teacher to a pupil. The teacher is always more important than any apparatus he uses ; indeed, the apparatus is of value only through the use the teacher makes of it, and the worth of that use depends not so much on the dexterity of the teacher or on his skill in manipulating the apparatus as on his sympathy with his pupils, his interest in their problems, his knowledge of their difficulties, his own sense of values".[1]

(*v*) *Audio-Visual Aids are not a substitute for earlier learning methods.*

Finally, we should bear in mind that audio-visual education is not a special type of education. Audio-visual aids do not substitute for reading, writing, discussions, and other kinds of learning activities. Indeed, these aids often become more effective when they combine with these earlier learning methods.

[1] A Report of the Advisory Council on Education in Scotland—1948.

CHAPTER 5

Contribution of Audio-visual aids to learning

One of the most important changes that have occurred in this century is the increasing importance given to the study of the child in place of the knowledge he should be acquiring. Even a few decades ago the teaching of a subject was considered from the point of view of the adult, not by whether it was appealing to the child or not. Learning was then a difficult business. But what a change has taken place in educational practice! How much attention is now being paid to the learning activity of the child! We now know that effective learning depends to a great extent upon the child's having a strong motive for learning as well as upon his experience being made meaningful and purposeful for him.

Audio-visual aids motivate the child's learning by arousing his interest in a number of ways.

In the first place, the aids are something new for children. They provide a change from the usual activities of school such as reading, writing, listening. The novelty of the aids makes them attractive to pupils.

Secondly, the aids provide a change in the atmosphere of the classroom. When a film or a filmstrip is screened, children talk, laugh, question, and comment upon freely as they do outside the classroom. The attitude of the teacher is also very friendly. This pleasant and natural atmosphere contributes greatly to learning.

Thirdly, audio-visual aids are comparatively easy to understand and so they interest children more than the description of anything through a talk, interest in which can only depend on their power of understanding, knowledge of the language, and previous learnings.

In the fourth place, many of these aids give children opportunities to do something. An opportunity to touch a model, press a button, or fix a sandpaper item on the flannel board provides an added appeal.

Audio-visual aids make the child's experience meaningful. "Because audio-visual materials supply a concrete basis for conceptual thinking they give rise to meaningful concepts—to words enriched by meaningful associations. Hence, they offer the best antidote available for the disease of verbalism".[1] Under certain situations verbalism is quite helpless. Think of a teacher verbally attempting to give his students an idea of an animal which they have not seen before. He describes its height, colour, head, legs, ears, and other characteristics, but none of the children is able to form a correct idea of the animal. But how accurately could they form an idea of the animal by actually seeing it. It follows, therefore, that direct experience is the basis of all effective learning. "It is the rich, full-bodied experience

[1] E. Dale—Audio-Visual Methods in Teaching

that is the bed-rock of all education. It is the purposeful experience that is seen, handled, tasted, touched, felt, and smelled. It is the unabridged version of life itself".[2]

But though direct experience is the basis of all effective learning, the world of learning, as already said, is such that it cannot be lived on direct sensory level. A real thing may be too complex, too big, too small, too fast or too slow. In such circumstances learning through a model, a film, or a filmstrip is much easier than learning through direct experience. A model of a factory is often more helpful from the point of view of study than a visit to its various departments and sections spread over a large area. To emphasize the key points or basic mechanisms we often make use of models from which distracting details have been left out.

Again, it is not always possible to experience directly things which are far away or not easily accessible. It is not easy for many to travel to Kashmir and see how apples are grown there and how tourists live in boats on the Jhelum, but all can take a film-trip to the place without any difficulty. Many successful projects in our country are also too far away for many people to visit. The development and results of these projects can best be made known through audio-visual aids. It is almost impossible for us to have a direct experience of the way to the top of Everest, but the famous British Information film "Conquest of Everest" can easily give us a clear idea of the route which Tenzing and others took to get to the topmost spot on the Himalayas.

Audio-visual aids help us not only to see things that are removed by space but also those that are removed by time. We can, of course, read about things of the past as we can read about things of the present. There are people who have formed a fairly good idea of the days of Shivaji, Raja

[2] E. Dale—Audio-Visual Methods in Teaching

Rammohan Roy, or Abraham Lincoln through wide and careful study of books, but how many students today can be expected to study the past in this manner? Again, will they have the idea in the same vivid manner as they can have with the help of audio-visual reconstructions? Give a chance to your students who have read about Rammohan or Lincoln to view the film "Raja Rammohan Roy"[3] and "Abe Lincoln in Illinois"[4] and ask them to answer the question. Whatever answer you may get, one thing, however, stands clear, a point already made, that film reconstructions can never be the sole means of study. As Edgar Dale reminds us, "Reading must always be used as an integral part of the audio-visual learning experience".[5]

Properly selected and used, audio-visual aids help decrease the amount of forgetting and increase the permanence of what is learnt. They are able to achieve these mainly by virtue of their power of making experiences enjoyable and meaningful. When we have taken interest in a topic and have understood it clearly, we are not likely to forget it. "Other things being equal", says Pressey, "material will be remembered in proportion as it is meaningful".[6]

[3] An award film of 1966
[4] A U.S.I.S. film
[5] E. Dale—Audio-Visual Methods in Teaching
[6] S. L. Pressey—Psychology and the New Education

CHAPTER 6

Proper Selection and use of Audio-visual Aids

Proper Selection of Aids

The effectiveness of audio-visual aids depends upon their proper selection and use. The following points should be borne in mind in selecting the aids :

(i) The aid should deal with the topic under study.

Select the aid or combination of aids that fulfils the objectives of the lesson best. Always bear in mind the exact topic under study. In a lesson on hygiene, for example, the aim of the teacher may be to give pupils an idea of areas where mosquitoes breed and of effective methods for combating the insect. He selects a famous film 'The Mosquito', but his lesson fails because the picture instead of contributing meaningfully to the topic under study presents something else, e.g., the life history of the mosquito and the effect of its poison on human blood. Whatever may be the quality of an aid or the reputation of its producer, it is of no use unless it contributes meaningfully to the topic

the children are to learn. We must make certain that the film, or the filmstrip, or the picture, or the model, or the flannel-board display we are taking the help of is really the most effective aid for the topic under study.

(ii) *The aid should give a true picture of the topic.*

An aid may be on the specific topic under study, but it may not tell the whole story. A class may see a film on the Sunderbans and conclude that the area is all forest and rivers in which tigers and wild birds abound and the only human beings that live there are honey collectors and woodcutters. The producer of this film (like almost all producers) has chosen the beautiful, unusual, and interesting scenes leaving out a more important, if not interesting part of the area, the reclaimed villages where thousands of families are settled and who through hard labour produce a substantial portion of paddy that comes to Calcutta. The visual aids which do not tell the whole story should either be avoided or used with sufficient care to make certain that there are no faulty generalizations from them.

Certain audio-visual aids again may cover all aspects of the title they deal with, yet they may not be of much help being out of date. Who will like to use a film on fruit preservation produced by the Lyallpur Fruit Products Laboratory before Independence? The preservation techniques and the manufacturing equipment have both undergone substantial changes since the picture was shot. An excellent filmstrip on Delhi produced in 1948 is almost useless today for classroom use. Certain fields of study change quickly and we should take care in selecting the most recent aids for them.

(iii) *The aid must be appropriate to the experience and intelligence of the learners.*

In selecting aids, the teacher should also see that they are appropriate to the experience and intelligence of the children. The aids will never be

helpful unless they are suitable for the average level of the children. A filmstrip may be excellent in itself, but it may be too difficult for a junior class. The excellent Bray film "Tides and the Moon" may appear too simple to post-graduate students of geography though it is so instructive to senior pupils of a high school.

It should be noted also that the appropriateness of an aid does not always depend on that particular aid alone. A topic of hygiene, for example, may not be easily understandable with the help of a filmstrip, but the same topic becomes quite clear when another aid, a model, is introduced. As Dale reminds us, "The key question is not whether a specific material when used alone is adequate or appropriate but whether it can be made useful as part of a planned unit of study".[1]

(*iv*) *The aid should not be foreign to learners' environment.*

In certain learning situations, aids which present scenes that are foreign to learners' environment should, as far as possible, be avoided. Many excellent foreign films and filmstrips on health and hygiene may not be of much help to students in India because they present scenes and techniques quite foreign to their environment. Similarly, many well-known foreign films on agriculture cannot be used to advantage because they show the use of equipment which are either not available or, even if available, do not fit into the typical conditions in our country.

(*v*) *The aid should be in good condition.*

Another point of great importance in the selection of audio-visual aids is their physical quality. When films, filmstrips, pictures, charts, maps, models, etc., are new, they are all right, but when they become a little old, unless good care has been taken in handling and preserving them, their condition becomes so bad that they are not worth the time

[1] E. Dale—Audio-visual Methods in Teaching.

and effort involved in using them, although they may be valuable by themselves. When we select audio-visual aids for learning purposes, we must make sure they are in proper condition. It is no use selecting a film if its sound track is damaged. The photographs we show to children should be sharp and clear. Faded chalkboards, dirty flannel boards, broken models, and too old charts do not do even half the work.

(vi) The aid with a teaching note should be preferred.

Many films, filmstrips, and slides produced of late have teaching notes. These notes are very useful. It is not always possible for teachers to preview all the films and filmstrips they use in classrooms, but they can certainly go through these notes to form an idea of their content. It may be noted in this connexion that the Department of Audio-visual Education of the National Council of Educational Research and Training has taken up the preparation of teaching notes for films which can be used in classrooms. In the proceedings of the second meeting of the National Board for Audio-visual Education in India we find: "In order to encourage the proper use of the imported film, it is proposed that the Central Film Library should take upon itself the responsibility of preparing commentaries and notes suggesting the proper use of the film, indicating follow-up activities and other materials with which the film can be integrated. The material may assume the form of a booklet, copies of which will be circulated to all members of the library as and when they ask for a particular film. These booklets will be retained by the member institutions and constitute a reference file."

(vii) Too many aids should not be used unnecessarily.

As different kinds of audio-visual aids are now available, some teachers, particularly those who are enthusiasts, may use too many of these unnecessarily. For example, in a lesson on geography, if a teacher without any special reason shows still pictures on the Suez Canal after screening both a film and a filmstrip on the subject, he is certainly not doing the right thing.

The question of using too many aids, however, does not arise now in our country with so much shortage of audio-visual aids particularly films and filmstrips.

(*viii*) *Simple aids should be preferred to scientific aids which are not easily available in our country.*

There is another important point in the selection of audio-visual aids. It has been pointed out earlier that simpler aids should not be neglected. Films and filmstrips are excellent aids, but as they cannot be easily procured, we need not bother so much about them. Very good results can be obtained through the use of such simple aids as pictures, models, and the flannel board. These inexpensive aids can be easily procured or collected or made by children themselves under the guidance of teachers. But if an institution possesses a projector and if the film is considered a far more effective aid in a particular learning situation, it is worth the effort involved in using it.

Effective Use of Aids

Preparation on the part of the teacher

After the aids have been selected, the teacher should prepare himself. He should know what the aids teach and where they fit into his plan. No film or filmstrip should be shown to children unless the teacher has previewed it. If for any reason he is unable to preview it, he should look well through the teaching notes. In any case he must not depend on synopses given in film or filmstrip catalogues as these synopses even if they are carefully prepared can only give him a partial idea of content.

Some of our training colleges nowadays give opportunities (though unfortunately on a very limited scale) to trainees to preview selected films, filmstrips, and slides. Trainees can also get very good ideas of different types of audio-visual aids from the educational exhibitions which are gener-

ally arranged by these institutions. Prospective teachers should keep records of all usuable aids they have had opportunities to preview or see. These records are not complete unless purchase and loan facilities of the aids are also noted. Some of these aids possibly can be made inexpensively. A few points noted in time about making these aids may be of great help later.

Preparation on the part of pupils

In the use of audio-visual aids, preparation on the part of the pupils is of no less importance than preparation on the part of the teachers. Before a film or a filmstrip is shown, children's curiosity should be roused. Specific things to look for in the film or the filmstrip should be pointed out before the aid is used. If there is any point in the film that may be confusing to the children, it should be thoroughly explained before the film is screened. A school journey may be a mere sight-seeing if pupils are not adequately prepared for it and their curiosity not properly roused. When children go to visit a ship with a preparation of what they are going to see in it—the radar in the navigating room, the fire-controlling apparatus, the anti-rolling device, the plant for distilling drinking water—the visit will undoubtedly be of maximum benefit.

Proper Presentation

In the use of audio-visual aids proper presentation is of the highest importance. If presentation fails, everything fails. The material should be presented under the best possible conditions and in the best possible manner so that everyone in the room can both see and hear in comfort. In the case of projected aids this can be ensured if four conditions are fulfilled. The equipment including the screen is good and in good condition. The teacher who uses it has had a thorough training in the setting up and operation of the equipment. Spares (e.g., bulbs, exciter lamps, tubes) which may be needed are at hand and in good condition. A reasonably large room with comfortable seats, adequate ventilation, suitable acoustic conditions,

and proper darkening devices has been secured. There might be difficulties in fulfilling the last condition in a general-purpose classroom, but in rooms where films are shown regularly there is no reason why ideal conditions should not prevail. A few years ago in a training centre near Calcutta with which the author was associated, the educational value of an outstanding film was largely lost on account of an unsatisfactory room in which it was projected. In the month of May about three in the afternoon without any provision for ventilation and with all doors and windows closed, the small accommodation which had a roof of corrugated iron became so hot and stuffy that those viewing the film (and the author was not an exception) were only interested in finding out how soon the picture would come to an end.

In the use of simple non-projected aids also the four conditions above generally hold good. The chalkboard or the flannel board should be in good condition. In most schools in our country they are neither kept in proper position nor in proper repair. Rarely are they of the right type or of the right colour. The need for training in the use of simple aids is as important as in the case of scientific ones. A flannel board or a chalkboard in the hand of a properly trained teacher presents a completely different picture. Materials such as board pins, coloured chalks, cardboard, pieces of flannel and sand paper, and paints should always be in stock. Some of the basic tools like scissors, knife, hammer, pliers should also be available in the institution. Many interesting learning situations have suffered on account of the non-availability of some of the essential supplies. Finally, classrooms equipped with a flannel board, a bulletin board, and a chalkboard should be reasonably large, well-lighted, and well-ventilated. And every classroom should no doubt have comfortable seats.

Adequate Follow-up

The follow-up varies according to the nature of the subject. Generally important points are emphasized and there is a discussion on the topic. If

the teacher finds that the students have not grasped the points clearly, he might arrange for a second screening of the film or another display of the aid for a thorough understanding of the ideas. Geographical references should be pointed out on the map. If the aid used is on some crafts, the follow-up should include actual practice of techniques shown. The aid in some subjects may arouse an interest in a school journey. Since the desire to learn may not last long, such journeys should be undertaken as early as possible.

PART TWO

AUDIO-VISUAL AIDS

CHAPTER 7

Field Trips

(or Journeys)

Contribution of the Field Trip

One of the most valuable of audio-visual aids is the field trip or journey though unfortunately in India many educational institutions do not make use of this aid to the extent they ought to do. A field trip or a school journey may be defined as any excursion organized by teachers to enrich the pupils' experience.

Children can no doubt form an idea of a thing from what their parents or teachers tell them. They can also form an idea of the thing by reading. Pictures help make their learning more meaningful, but the knowledge they gain by experiencing it in direct reality is quite a different matter. The pictures of flowers in books and the real flowers in gardens which children smell and touch gently with their fingers are so different.

It is wrong, however, to think that children learn simply through contact

with direct experience. In their visit to a garden children may find a particular kind of flower, say roses, healthier and more colourful on one side of the garden than on another. They may admire them more, but they may not understand why they are different from the flowers they have seen on the other side unless they are told by teachers that the bigger roses got more sun and possibly more manure. When children have had proper guidance and assistance, they are likely to ask many more questions to know more about new things. Trips or visits will be of little value if children are not properly guided and helped by teachers to get the knowledge they should have from them.

Whether children visit a garden, a post office, a railway station, or an aerodrome, the number of things they can learn is endless. It is, therefore, important for children to make some plan about things they wish to learn in the visit. Whatever plan is made, all children will not learn in the same manner. Some children are satisfied with simple answers, but those who are intellectually alert will go deep into matters. They will continue to ask questions till they are satisfied, till their present experiences do not conflict with the experiences they have had before. They may not be satisfied with the answer that the bigger roses had more sun and more manure. They may ask the question: "Why are some roses smaller on the same plot with the same manure and the same advantage of the sun?" There must be some other reason or reasons for differences. Were there differences in the cuttings used? We were told roses needed individual care. Was the same attention paid to each plant?

The field trip can contribute to learning by influencing children's emotions. When children visit a mine and see the hard and risky job of the miners, they naturally feel for them. So many questions may come to their minds then. Have the miners been provided with the latest tools and protective appliances? Are there arrangements in the mine for supplying them with cheap and whole-

some food? Does any doctor live in the area to give immediate medical help in the event of any accident? How many lifts are there for use during emergencies?

Field trips have other advantages and values. A visit may be planned to help boys and girls to select their life work. Boys and girls visiting medical colleges or engineering firms may become ambitious of becoming doctors or engineers.

In rural areas trips can be arranged to help life in the community. Our villages have always some problems such as health, roads, illiteracy in which students' services can be utilized. Children should also have some idea of different workers in their communities. When through properly planned visits children see the work and life of the potters, the weavers, the blacksmiths, the traders, they understand how everyone in the community plays a part to make living possible.

Field Trips as a regular part of the Curriculum

The field trip being such a good method of learning should be made a part of the regular curriculum. Indeed, this learning procedure can be utilized in almost all subjects of the curriculum. Unfortunately, as already mentioned, few educational institutions in our country have any regular schedule of field trips. The position in Western countries is quite different. Edgar Dale writes, " . . . . our schools in general are making wide and increasingly effective use of field trips. School systems are issuing guides and bulletins to help their teachers in selection and planning. The Los Angeles schools, for example, publish a catalogue of school journeys IT'S WORTH A VISIT in which 150 field trips are listed and discussed in relation to the elementary school programme."[13] No such guides are available in our country (the Department of Audio-Visual Education of the National Council of Educational Research and Training should itself prepare or encourage the preparation of such material), but we have no want

[1] E. Dale—Audio-Visual Methods in Teaching

of places for learners to go and our teachers are quite competent to make proper planning. Museums, zoos, fire stations, department stores, banks, government institutions, farms, newspaper offices, factories are just a few of the places in or near larger cities that can be visited easily and inexpensively during school hours year after year.

Different types of Field Trip

A field trip may be of various types according to the purpose for which it is undertaken. It may be a short trip in rural areas to the village market, agricultural fields, the railway station, or the post office. It may be even to the school garden itself for the study of some flowers and plants. Such

Guided by their teacher some junior pupils of the Surendranath Institution, Calcutta are learning about plants in a garden by this enjoyable method of discovering things for themselves.

trips can be completed within a single period. There may be trips in cities requiring half a day, usually all the periods after the lunch break, to a factory, museum, zoo, planetarium, park, or a historical monument. Trips to historical places or project areas take longer time, two or three days or an entire week. Some educational institutions now arrange visits to important places in the country during vacations. Such trips take two or three weeks or longer time depending on the number of places to be visited. In Western countries the field trip is given so much importance that sometimes an entire school year is spent on a field trip involving travel to foreign countries.

Difficulties which restrict the number of Field Trips

There are three main problems in our country which restrict the number of field trips. Though in many schools there are some enterprising teachers who are quite willing and competent to organize these activities, they do not always get sufficient encouragement from the heads of institutions particularly when they are of the old school. This difficulty, however, will gradually disappear as the educational possibilities of the field trip come to be better realized with the general development of audio-visual education in India. The State Board of Audio-Visual Education, it is hoped, will see that a minimum programme of school excursions is carried out by every recognized high or higher secondary school in the State.

There is another difficulty. Field trips cost money and so the idea is often dropped. This difficulty also will be got over when adequate grants will be available from the Government and schools raise their own funds to supplement these amounts. Many State Governments now bear fifty per cent of the cost of educational excursions to distant places approved by the Director of Public Instruction of the State. Special contribution from parents can also be collected when excursions to distant places are undertaken. Children whose parents are too poor should not be excluded. The poor

fund which is generally in existence in our schools may be of help in such exceptional cases.

Though some schools realize well the value of educational trips, they often find difficulties in arranging for meals and sleeping accommodation for a large number of students at project centres and at many places of historic and cultural interest. The railway arrangements often cannot bring the party back home the same day. There are two solutions of this problem. Schools can take advantage under certain conditions of the newly organized Youth Hostels in different parts of the country. Accommodation in these hostels is provided free of charge for children and the accompanying teacher. Utensils are also supplied and the party is expected to do its own cooking. The Tourist Departments in most States now organize trips to places of interest in the State and schools can take advantage of these facilities also. In West Bengal, for example, the Tourist Department organizes from time to time at cheap rates a number of trips to places like Diamond Harbour, Botanical Gardens, Government Dairy Farm at Haringhata, and the D.V.C. areas. The Delhi Transport Undertaking organized during the past few years many trips for students and tourists to places of interest near Delhi. The Auto-India Co-operative Society of Delhi has introduced a tourist service between Delhi and Jaipur at reasonable fares. Special trips for students and tourists are also organized by the State Transport in Gujarat to places like Bhavnagar, Rajkot, Porbandar, Junagarh, and Dwaraka.

Conditions on which a successful Field Trip depends

Whatever the purposes of a field trip may be, the following conditions must be fulfilled if the journey is to be of maximum benefit:

(i) A field trip must be correlated with school work so that it does not become a picnic or mere sight-seeing.

(ii) The visit must be well conducted. For this careful planning ahead is necessary. After the place of visit has been decided upon, the teacher responsible should first obtain permission (where necessary) from the authorities concerned. He should then study transport facilities. He should decide if the entire class or a selected group should go. If the visit is to a distant place, permission of the guardian should be obtained. Permission of parents to participate in school journeys may be for each trip or it may be a general permission for the whole year. A letter as shown below may be sent to parents to obtain permission for a particular trip :

The name of the guardian and address — Name of the institution and date

Dear Shri/Smt.....

The students of Class.....of this institution are planning an educational visit to.....

Could you very kindly write a line to say if you permit.....

.....to join the party?

Yours sincerely,

(Full signature of the Principal)

If the visit is to a distant place, the cost per child should be estimated and necessary money should be collected. Some children may not be able to afford the trip. In deserving cases the teacher may ask the institution to allot funds or, as suggested earlier, he can take the help of the poor fund. Matters such as food and accommodation must be settled by writing long before the journey is made. There should be strict instructions to children about their dress during the journey and the things they

should include in their kit. The teacher in charge should be equipped with a first-aid box. He should see that children do not get too tired and their toilet needs are attended to. It is desirable that the teacher in charge should have thorough knowledge of the things he will show to the children. In journeys to historical buildings the services of ordinary guides should be avoided.

(iii) The pupils must be adequately prepared for a visit. They must understand its purpose and what they can expect to learn from it. Books, maps, pictures, or any other aid available should be used to arouse student interest in the trip. A list (preferably mimeographed) of things which can be seen on the way and at the place should be handed to each member of the group. Students should be encouraged to ask questions, take notes, draw maps or diagrams, and take photographs.

(iv) There must be an adequate follow-up to find out what has been learned from a visit. Full opportunity for thorough discussion is essential. A field trip is mere sight-seeing unless pupils understand its relationship to school work and the value of information gained.

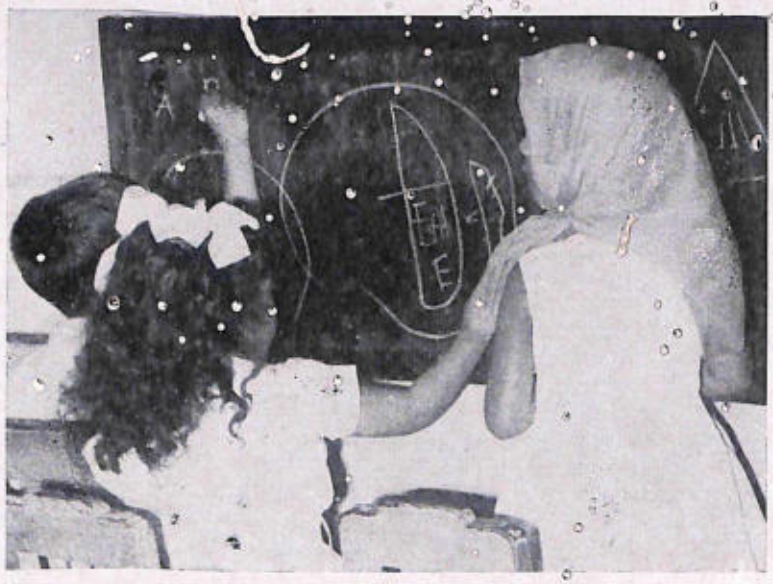
CHAPTER 8

The Chalkboard

A neglected school apparatus in India

The chalkboard is an essential aid to learning. Children love to write or draw or scribble on it. Unfortunately in most of the schools in our country this valuable aid is the most neglected of the school apparatus. And it does not exist even in homes which otherwise pay good attention to the education of children. When school houses are built, little attention is paid to providing classrooms with adequate chalkboard space. And in many schools chalkboards are not kept in the proper position and they are not kept in good repair. Erasers are not generally used. Where they are used, they are either not of the desirable type or found in a very neglected condition.

It is indeed a pity that in India today chalkboards are not even used as teachers used them thirty or forty years ago. This important aid



Children love to write or draw on the chalkboard. (Courtesy : South Point School, Calcutta)

will not be properly used unless training colleges in our country pay greater importance to the matter. The Department of Audio-Visual Education of the National Council of Educational Research and Training may well arrange for a special course on the use of the chalkboard from time to time.

Importance of the Chalkboard

A chalkboard particularly when it is black does not look very attractive, but when it is used properly it becomes very inspiring. It is of great importance in setting standards of neatness, accuracy, and speed, and it helps children visualize spelling. An illustration drawn on the chalkboard during a lesson can restore the attention of the class. In chalkboard work the teacher can, by writing and drawing diagrams, emphasize the essential points in the lesson. He can get the children see a map or a picture built up with a few quick strokes. Moreover, the chalkboard is an aid which is always available in the classroom ; for its

use no technical knowledge or high artistic skill is necessary, no spares are to be kept at hand, and there is no wastage of time in making the room dark.

The Boys' Section of Lake View High School, Calcutta making an effective use of the chalkboard to teach spelling

The use of the chalkboard is essential for obtaining the maximum benefit from such aids as a film or a radio broadcast.

Important points in Using the Chalkboard

The effectiveness of the chalkboard as a visual aid can be considerably increased if the following points are borne in mind in using it :

(i) Clean the chalkboard first by downward strokes with a clean eraser or cloth and not with the hand or fingers.

(ii) Write in straight rows starting at the top left corner.

(iii) Write only a few important points bearing in mind that the chalkboard is unsuited for elaborate work.

(iv) Write neatly in large letters making sure that the writing is easily readable from the back of the class.

(v) Avoid abbreviations except those in common use.

(vi) Plan ahead what you will write on the chalkboard, but never draw a map beforehand or by constant reference to a book, as this may give the impression that map-drawing is not a simple business. There should, however, be no objection to a teacher taking the assistance of a drawing teacher for complicated diagrams which can be prepared in advance and shown when necessary.

(vii) Get together everything you need for the chalkboard before the class begins—eraser, chalk, rulers, compasses, templates, stencils or any other device that may help you draw. The use of these devices is no indication of the teacher's lack of skill in chalkboard work.

If you have an opaque projector (an episcope) in your institution, it can be used for the tracing of outlines of maps and drawings. The tracing, however, should be completed very quickly. One should not take more than two minutes to trace the outline of a map.

(viii) Use a pointer to focus attention when you have drawn a map or a sketch.

(ix) The teacher should stand to one side of the chalkboard to permit the children full view of all that has been written or drawn on it.

(x) Make sure that the chalkboard is not high above the eye level of the children, is well lighted by natural or artificial means, and the front row of desks is at least eight feet away from it.

(xi) Make sure that the chalkboard is serviced at least once yearly.

Templates and Stencils

Drawings can be made quickly and well on the chalkboard by tracing around templates. A template is a pattern which is held against the board and outlined. It can be made of tin, thin wood, or cardboard. Teachers and students of geography, science, and mathematics may use templates for quick and accurate drawings though they should be able to do rough drawings of simpler things on the chalkboard without this device. Little children love to draw animals, birds, trains, aeroplanes, and other interesting things

This teacher is certainly able to draw a good map of India without any device, but he takes the help of a template for quick work. A learning situation in Lake View High School, Boys' Section, Calcutta

on the board by tracing around templates. With these they draw quickly and well, but these nice drawings are the creation of the device and not of the children. Teachers may use such devices for neat and quick work, but for children things in which they have no real contribution have little educational value.

A chalkboard stencil is made by first making a drawing on paper and then making a series of holes along its lines. When the stencil is held against the chalkboard and a used eraser is patted over the perforations, a faint outline appears on the board. A chalk is then applied on this outline to produce a neat and accurate drawing.

Materials used in Chalkboard construction

Various types of materials are used in chalkboard construction—wood, slate, glass, plastic, paper, and cement mixtures. Wood is the cheapest and

A glass board in use in the Post-Graduate Department of the S. S. Karnani Memorial Hospital, Calcutta

so it is the most commonly used material. Slate is widely used in America, but it is expensive and it is difficult also to obtain a large size of the material. Where a wall chalkboard is to be erected, the use of glass might be considered. Glass chalkboards though more expensive than wooden ones give better service and last much longer. The Report (1948) of the Advisory Council on Education in Scotland says, "We were told of blackboards made of glass which were installed in a technical college some forty years ago and are still proving most efficient".

The glass board, therefore, should be given a fair trial in our country. One great advantage of the glass board unlike the wooden board which is generally made of inferior wood is that it is not affected by weather conditions. A glass chalkboard can be made inexpensively by getting a sheet of ground glass from a glass shop and applying olive green or yellow paint on its plain surface. The rough side is used for writing. A frame for the painted glass can be made of ordinary wood.

Plastic surfaces for chalkboards have recently been developed in Great Britain and can be obtained in different colours. A roll-up chalkboard can be made of thick wrapping paper, but it does not last long and it is not easy to write on. It is, however, very easy to carry and so social workers use it to advantage when they move from village to village conducting meetings or discussions. They can make this paper chalkboard by a simple process which is described below.

Apply French polish on both sides of a sheet of thick wrapping paper. When the paper is thoroughly dry, apply matt olive-green paint to one side of the paper. After the paint has thoroughly dried, apply it for the second time. A round strip of wood about one inch in diameter is fastened to the two ends of the roll-up board.

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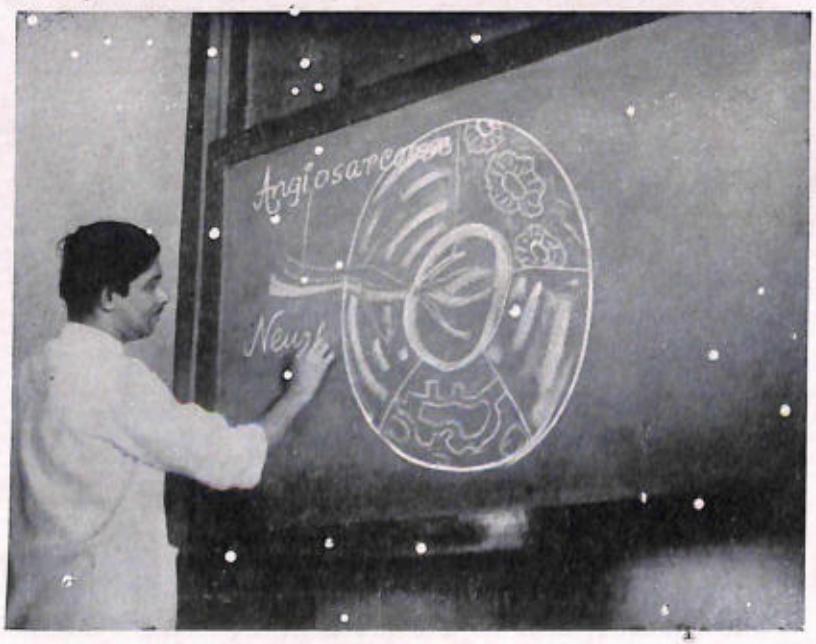

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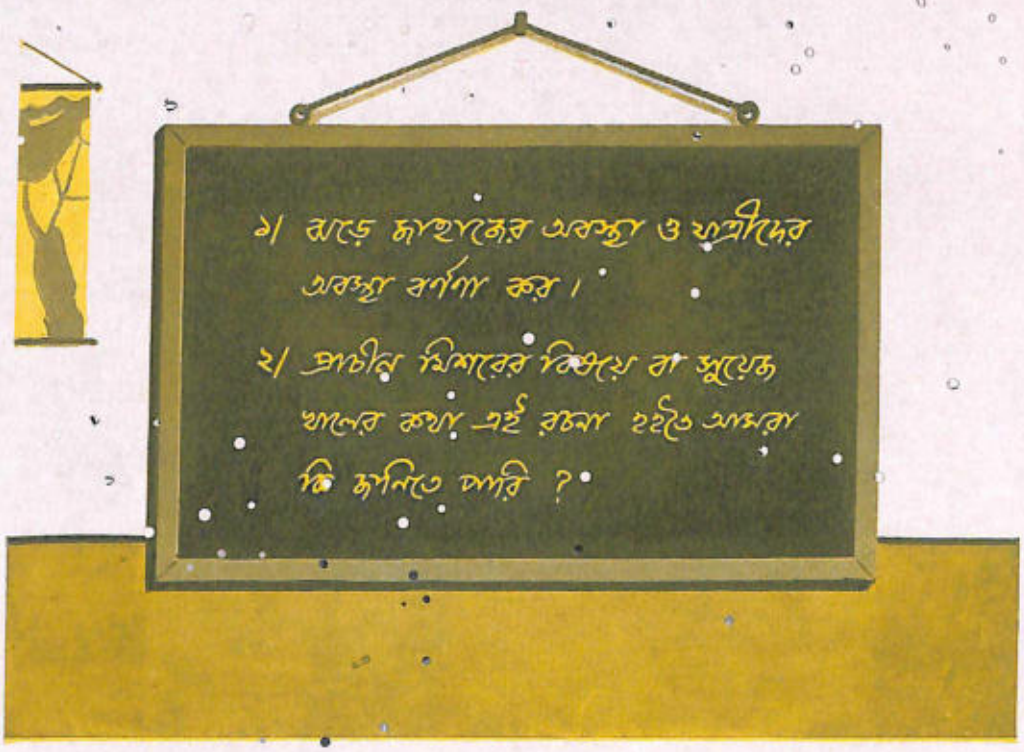
Yellow or Olive-green Chalkboard

In India chalkboards are still black, but in America and Great Britain the black colour has given place to either yellow or olive-green. The National Institute of Industrial Psychology in America of late has found evidence to



Yellow chalk on an olive green surface gives the most satisfactory result.

the effect that a blue chalk on a yellow board causes less strain on children's eyes and adds to the general cheerfulness of the classroom. The use of colour in America for the so-called blackboard has given rise to the new term—the CHALKBOARD. The findings of the Advisory Council on Education in Scotland indicate that yellow chalk on an olive-green surface gives the most satisfactory result.

Types of Chalkboard

The ordinary chalkboard held by an easel may be all right for the learning of arts subjects in a small class, but it is quite unsuitable for mathe-

Our schools for little children should have a board like this. (Courtesy : British Information Service)

matics and science. For the learning of these subjects the roller type of chalkboard with a matt surface is far better. This type of board is very common in Secondary Modern and Infant schools in Great Britain. If the roller type is used, a portion of the board can be appropriately lined or square marked to provide for the learning of such subjects as handwriting, elementary arithmetic, and higher mathematics.

The Magnetic Chalkboard

The magnetic chalkboard is of recent origin in Great Britain. It is extremely useful and interesting. The difference between the ordinary chalkboard and the magnetic one is that the latter is made of steel on which magnets can be fixed. This board is especially useful in the primary

A demonstration of a magnetic chalkboard lesson in the University of Leeds) (Photo by the author)

school because when children fix something on it as an exercise in the revision of a lesson, their creative impulse is partially aroused. They learn through an interesting activity. This board is very useful from the teacher's point of view also, because he can promptly fix pictures, charts, etc. on it with the help of magnets.

CHAPTER 9

The Flannel Board (Also called the Felt Board)

Like the magnetic chalkboard the flannel board is also of recent origin in Great Britain and in the U.S.A. It is a valuable aid in many learning situations of junior as well as of senior pupils. Some of our good schools are now making regular use of the aid.

Pieces of flannel or sandpaper will stick to a flannel-covered board with a little pressure and so small pieces of these materials are pasted on the reverse side of pictures, drawings, etc. for placing on the board. If the picture items are cut out and made directly from flannel, blotting-paper, and sandpaper, no additional rough-surfaced backing will be needed for them.

Usefulness of the Flannel Board

Like the chalkboard, the flannel board can be used throughout a discussion, but the difference is that while we write or draw on a chalkboard, on

a flannel board we place prepared items and remove them when needed. With the help of this aid subjects like arithmetic, hygiene, nature-study, geography, languages can be made meaningful and interesting. Maps and stories can be built up in a dramatic way on the flannel board.

Flannel boards provide creative experiences in a number of ways. Most of the items that are placed on the board can be prepared by children under the guidance of teachers. They develop their power of expression and manual ability as they cut alphabet, birds, animals, and pictures from flannel or sandpaper or any appropriate material. The cutting work is always an enjoyable activity.

A junior pupil is learning Hindi with the help of the flannel board in the Secondary Department of the Surendranath Institution, Calcutta

Children of Lake View High School, Girls' Section, Calcutta are learning in a very interesting way names of animals in three languages (English, Bengali, and Hindi) with the help of a flannel board. Can anyone suggest a better learning situation for them?

Some imaginative parents and teachers encourage children to draw and cut pictures and display them one by one on the flannel board to tell stories created out of their own imagination. Even if early efforts are not very successful, the effort itself and the desire to succeed have great educational value.

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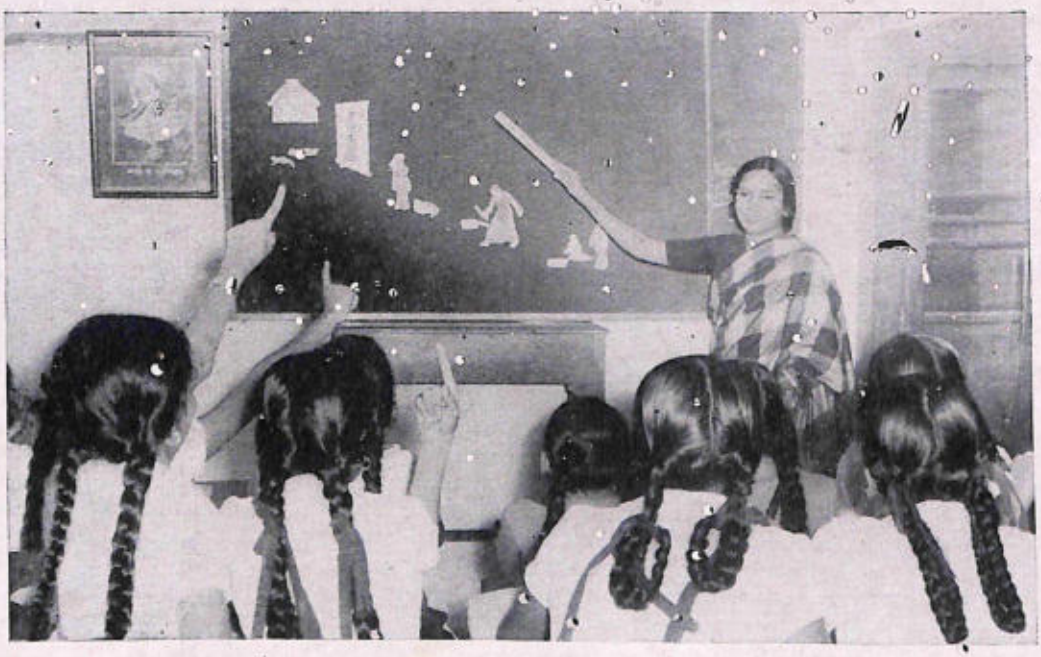
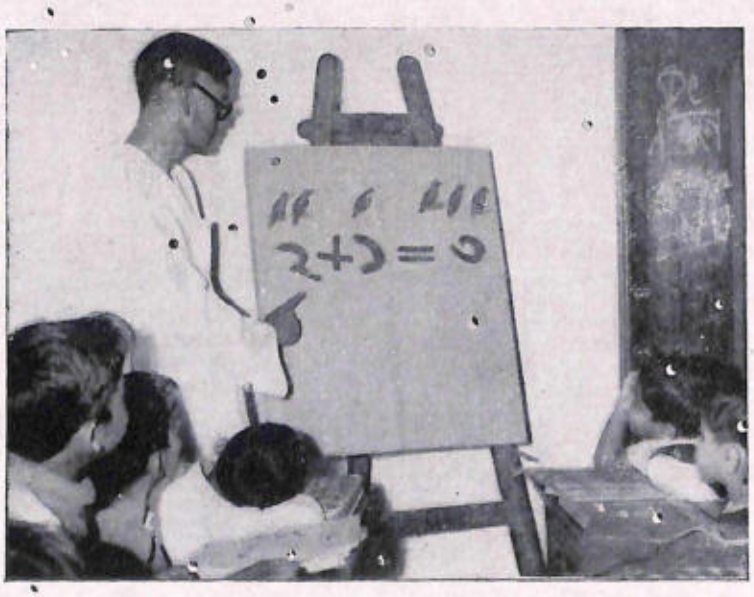
Children of Lake View High School, Girls' Section, Calcutta are learning in a very interesting way names of animals in three languages (English, Bengali, and Hindi) with the help of a flannel board. Can anyone suggest a better learning situation for them?

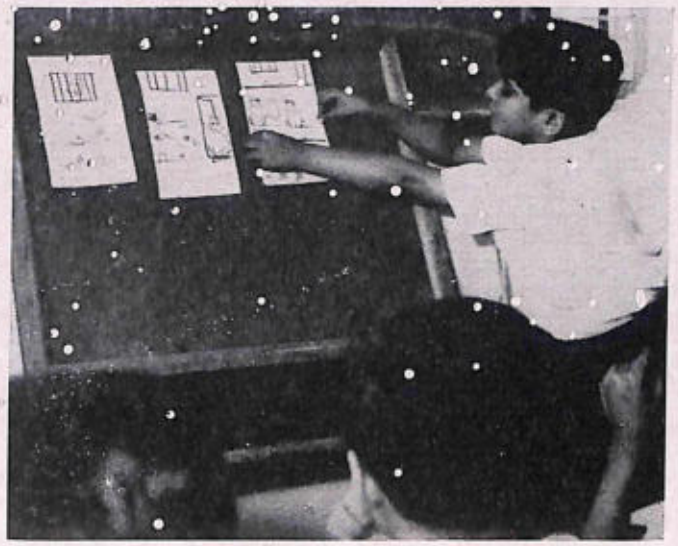
Some imaginative parents and teachers encourage children to draw and cut pictures and display them one by one on the flannel board to tell stories created out of their own imagination. Even if early efforts are not very successful, the effort itself and the desire to succeed have great educational value.



A teacher developing a story with the help of the flannel board (Courtesy : P.V.T.D. College of Education for Women, Bombay)



These attractive pictures of birds on the flannel board make arithmetic lessons, real and interesting. The pictures and the figures can be quickly rearranged to change lessons. (A junior class in the Surendranath Institution, Calcutta)



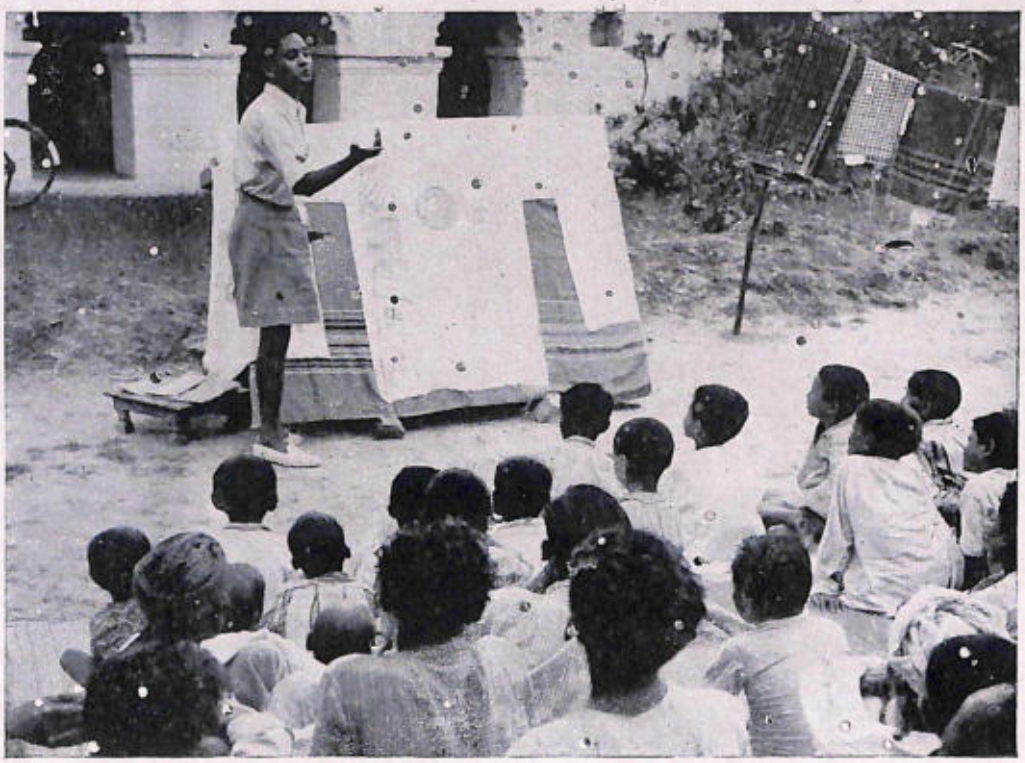
A child tells with the help of the flannel board a story created out of his own imagination. The picture items were also prepared by him. (Courtesy. South Point School, Calcutta)

How To Make a Flannel Board

Flannel boards are not expensive and they are not at all difficult to make. A piece of felt or flannel is stretched tightly and then glued to thin plywood, masonite, or heavy cardboard. Flannel boards meant for use in classrooms should not be smaller than three by four feet. Any colour of flannel may be used, but it is better to avoid light colours. Light colours get dirty and do not generally provide good contrast.

Flannel Boards in the Education of Villagers

In social education work flannel boards, if effectively used, can prove very helpful in communicating a lot of useful information to adults in a



A Village Level Worker explains with the help of a flannel board new methods of agriculture to young would-be farmers in a Community Development Block near Ranchi.
(Courtesy of the United States Information Services)

meaningful manner. Villagers love stories when told in an interesting manner, and our social workers, if they really want, can prepare with a little skill in drawing interesting story items for the flannel board.

CHAPTER 10

The Bulletin Board

Usefulness of the Bulletin Board

The bulletin board is a learning aid of great educational value, but unfortunately few schools make use of this inexpensive aid. Even in our schools in which bulletin boards are found in classrooms, they are not generally used in a planned and systematic manner. And they are sometimes found without any materials displayed on them. There is hardly any excuse for this as these materials are easily obtainable. No bulletin board in any part of the world under an earnest teacher has ever had any difficulty in getting suitable display materials. The main trouble is that few training colleges in our country give the aid the importance it deserves.

The All-India Teachers' Conference on Audio-Visual Education held in July, 1956 suggested that teachers should observe the following three principles in encouraging the use of bulletin boards by pupils :

"(a) the bulletin board is a perpetuar magazine of the class or the school, designed to give the pupils information of direct concern to them and tap their curiosity and desire for knowledge.

No classroom is complete without an attractive bulletin board. (Courtesy of the United States Information Services)

(b) at any time a bulletin board should present an aesthetic unity, a harmony in the lay-out and illustration of various elements that go in its making ;

(c) the bulletin board should be entirely a result of the creative effort of pupils, may be under the general guidance of the teacher. It should be a work of the pupils, by the pupils, for the pupils."

The bulletin board is useful in a number of ways :

(i) It serves as a place for the display of photographs, newspaper and magazine clippings, illustrations, and small samples of pro-

ducts in connexion with specific lessons or topics of current interest.

(ii) It provides a suitable place for the display of all kinds of creative work of students.

(iii) It provides a suitable place for the posting of announcements, assignments, distinctions, etc.

(iv) It enables children to work as a group.

(v) It adds to the atmosphere of the classroom.

Proper Placing of the Bulletin Board

Like the chalkboard, the bulletin board should be fitted at a suitable well-lighted (by natural or artificial means) place in the classroom. This place should be planned when the school is built. In some institutions in India where bulletin boards are in existence, only one board is generally found near the entrance to serve the entire institution, and this board also is not fixed in a suitable place. The board should be placed at the eye level of the children.

Important points in Using the Bulletin Board

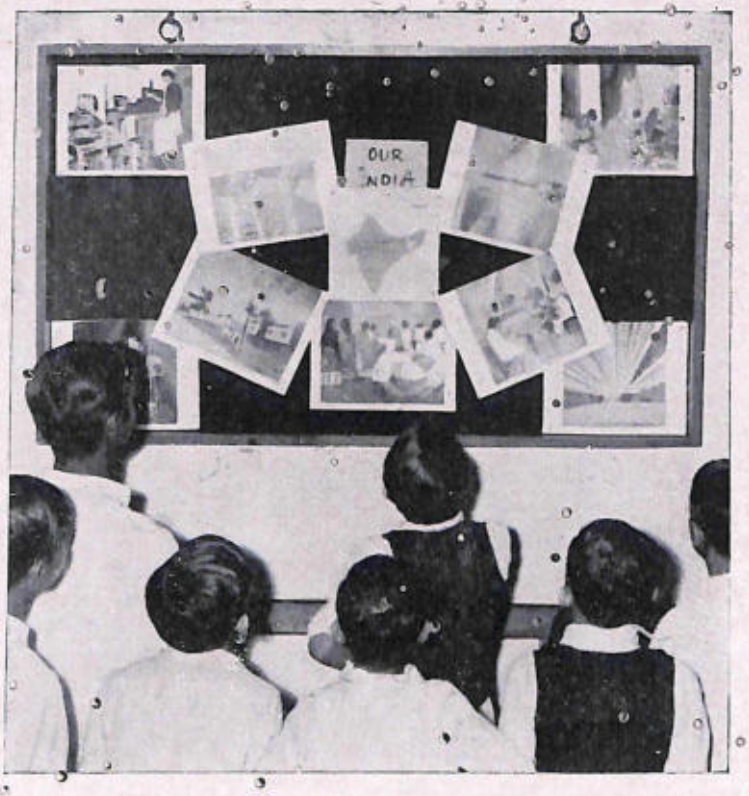
The following points should be remembered in using the bulletin board :

(i) Only appropriate material should be displayed.

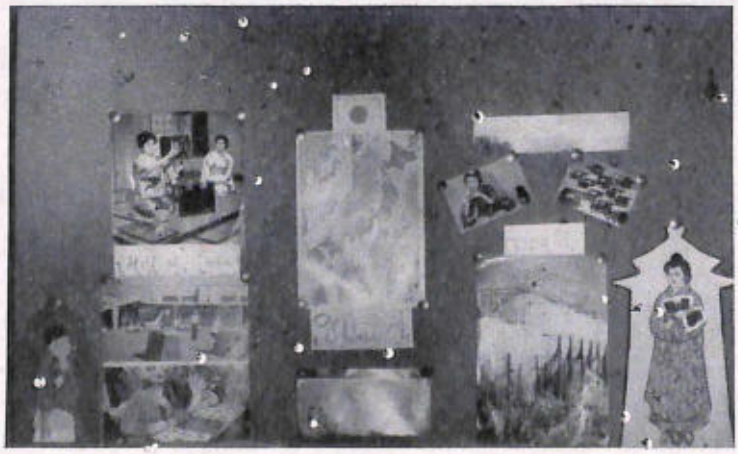
(ii) The material should be arranged in a neat and orderly manner.

(iii) There should be no crowding of display materials.

(iv) The material displayed should be large enough to be seen from a reasonable distance.



The School Bulletin Board, Surendranath Institution, Secondary Department, Calcutta



A Bulletin Board showing pictures and things of Japan
(Courtesy : P.V.T.D. College of Education for Women, Bombay)

(v) The material should be changed at not too long intervals.

(vi) Each display should have a suitable title.

(vii) Students should be given responsibility for collection and display of material in connexion with specific lessons.

How To Make a Bulletin Board

Bulletin boards are very easy to make. Make a frame of five by three and half feet (the size may be larger or smaller according to the size of the classroom) and cover it with either plywood or fibre board. Apply suitable paint on the board to make it attractive. Linoleum with its variety of colours and masonite board are also suitable materials for making bulletin boards.

CHAPTER 11

Pictures and Photographs

Pictures make learning meaningful

Pictures are invaluable aids to learning. They make the topic clearer and more interesting. Things which children have not experienced firsthand become meaningful to a large extent through pictures. A single picture of a thing can do more than half-an-hour's talk on it.

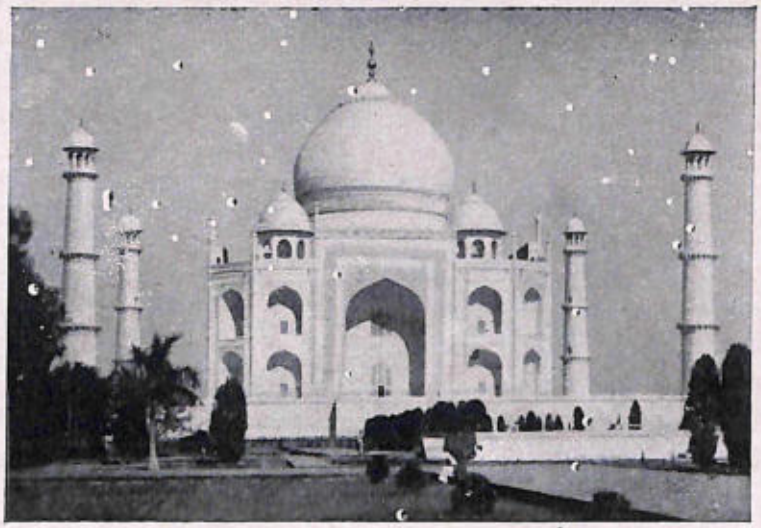
It is difficult to think of a learning situation in which pictures have no contribution to make. Even in subjects like arithmetic and mathematics pictures play their part. We show little children pictures of five birds or some other things to help them get at the meaning of the number 'five' in a real and interesting manner. A picture showing seven children and four mangoes raises the question, "How many mangoes do we need to give a mango to each child?" Common geometrical shapes—circle, square, triangle,

Only a real Polar bear could be a better learning aid. (A still from the author's film "Royal Edinburgh")

rectangle—are understood by children immediately when pictures of these are shown.

In the learning of English, Hindi, or any other language pictures help greatly in understanding the meanings of words and sentences.

Pictures are invaluable aids also in the study of health and hygiene. Children can learn a great deal more about cleanliness, care of the eyes and teeth, and good posture if they are helped by parents and teachers with appropriate pictures. Magazines today abound in pictures of foods of value. These can be displayed on the bulletin board or flannel board and children may be asked to choose some of the items for their breakfast or dinner giving reasons for their choice. Though models serve better than any other learning aid in understanding how the organs of the body function, pictures properly used will also prove helpful. Many teachers have used pictures of the organs of the human body to good advantage in the hygiene class by showing them part by part on the flannel board as discussions get on



The use of pictures adds interest to discussions. (Photos by the author)

A teacher making a lesson on the respiratory system meaningful with the help of picture items on the flannel board (Courtesy : P.V.T.D. College of Education for Women, Bombay)

Biography becomes a living study when presented through pictures. It would be hardly proper to talk to little children about great people without showing them some pictures or photographs of the people. Pictures, good or bad, bring realism at once, but care should be taken in selecting the best available.

Pictures are of great help in nature-study in the absence of real things. Indeed, we cannot think of little children learning about animals, birds, flowers, and insects without the help of either real things or pictures or models.

Biography becomes a living, vital study when presented through pictures. (A learning situation in South Point School, Calcutta)

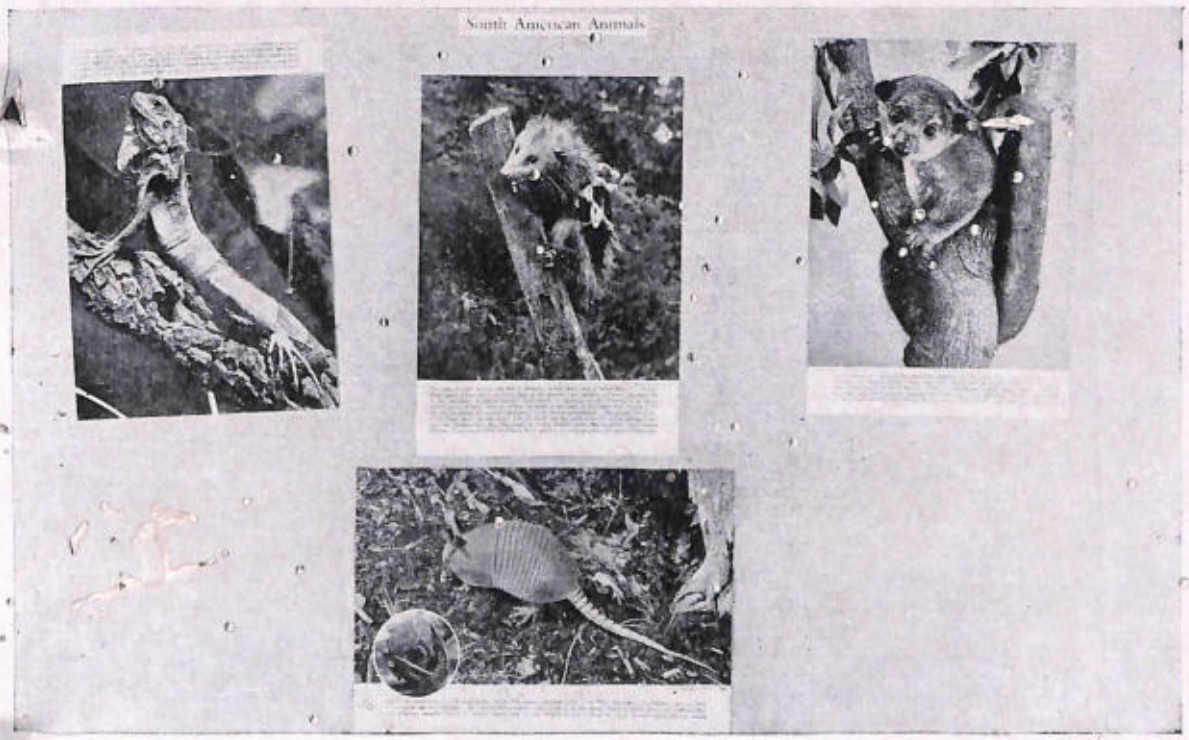
The abstract words and symbols of geography become meaningful when they are explained with the help of pictures and maps. Little children take great interest in the day-to-day events of the world when parents and teachers take the trouble of selecting pictures which appear in newspapers and magazines and of displaying them with suitable titles on a bulletin board. Very unfortunately papers and magazines containing valuable learning are generally disposed of as old useless things.

Pictures play an important part also in promoting mutual understanding and appreciation of cultural values and ways of life amongst the different peoples of the world. Scholars from the East and the West have long been studying each other's cultures, but there can be no real progress towards the understanding on which the peace of the world depends

unless children are given some idea of cultural differences in the most formative period of their lives. Pictures not only help to convey this knowledge in a meaningful manner, but, what is more important, they can be used to develop enlightened and sympathetic attitudes.

Pictures are Inexpensive Aids

In every home and school there should be a collection of pictures. An excellent collection can be made at practically no cost from magazines, calendars, tourist materials, publicity handouts, posters, etc. Picture sets available free on request from commercial firms and information services of



Many interesting pictures of animals, birds, fish, flowers, transport, etc., so useful in the Primary School, can be collected from cheap old magazines. These pictures of South American animals, some about 8″ × 10″ in size, were collected from an old magazine at a cost of 19 P. only.

foreign governments are particularly helpful. Some pictorial publications also can be an important source of picture materials for educational purposes. As some of these may not be very expensive and as they may have a large number of illustrations, the cost per picture will be just a few paise.

Proper Selection and Use of Pictures

The effectiveness of pictures depends upon their proper selection and use. Children often develop wrong ideas on account of their limited experience. These can be corrected through appropriate pictures. If a child living in Calcutta believes, for example, that coconuts grow near Calcutta only, pictures of villages in Kerala will help remove this wrong idea. Again, if some children by seeing a single picture of an igloo (a hut made of snow) or by seeing Robert Flaherty's famous film "Nanook of the North", a picture on the daily life of Eskimos of Canada's frozen North, form the idea that Eskimos live in igloos only, pictures of life in Arctic regions will at once convince them that the igloo is not the usual dwelling in these areas. It is true that Eskimos make igloos and take shelter in them, but they do so under unusual situations during winter months. The pictures from which children may form the wrong ideas above are not pictures showing usual things. The shots of the igloo which Flaherty took for his documentary did not show the usual home of Nanook and his family. Unusual pictures should, therefore, be supplemented by typical ones to tell the whole story. If typical pictures are not available, the unusual character of the pictures shown should be made clear.

In selecting a picture for the classroom as in selecting any learning materials, the first question to ask is: To what extent does it meet the pupils' need? It is no use showing pictures of things about which the class has not a clear knowledge. No teacher in Kerala or in Bengal would ordinarily

show pictures of coconut trees in classrooms. If the real thing can be shown, there is hardly any need for using a picture. It is certainly much better to take children to the zoo than show them pictures of animals. But opportunities for showing real things are extremely limited and so pictures should be used whenever possible.

As in the selection of all audio-visual aids, the pictures selected should be suitable for the average level of the children. Pictures for younger children should be bright and should have fewer details. Coloured pictures are attractive, but make sure that they are of natural colour. For in a learning situation, pictures or photographs are to help children see what things really look like.

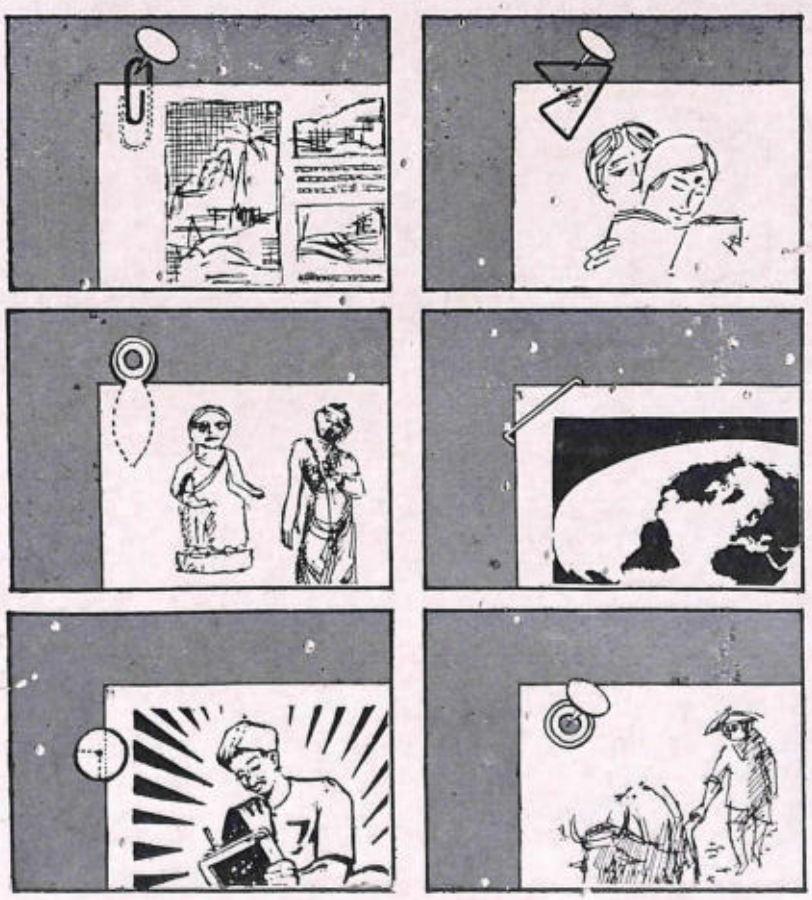
There is another important question in the selection of pictures. Does the picture give an idea of relative size? Children can form a wrong idea of the size of a thing unless there is something in the picture whose size is known to them well. A good photographer is always careful to include human figures or some other things to give a rough idea of the size of the thing he is photographing. The human hand which holds an insect gives the idea of the actual size of the creature. Adults may be able to form the idea of size through other means, but for little children this is perhaps the best way.

Pictures and photographs intended for classroom exhibition should be sufficiently large and clear to be seen by all children. Many useful photographs lose their value by being too small. If small-sized pictures are used, they should either be shown to children individually or projected on a screen with the help of an episcope, the apparatus for the projection of opaque material.

When pictures are to be shown to a class or a number of children, they should be properly placed. Some teachers hold them up in front

The human figures in the pictures help children form an idea of the size of the 'dhandouli' (basket for the storage of paddy) and the elephant. The picture of the 'dhandouli' was taken by Mr J. Ghosh of the Institute of Art in Industry and that of the elephant, by the author.

the group, but this is not a desirable thing. With the picture in hand, how can the teacher point out its features or make sure that all the children are seeing it well? The problem can be solved if the picture is placed on a stand or easel. The ideal thing, however for displaying pictures is the bulletin board with which all classrooms should be equipped. Some teachers display pictures on the bulletin board by driving thumbtacks or board pins through the pictures, but those who have proper respect for pictures avoid this practice



Correct ways of displaying pictures (Drawings by Mr D. Bakshi, Chief Artist, Dept of A. V. Education, NCERT, New Delhi).

by putting the thumbtacks through a hole punched in the mount and reinforced with gummed eyelets or by inserting the thumbtacks through a paper clip holding the mount.

Another important point to be remembered in the use of pictures is that too many pictures at a time should never be used. Teachers should

The teacher must help children to see the particular things in a picture he intends that they should see.
(A junior class in the Surendranath Institution, Calcutta)

also bear in mind that photographs and pictures do not always tell their own story. What the children see may be quite different from what the teacher intends that they should see. It should be remembered also that pictures do not always arouse interest in children at once. Their interest should be aroused by telling them beforehand what they should observe in the pictures. Teachers can help children make effective use of a picture by preparing a list of questions which can be answered by a careful investigation of the material.

Again, pictures have certain aspects which children should be taught to read. It has been pointed out earlier that in a good photograph there is always something of known dimensions from which an idea can be formed of the size of a thing. It is the duty of teachers to train children to make this comparison. Similarly, children should be trained to form an idea of distance from the sizes of familiar things in the picture. And children should be asked also to look out for things which suggest low or high temperature. Thinner dresses, electric fans in use (a thing in motion has certain characteristic signs which a motionless thing lacks and children should be able to find these out too), and open windows indicate warm weather while shawls or coats in dresses and chimneys in use in houses with windows closed generally suggest low temperature.

Pictures should be Mounted, Titled, and Filed

Any photograph or picture worth using should be mounted. This will prevent damage and facilitate filing and storage. Some institutions use white boards for mounting pictures. These are sturdy and available in many sizes, but they are expensive things and they get dirty after a few handlings. And it has also been found that the white colour yellows with age. The cover paper (used to cover magazines and pamphlets) available in different colours is a more suitable material. Care should be taken, however, to select light colours as pictures may not stand out well against dark backgrounds.

Mounting is quite a simple thing. One of the simplest ways of mounting is to apply flour paste on the back of the picture and then to place it on the mount using a piece of cloth as a smoother. In mounting pictures care should be taken to prevent them from curling when the paste dries. A simple way to avoid curling is to press mounted pictures under weights for some time. The mounting of pictures is a matter of importance and should

not be neglected in schools. When teachers give importance to pictures, children too give them importance and tend to learn more from them. The mounting of pictures is considered so important in Western countries that films and filmstrips have been made on the subject. One of these—WET MOUNTING PICTORIAL MATERIALS, 16 mm., 11 minutes, sound—is available from the Department of Audio-Visual Education of the National Council of Educational Research and Training. The filmstrip MOUNTING PICTURES (colour), available from the Communications Media Centre of the U.S.A.I.D. in Delhi, shows various methods of mounting pictures for a number of purposes.

Pictures in schools should be catalogued and kept in such a manner that those required by teachers in lessons can be easily found. There are various ways of storing pictures, but a simple way is to keep them alphabetically in deep pigeonhole cupboards.

Some good pictures for children are often soiled through frequent handling. Though protective coverings may not always be inexpensive, some special collections may be placed between two sheets of transparent plastic. The only trouble about this device is that the plastic surface may produce a glare.

A good picture speaks for itself, but the majority of pictures used in classrooms are much more effective when they have suitable captions. Pictures without captions are used to test learning or to promote critical thinking.

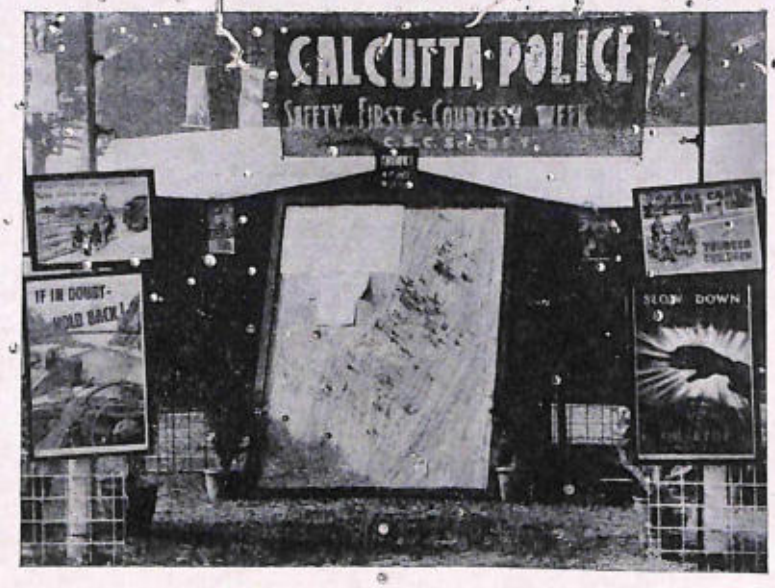
CHAPTER 12

Posters

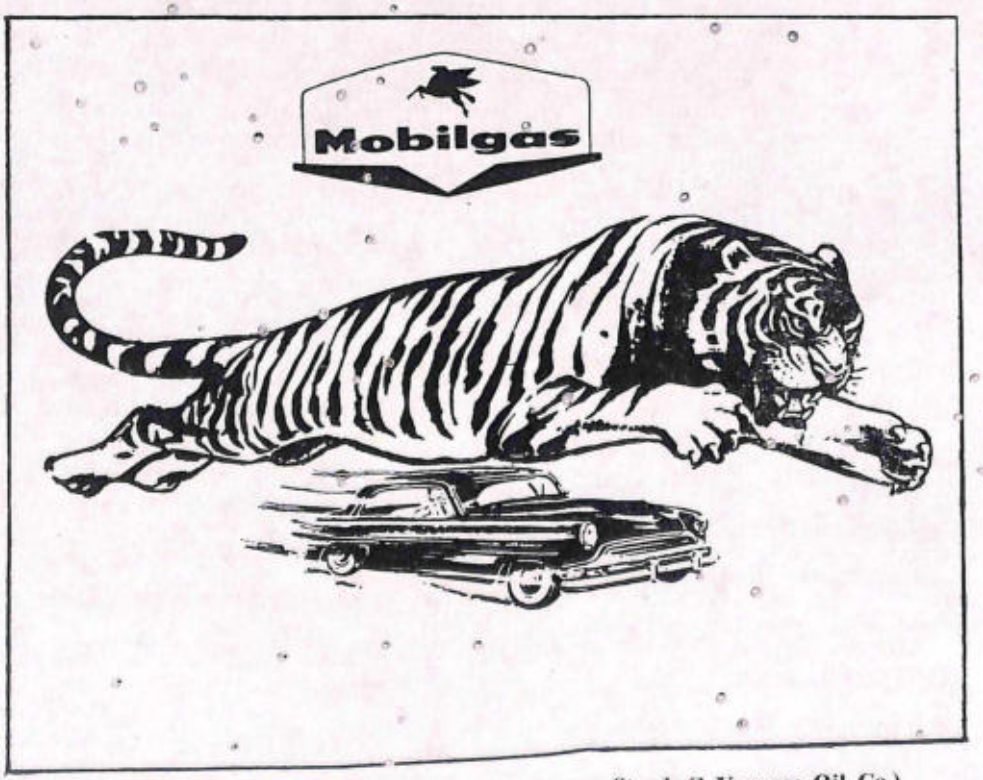
Posters are widely used by almost every department of the Government and by a majority of commercial firms for any campaign or publicity. It is difficult to find a spot on a main thoroughfare in cities like Calcutta, Bombay, Madras, or Delhi from where a poster cannot be seen.

Features of a Good Poster

A good poster presents a single idea and keeps it simple. Too many words should never be used on a poster. The illustration used can be anything, a picture, a cartoon, a drawing, but it should be such that it can be understood at sight. A poster must tell its story at a glance. Illustrations and captions should be large enough to be seen easily. The size of a poster should be at least twenty by thirty inches. Colour is helpful though not essential. A coloured poster is generally more attractive and appealing.



Posters are widely used every year by the Calcutta Police in their Safety First and Courtesy Week.



This poster tells its story at a glance.. (Courtesy : Standard Vacuum Oil Co.)

The Use of Posters in the Classroom

Although posters have a limited use in the classroom, they are of great help in providing general motivation. The attractive photo-posters available free on request from foreign embassies can make learning about different parts of the world easier and more interesting. Posters on health and hygiene available from various sources give children useful information in a meaningful manner about food, nutrition, and cleanliness.

A teacher with the help of a poster impresses on children the need for cleaning teeth with a 'dantan' (Courtesy : South Point School, Calcutta)

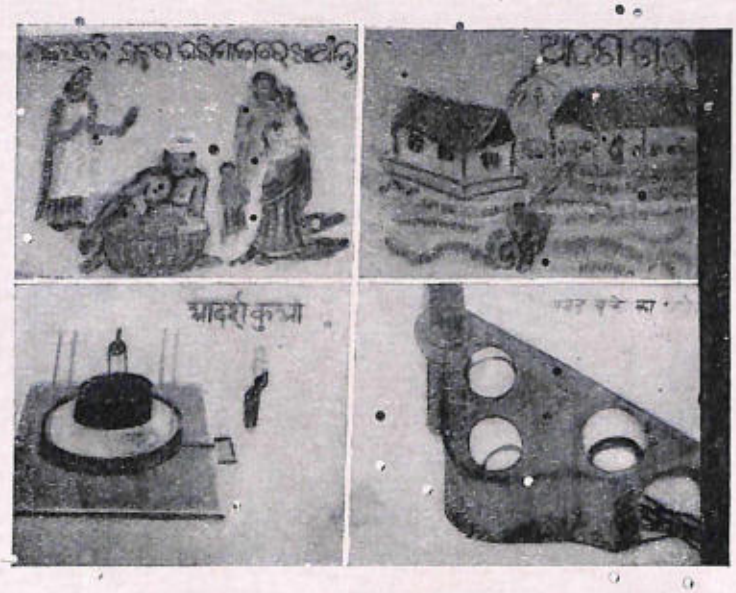
Posters can be of great help in encouraging good habits in children. 'Wash your hands well before meals', 'Clean your teeth properly', 'Sit correctly' are some of the useful topics for posters for children.

The Use of Posters in Villages

When well-planned and well-made, posters can communicate a lot of useful information to adults in villages in an interesting manner.

Posters can be easily made by social workers. They can be made even by those who cannot draw well. Only a few years ago at a Social Education

Organizers' Training Centre near Calcutta almost all the trainees without high artistic skill prepared excellent posters by following a few simple tips. The person who makes the poster must, of course, have the desire to succeed.



Without high artistic skill but with a desire to succeed the trainees of the Social Education Organizers' Training Centre at Belur Math made these excellent posters. (Courtesy of the S. E. O. T. C., Belur Math)

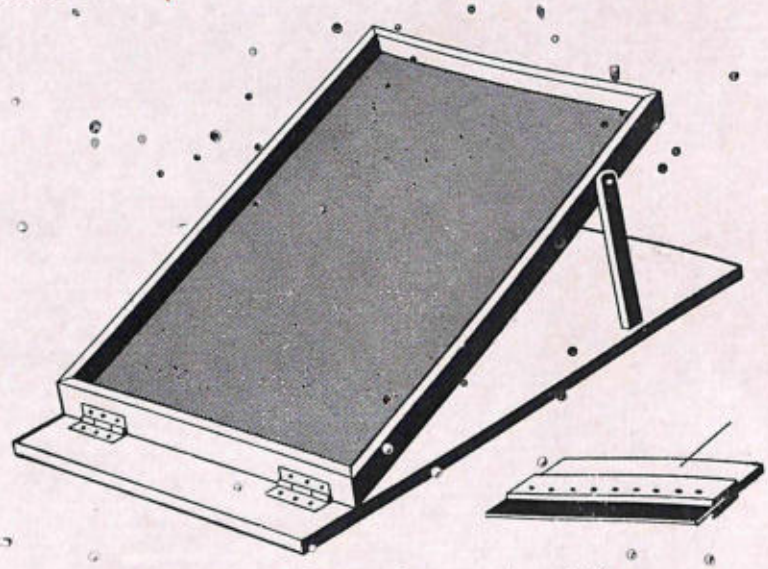
Silk-screen process of making Posters

Silk-screen process is a process for easy duplication of posters. Covers of magazines, invitation cards, and programmes can also be produced with the help of this technique. Silk-screen printing requires only simple equipment that can be made from inexpensive material. The frame can be made from ordinary teak wood. The squeegee with the help of which the paint is forced through the silk is just a piece of rubber fastened to a wooden handle. The silk for the screen and the stencil in which the design is cut can be purchased at a nominal cost.

The stencil in which the design to be printed has been cut is adhered to the silk stretched tightly on the printing frame and through the stencil inks

This poster is designed for use in villages to impress on women the need for proper utilization of leisure time. (Courtesy : Department of Audio-Visual Education, National Council of Educational Research and Training)

or paints are forced on to sheets of paper. The same silk can be used again after cleaning. Each colour in a poster is printed separately with the help of a separate stencil.



A typical silk-screen frame and squeegee

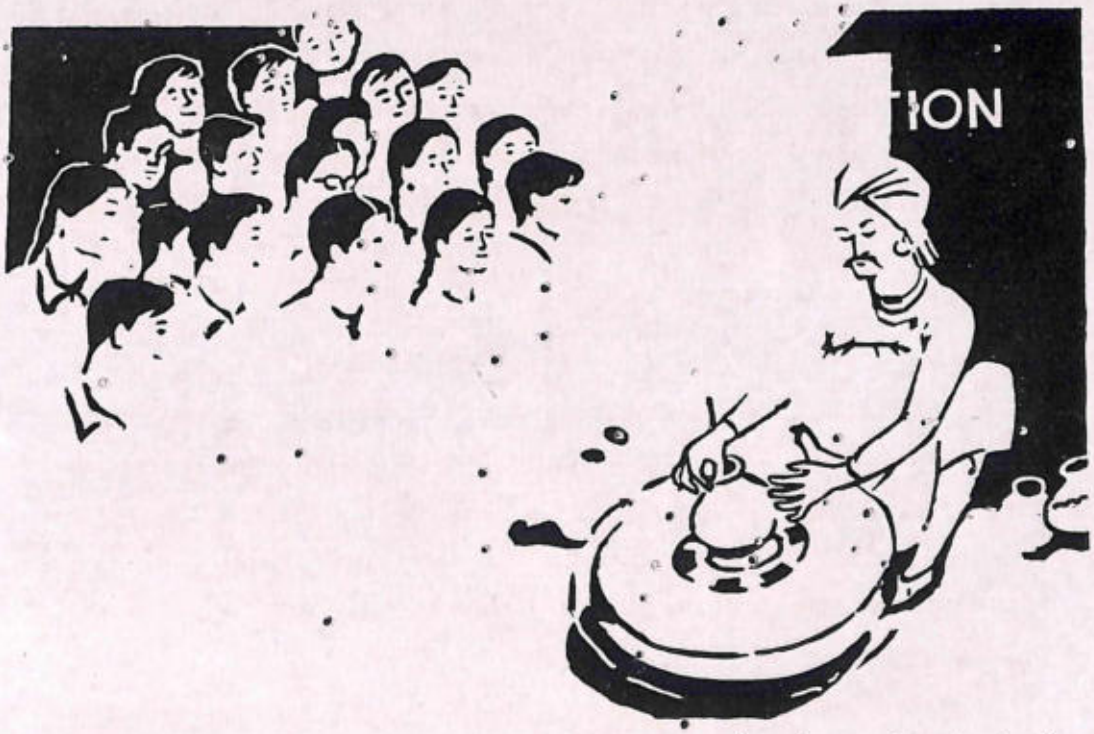
The following processes of silk-screen printing are in use in our country :

(i) the paper stencil process
(ii) the shellac-coated paper stencil process
(iii) the tusche method
(iv) The photographic method

The paper stencil process

The most simple of all the silk-screen techniques is the use of paper-cut stencils, but it is not recommended if large numbers of clean prints are required. The paper used should be thin but sturdy. Draftsman's tracing paper or light-weight bond paper may be used. The design can be traced from the original on to the sheet of paper to be used for the stencil. The paper is then placed on a hard surface such as plate glass over which a greasy substance (e.g., castor oil) has been applied and then cut with a sharp knife. The printing frame is then lowered over the stencil and ink is

applied on the silk with the squeegee in the normal way. This application of ink helps to fix the stencil under the silk. After this the frame along with the stencil is lifted from the glass. The frame becomes ready for printing as soon as the unwanted portions of the stencil have been removed from the silk.



An example of a print from a shellac-coated paper stencil (Courtesy : Department of Audio-Visual Education, National Council of Educational Research and Training)

The shellac-coated paper stencil process

The shellac-coated paper stencil can be prepared by the following method. Take two sheets of draftsman's tracing paper and stick them together by means of wax. This paper is then given two coats of shellac and allowed to dry. A few drops of castor oil added to the shellac before coating will make cutting easier. To cut the stencil, first take a piece of this shellac-coated paper two or three inches bigger on all sides than the master copy. The piece is then fastened over the master copy with the

shellac-coated side up by means of adhesive tapes on four corners. Then take a sharp knife and cut the stencil very carefully so that the backing paper remains intact. After the cutting is finished, remove from the backing paper all pieces of shellac-coated paper which represent the areas that are to be printed. Make sure that centres of letters or other isolated islands of the design are not disturbed. Now place the stencil under the silk frame in proper position and after lowering the frame run a warm iron over the screen. This will heat the shellac and cause the stencil to adhere to the silk. A small piece of cloth wet with a few drops of alcohol may be used in place of the iron. When the required portions of the stencil have been properly adhered to the silk, remove the backing paper gently. The frame is now ready for printing.

The tusche method (tusche—a greasy lithographic ink)

The tusche method is generally employed for pictures in which shading is required. First, the picture to be printed is traced on the screen and then liquid tusche (or crayon tusche or lithographic pencil) is applied on all parts of the design to be printed. After the tusche has dried, a coat of glue is applied over the entire screen. A second coat of glue is applied when the first coat is dry.

After the second coat has thoroughly dried, a cloth wet with turpentine is placed on the under side of the screen and the outer side directly opposite the wet cloth is rubbed with a dry cloth. This operation removes the tusche and the glue over it opening the screen wherever the tusche was applied. It should be noted that the tusche is only soluble in oil after it is dry.

The photographic method

Photographic stencils are used for fine commercial work. This process which needs expensive equipment is not recommended now for educational institutions in our country.

Those who wish to know more about the techniques of silk-screen printing should read the following publication :

SCREEN PRINTING FOR DESIGN DUPLICATION
Lipi Designers, 1C/17, Rohtak Road, New Delhi-5.

Charts

CHAPTER 13

A chart can present any information other than geographical in an easy-to-understand way. It is defined as "a visual symbol summarizing or comparing or contrasting or performing other helpful services in explaining subject-matter".[1]

Important points in Making Charts

Like posters, little skill is necessary to make charts. In making charts the following points, however, should be remembered :

(i) Charts like any other pictorial material should be sufficiently large to be seen easily. The producer of charts should be clear about the conditions under which they will be seen. What is the maximum distance from which the chart will be looked at? Is it to be studied by all the children of the class all looking at it at the same time? Or is it to be seen by a small group?

[1] E. Dale—Audio-Visual Methods in Teaching

(ii) Charts can tell a story in some detail but it should not contain too many words.

(iii) They should be attractive to look at.

(iv) They should be strong enough to stand rough use.

(v) As the main point about a chart is that it should be clearly understood by all those who are intended to study it, it should not contain any picture which is not related at all to their experience.

Various Types of Charts

Charts may be of various types, each meeting a specific need. The important ones are given below :

Table chart

This type of chart presents information in ordinary sequence. Patients' charts in hospitals showing diet and medicines given at certain points of time and historical charts giving lists of rulers or battles in chronological order with some information as well are typical examples.

Tree chart

This is an effective way of showing the development or growth of a thing. The origin is a single line or other representation of the trunk, and the various developments are shown as branches. Botanical or biological charts tracing the origin of many contemporary forms of plant or animal from a single source are good examples.

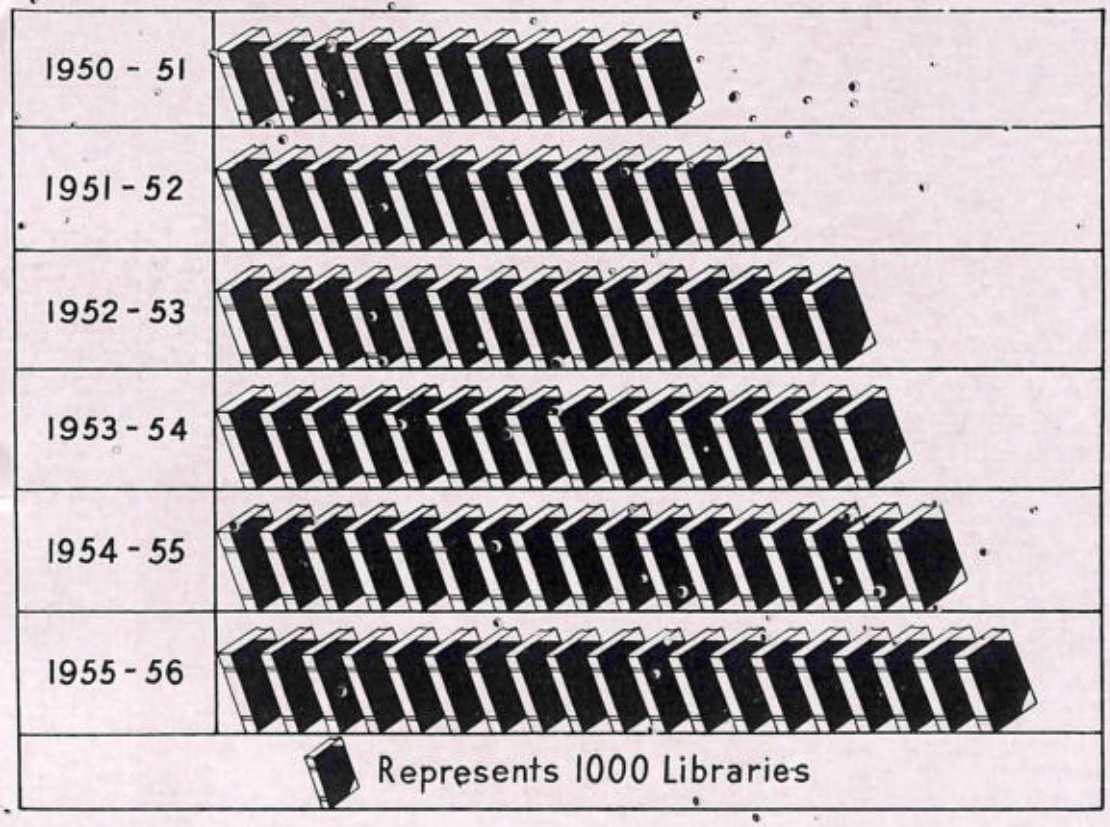
Flow chart

A flow chart shows by lines, rectangles, etc. the organization or structure of a government or a big institution.

Isotype chart (Isotype-International system of typographic picture education)

This is a pictorial representation of statistics. The pictographic technique for portraying statistical data was developed mainly by Dr Otto Neurath though he was not the first person to use the pictorial type of chart. In

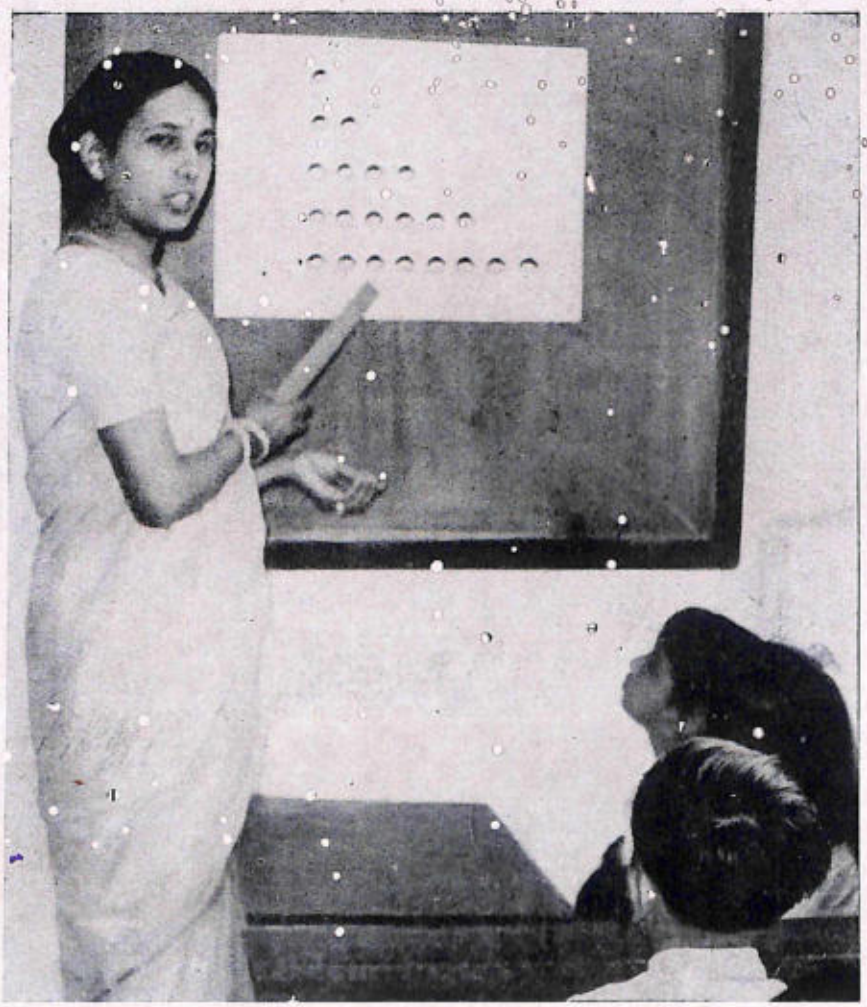
1914 Williard C. Brinton in his "Graphic Method for Presenting Facts" showed a number of pictorial charts though he did not pursue the technique beyond his initial exposition.



An isotype chart showing the progress of libraries in India during the period 1950—1956

With the help of this type of chart the meaning of statistics can be made clear to people or children who are not able to understand graphs.

The pictorial chart should be made as simple as possible and the symbols should be self-explanatory. If the chart is concerned with railways, an outline or a silhouette of a railway engine should be shown. If it is about population, the symbol should be an outline or a silhouette of a human figure. It should be remembered, however, that only approximate comparisons can be presented by this method and that pictorial charts are



A pictorial chart in use in the South Point School, Calcutta

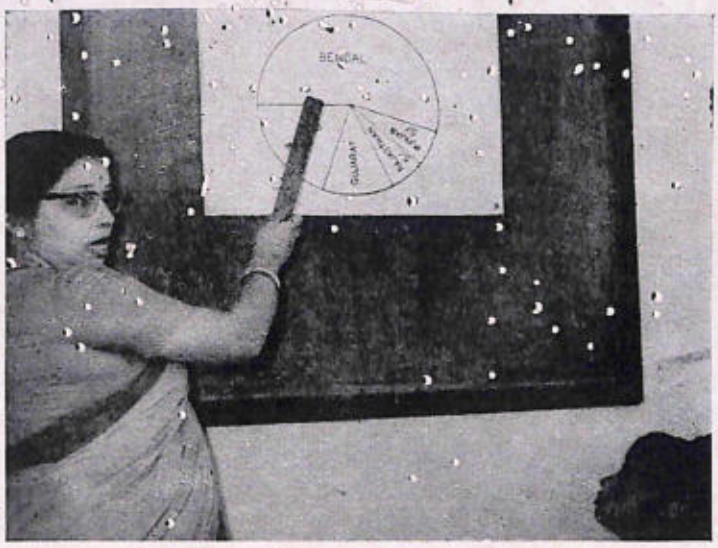
not suitable at all for showing fractional percentages of a whole for which pie charts are used.

Pie chart

In a pie chart a pie or circle is divided into segments, each segment representing a percentage of the whole. When percentages are very small fractions, the actual percentage is indicated in each slice.

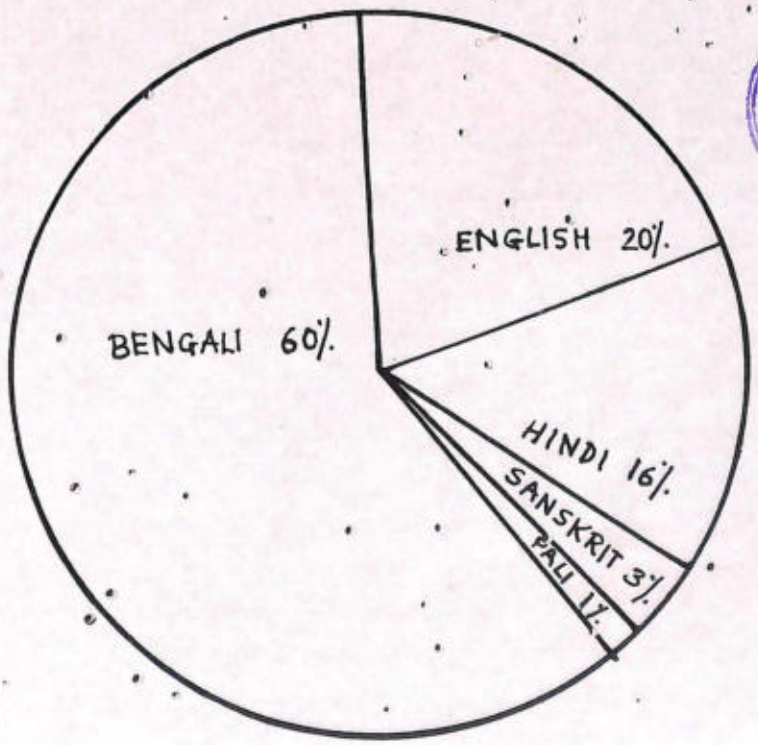
The Use of Charts with Other Aids

When we teach with the help of charts, we follow the same principle that applies to any audio-visual aid. A chart becomes a more effective tool



A teacher using a pie chart in the South Point School, Calcutta

for learning when it is combined with other aids. A chart used with a model can often make the information clearer. Charts can be used to emphasize certain points presented in a film or a filmstrip. And there are occasions when posters and charts go hand in hand.



A pie chart showing percentages of books in different languages in a school library in Calcutta

CHAPTER 14

Diagrams

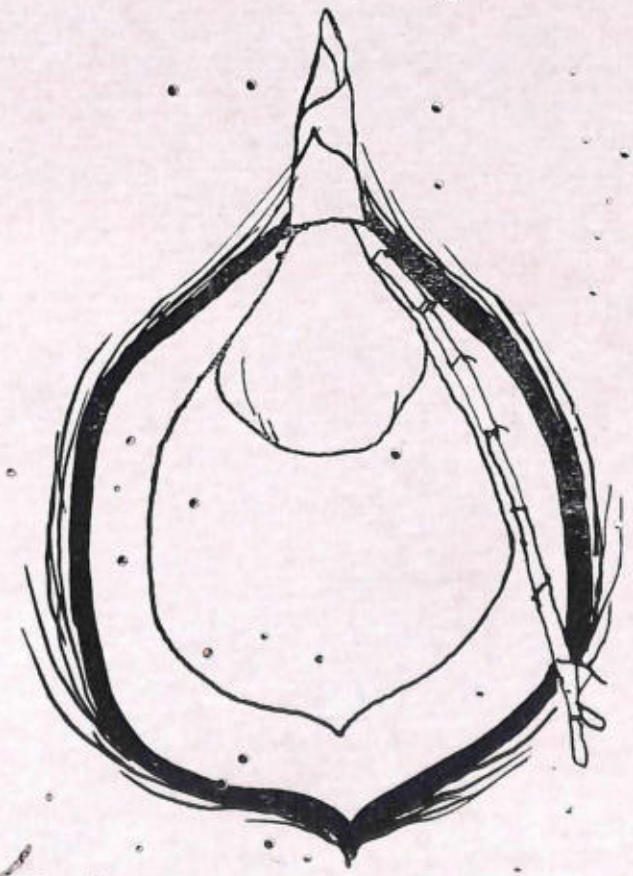
A diagram is a drawing mainly with the help of lines and geometrical forms for the purpose of explaining something. There are no pictures in diagrams.

Diagrams are helpful in the learning of almost all subjects. They are indispensable in geometry. They play an important part in science and engineering to show causal relations and structures of objects and apparatus. A plan of a house and the drawing that explains the hydrogen atom are diagrams. In the teaching of botany we often take the help of diagrams to show cross-sections of fruit, flowers, and plants.

Learning from Diagrams

Before a diagram is drawn on the chalkboard or presented to make a learning situation meaningful the teacher should make sure first that his students have sufficient background knowledge to understand the drawing

As diagrams are abstractions, whenever possible they should be used along with the original thing. In nature-study, for example, if you are showing the diagram of a flower, it is better to show the class the original flower at the same time. When the real object cannot be brought into the classroom, the help of other audio-visual aids, such as pictures, filmstrips, films should be taken to give a complete and accurate conception of the diagram. Another important point in using a diagram is that all its items should not be shown all at once. The main outlines should be drawn first and the additional items should appear as the explanation gets on. This means that diagrams drawn in front of the class are more beneficial than those prepared before the lesson. A diagram of a complicated mechanism is generally prepared in advance.



A diagram of the inside of a coconut to show the growth of roots when the shoot just emerges out of the husk

Important points in Drawing a Diagram

The following points should be remembered in drawing a diagram :

(i) The diagram should be correctly and neatly drawn to scale.

(ii) Tools like a ruler and a compass should be used where necessary as it is difficult to draw straight lines and circles freehand.

(iii) The diagram should be as simple as possible, and so all non-essential things should be eliminated.

(iv) Any important thing should be emphasized with colour, but too many colours should not be used. The objective of a diagram is to clarify meaning, not to be just a pretty picture.

(v) Like pictures and charts, diagrams should be sufficiently large so that they can be seen by every student in the class.

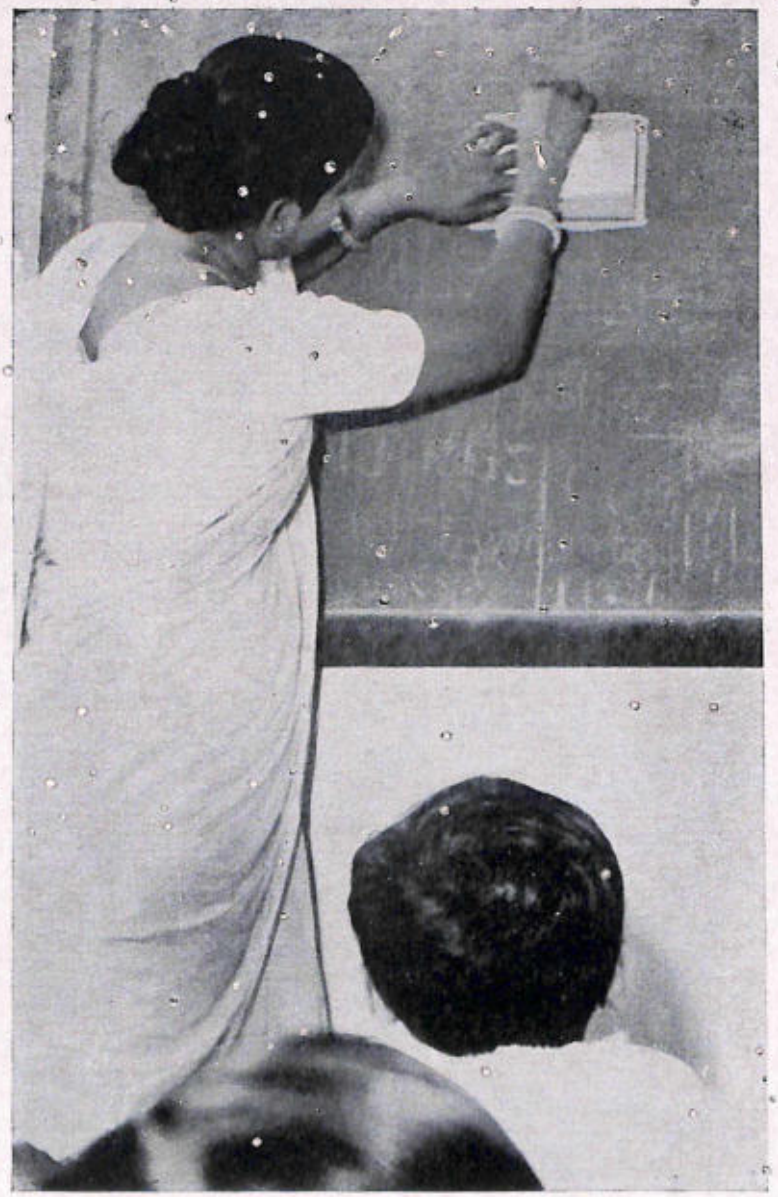
CHAPTER 15

Maps and Globes

One of the most widely used classroom aids is the map; only with its aid can geography be properly learnt. It is probably true to say that ninety-nine per cent of geography can be represented on maps. With the help of a map we know exactly where a place is, how far away it is, and what lies between. Though the map is one of the most commonly used aids in the classroom it is unfortunately the one least understood. The reason for this is that in most cases children are not helped to understand the realities behind the maps.

A Simple Method of Introducing Children to the Study of Maps

There is a simple and very helpful method of introducing children to the study of maps. Let the teacher place a simple object such as a book or a chalkboard eraser on the chalkboard and draw around it. When the book or the eraser is removed, a drawing is seen which is not a



Helping children understand a map (Courtesy : South Point School, Calcutta)

picture. It is a plan or map. Children should be asked to draw many such plans using a variety of available objects. The next step will be to draw a plan or map of the classroom, but it is too large to be drawn full-size. So the element of reduced dimensions will naturally arise. It is important

that the map of the classroom should be drawn for some purpose. The map of the classroom must not be merely a map of the room, but a map to show something about the room. It may conveniently be 'A map of the classroom where I sit'.

The test of the map is not whether it looks nice, but whether it fulfils the purpose for which it is drawn. Neatness is good, but mere neatness is not enough. Neat and correct maps are the best. Neat maps that are wrong are worse than untidy wrong maps, because more time has been wasted on unimportant or non-essential aspects.

Stages in Map-Drawing

There will naturally be some mistakes in the first map; so the map is to be drawn again. It is desirable that the children should not feel that they are doing the same work. This can be avoided by giving a new title to the same map, eg., 'How I go to my seat'.

There should be no attempt at first to draw the maps accurately to scale. Before maps can be drawn in any way quantitatively accurate the idea of scale must be familiar. The familiarity is obtained gradually through lessons in map-drawing.

In the next step, the area mapped is increased, but the size of the paper remains the same. Things outside the classroom, e.g., the playground, the neighbouring streets are now drawn. The idea of scale becomes more prominent, and the children by thinking through a wall begin to acquire the ability to imagine the rest of the world.

Thereafter, the area mapped may be gradually extended. In a school at Delhi, for example, maps may be drawn to show "How we go to the Rashtrapati Bhawan', 'How we go to the Red Fort'.

Later, when the area is further extended, the children are introduced to areas which they do not know. This is another stride forward in the

work. They begin to learn something new with the help of the map. The new area should be shown to the children in relation to the things they know to be real.

Errors in Interpreting Maps

Very often in our schools geography which is learnt with the help of maps is not real geography. Children often use such phrases as 'the top of India', 'the bottom of Africa', and these clearly show that only the maps are thought of and not the realities behind them. Though these errors no doubt arise from the practice of hanging maps on walls, every effort should be made to see that children do not use these unfortunate phrases.

The Use of Various Types of Maps

Although all good secondary schools generally have various types of maps too much attention is paid to physical-political ones and too little use is made of others. It is important no doubt to know the boundaries of a country or of administrative areas within it, and mountains, rivers, and deserts there, but the maps which show the density of its population, its climate, its soil, its altitude, its vegetation, its industries are also to be studied side by side.

There is need also for the use of three-dimensional relief maps for the learning of topographical concepts. Light but sturdy relief maps in plastic are now available at low cost. These maps can be made by students under the guidance of teachers by using such materials as wood, clay, or plaster. It should, however, be clearly pointed out to children that the elevations shown in relief maps are by no means correct. They are exaggerated in order to make them easily perceptible. Some geographers are against the use of these incorrect maps, but they are so realistic that we cannot do without them. No flat map, however three-dimensional it may appear as a result of modern photographic techniques, can take the place of a real three-dimensional relief map.

A relief map of the world (Courtesy : Aero Service Corporation, Philadelphia, U.S.A.)

Some good primary schools make use of pictorial maps which are stimulating as well as informative. Some geographers, however, have frowned on these maps though many do not share their apprehensions. They have two important objections. A picture map is not a true thing whereas a map states things correctly. The use of picture maps as an introduction to map reading makes it more difficult to understand real maps.

The great usefulness of the map which can be sketched on the board by the teacher is not always realized in Indian schools. The published map is no doubt valuable, but it has so much detail that it is difficult to read and understand. The outline map seems more useful than the published map. In the outline map, by the omission of all that is not required, proper emphasis can be secured for the topic under discussion. If small outline

A pictorial map of India (Courtesy : the Tourist Office, Government of India)

maps to be filled in by children are required, they can be obtained with the help of a duplicator or by asking children to make a pattern of the country with a cardboard and draw around it.

Selection and Care of Maps

Maps which are in use in many of our schools today are either of poor quality or in a neglected condition. In some schools they are found on the floor. This is indeed most disappointing. In the general care and selection of maps, attention to the following points is helpful :

(i) Maps should be of matt surface. The glossy surface of some wall maps may prevent children in some parts of the classroom from seeing them clearly.

(ii) Maps should not be too detailed. The names and symbols used in maps should generally be within the grasp of students.

(iii) The scale markings in maps should be clear and dependable.

(iv) Maps should be sufficiently large so that they can be seen clearly from the back of the class.

(v) Though colour can help clarify so many things in maps, maps with too many colours should be avoided.

(vi) Maps should be strong enough to stand daily use in classrooms.

Maps should be kept in dust-proof cases. And there should be frequent checking with a view to attending to minor repairs in time.

The Globe—an indispensable aid

In our age in which people are becoming more and more world-minded on account of air travel, the globe is an indispensable visual aid. For some purposes the globe is superior to the flat map. With the help of the globe we can see the physical unity of the world, the relation of one part to all the rest, and the direction of one part of the world from another. Latitude and longitude and changes in time and seasons are more easily learnt with the help of the globe.

The globe is an aid even for little children in infant schools. Children very often read or hear about people or events in distant lands. Mihir Sen the other day successfully swam the formidable Straits of Gibraltar. Where is this strait? How does it separate the continents of Africa and Europe? Shastriji passed away at Tashkent. Manju's uncle has sent this picture from Edinburgh. Where are these places? Globes can answer these questions more meaningfully than maps.

The Relief Globe

Some geographers, as stated earlier, are against showing the highlands in relief on a globe or a map as it is impossible to show elevations correctly on these. Even if the height of Mount Everest is to be shown correctly on a globe eighteen inches in diameter, it would be less than one-hundredth of an inch. "The globe is indeed a great deal smoother than the proverbial orange, and a totally wrong impression is given if there is any roughness at all on the surface".[1]

Though this argument is no doubt true yet it must be admitted that students can form a more clear conception of the world when a globe which uses relief and a natural colour system is shown to them.

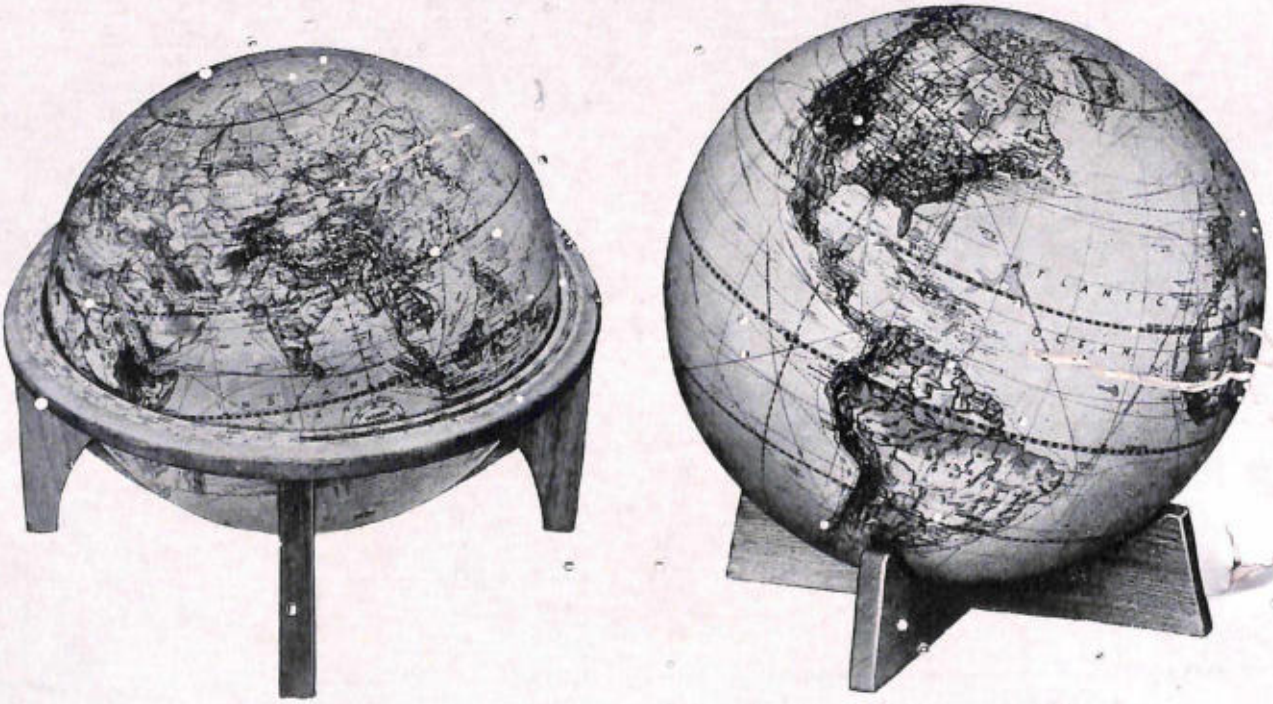
Proper Type and Size of the Globe

Although a globe is found in most of our schools today, it is often neither of the desirable type nor of proper size. And it is not used as frequently as it should be. The globe meant for use in a class should not be less than sixteen inches in diameter, though it must be admitted that even a 16" globe is not large enough for an entire class to see. As larger globes are not generally available in shops, students in some schools under the guidance of teachers make large globes of their own. The making of globes is enjoyed by children. A large globe is quite easy to make and it can be made inexpensively. First, a fairly large size ball is made with straw and gunny or through some other device. This ball is then plastered with layers

[1] James Fairgrieve—Geography in School

A relief globe (Courtesy : Aero Service Corporation, Philadelphia, U.S.A.)

A. slate-surfaced globe (Courtesy of George Philip & Son and Orient Longmans Private Ltd., Calcutta)



Globes in cradle mountings (Courtesy : Weber Costello Co., Chicago, U.S.3.)

of newspaper wet with flour paste. When a sufficiently large globular shape is secured, sufficient papier-mache is applied on it to make it smooth. It is then dried, painted, and drawn upon.

Papier-mache can be made by anyone inexpensively. Fill a pot with small pieces of newspaper, cover the pieces with warm water, and let them soak overnight. Squeeze out the excess water from the soaked pieces by straining them through a sieve or a stocking. Then add flour paste (roughly a tablespoon of flour for a sheet of newspaper used) to the pieces and knead until the mixture becomes a sticky lump.

There are three types of globes for school use: political globes, physical-political globes, and slate-surfaced globes. A political globe with a minimum of details is used in primary classes. In senior classes we use physical-political globes which show elevations through relief or colour. A slate-surfaced globe is useful in all classes because it can be drawn upon according to the specific need.

Globes are usually mounted on a pedestal or placed in a cradle but globes suspended from the ceiling have the maximum advantages. If this type of globe is used, children's own country should be on the top.

The Use of Maps and Globes with other Materials

Maps and globes become more effective tools for learning when they are combined with other audio-visual aids and materials. Filmstrips, slides, stereographs, and still pictures make map study more interesting and meaningful. Stamps and coins of different countries and samples of rocks and minerals can also help the study of maps, but nothing helps so much as the film. Give a chance to your students to view the U.N.O. film on the Mekong after they have studied the river with the help of maps, and you will understand the truth.

CHAPTER 16

Models and Mock-ups

A model is a three-dimensional recognizable imitation of an object. It may be of the same size or larger or smaller than the thing it represents. It can be handled, operated, and seen from different angles, and so it is generally more interesting and instructive than a picture or a chart which is a two-dimensional representation.

Uses of Models

Models are used in a variety of learning situations. It has been pointed out earlier that although direct experience is the basis of all effective learning, the world of learning cannot be based only on the direct sensory level. Certain real things may be too large or too small for study. Again, there are things which may be readily available and sufficiently large for study but from whose outward appearances we cannot understand anything. Certain real things are things of the past or things of the future or things far away from us. And there

are functions and processes in real-life material that cannot be perceived directly. In such situations we "take hold of reality and rearrange it, reshape it, edit it, emphasize certain things, and abridge others".[1]

Steel Projects at Durgapur, Rourkela, and Bhilai extending over several square miles can be easily and conveniently studied in a room with the help of miniature models. Similarly, things which are too small for study—an atom, a molecule, a tiny insect, a small flower—are made meaningful through scaled-up models.

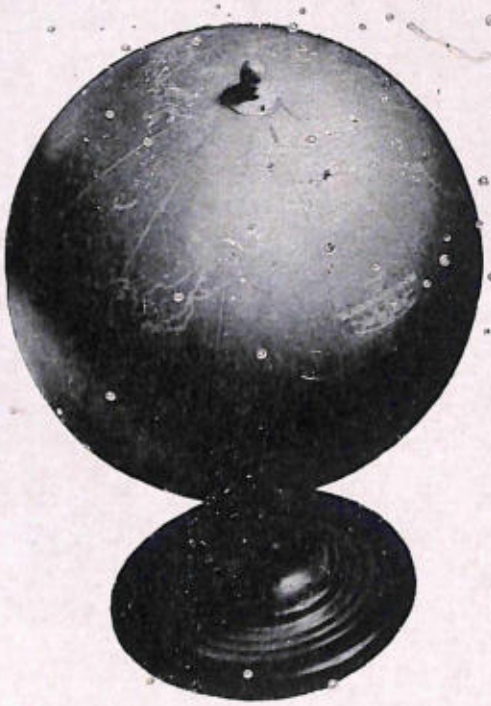
The organs of the human body such as eyes, ears, nose can be studied through models showing the hidden portions. The working of certain mechanical devices is made meaningful through models showing their insides.

Models are used to bring to life matters involving the past. We may read pages about the condition of Delhi hundred years ago, but the past days do not come to life till we use models or at least two-dimensional visual aids showing different areas of the city in those days. Epics of the past such as the Ramayana and the Mahabharata become enjoyable and real when they are presented through models.

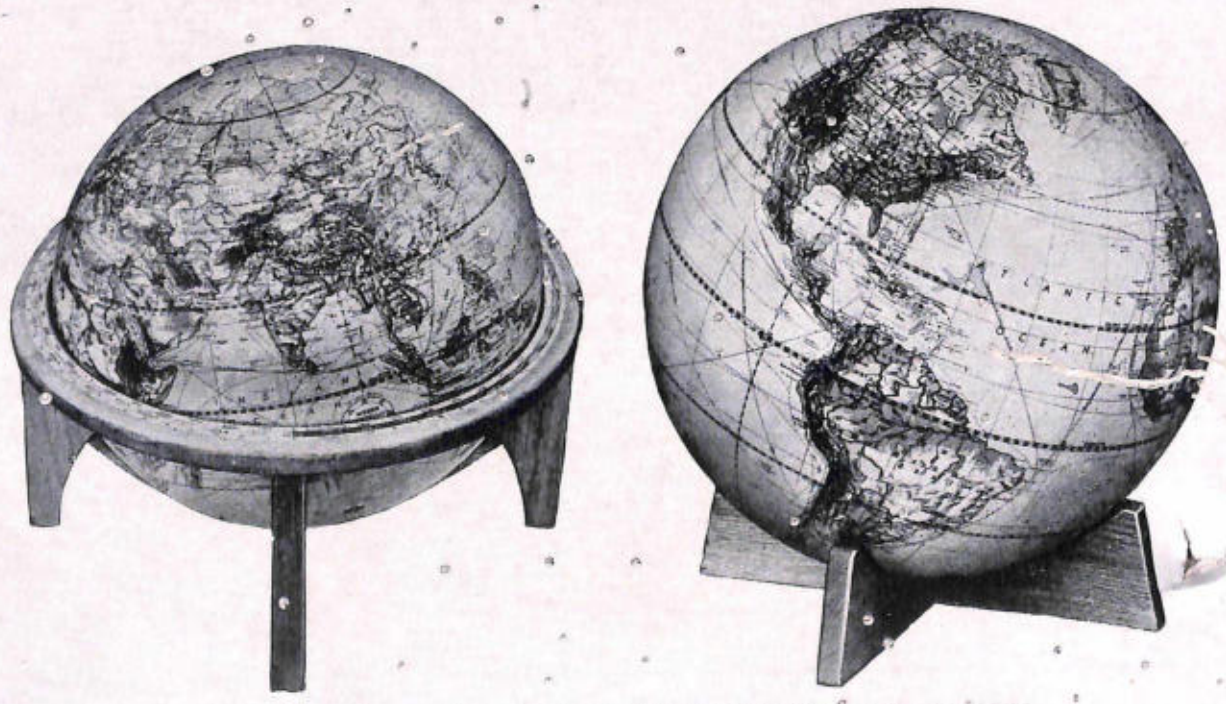
In planning or presenting matters concerning the future the need for models is always felt. Models of many important projects and buildings of our country were prepared and studied long before their construction was undertaken.

Like films and pictures models help us form ideas of things which may be far away and not easily accessible. Geography lessons become meaningful and interesting when miniature models representing things like coconut, rice, wheat, jute, cotton are placed on an outline map

[1] Edgar Dale—Audio-Visual Methods in Teaching



A slate-surfaced globe (Courtesy of George Philip & Son and Orient Longmans Private Ltd., Calcutta)



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[1] Edgar Dale—Audio-Visual Methods in Teaching

to show where they are grown. Imaginative teachers see that miniature models are used in this manner in many other learning situations.

This beautiful model on the Mahabharata shows the testing of the wisdom of Yudhistir by Dharmaraj in the guise of Yakshya. (Courtesy : National Cultural Association, Calcutta)

Many teachers of mathematics have stressed the value of models in the understanding of abstract constructions. Models are also used to good advantage in demonstrating situations which are dangerous to experience

This interesting model on the Mahabharata shows the death of Krishna from an arrow shot accidentally by a fowler when he was sitting under a tree. (Courtesy: National Cultural Association, Calcutta)

directly. Many police departments now take the help of models to teach traffic safety to school children. In some schools in the U.S.A. table-model safety kits are used to help children understand safety rules for pedestrian and bicycle traffic while others have even simulated streets on playgrounds

to teach traffic safety. It is hoped in course of time some of our good schools will use such learning devices to teach traffic safety not only to children but also to adults living around them.

Types of Models

Models vary greatly in form depending upon the purpose they serve. They can, however, be classified under four main types :

(i) Scale Models

In some learning situations we need correct representation of things through exactness of scale. We have small-scale models of Damodar Valley and other projects for use in schools. In the learning of hygiene exact-scale models of the organs of the human body are often used.

(ii) Simplified Models

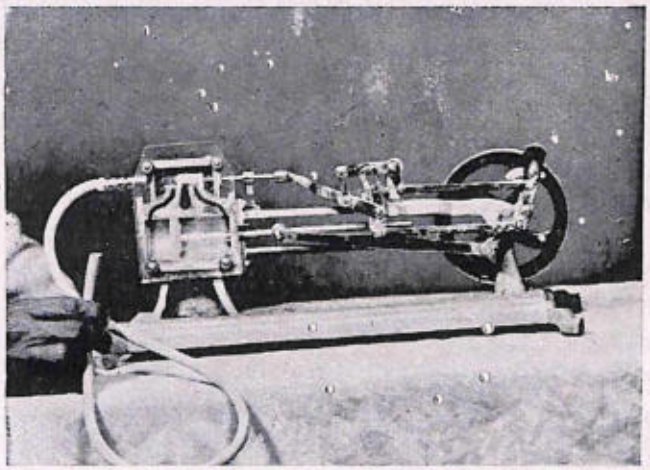
There are learning situations in which models which show roughly the external form of an object serve the purpose. The animals, birds, fish, rivers, hills which children of primary schools make out of clay, sand, or straw have great educational value although they are not made to exact scale. The term 'simplified' is applied to these models because they show roughly the external features.

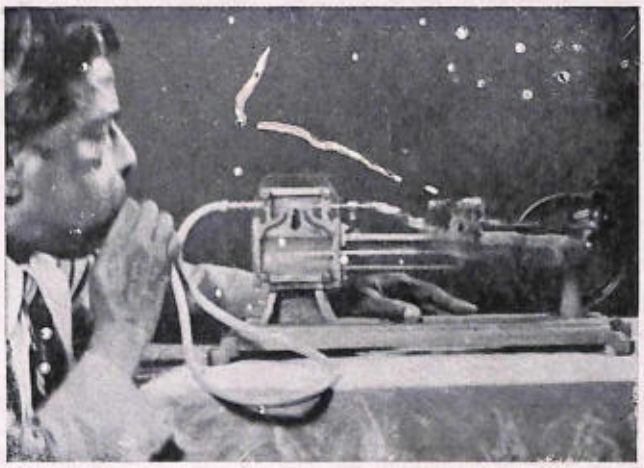
(iii) Cutaway or Cross-sectional Models

Simplified models are all right in so far as external appearances are concerned, but there are many situations particularly in the study of hygiene and technical subjects where it is necessary to see the interior of an organ or a machine to understand how it works. In such cases we use cutaway or cross-sectional models.

(iv) Working Models :

In some lessons working models which show in a simple way how things function or operate are very helpful. In many cases they are used in place of real articles because they are easier to understand. A working model of





These working models show the operation of steam engines. (Courtesy : Dept of Extension Services, Thiagarajar College of Preceptors, Madurai)

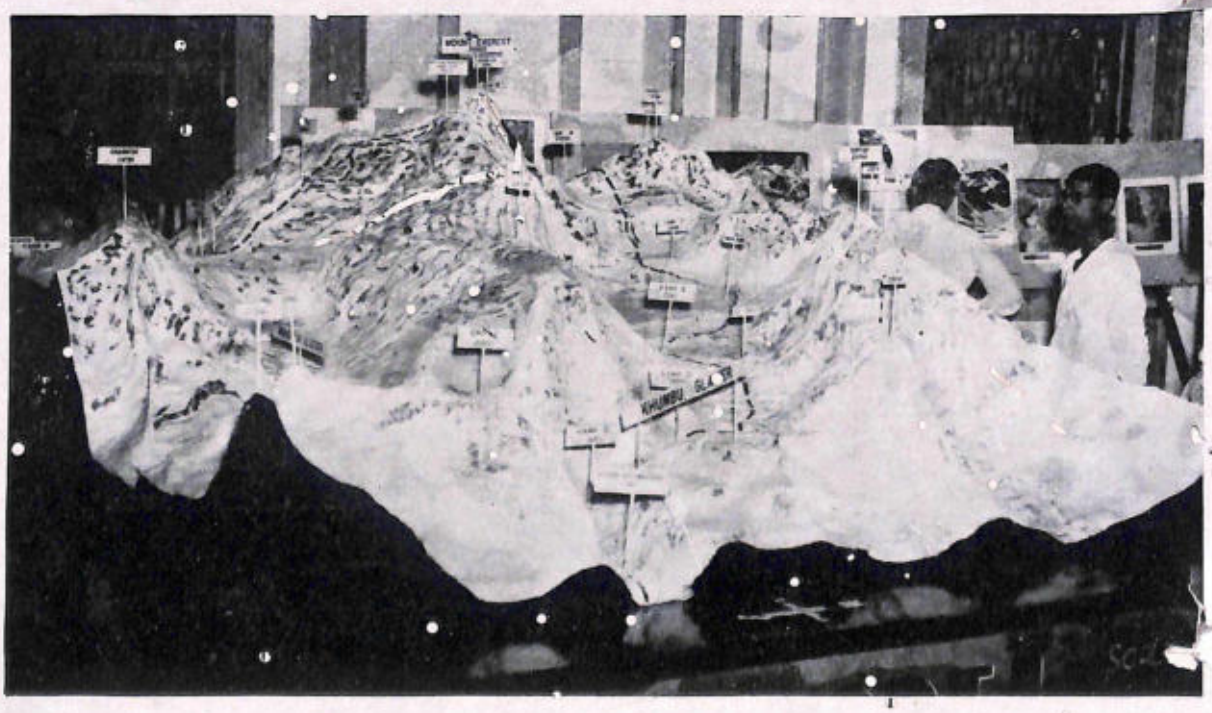
the human heart gives us a very good understanding of its different functions. Boys who look at working models of engines may

".....see with eye serene
The very pulse of the machine"

A Word of Caution in the Use of Models

Models are valuable aids, but a word of caution needs to be added. If the model is larger or smaller than the real thing, students should be given a clear idea of its actual size. In some cases models are oversimplified. Such models should be used with great caution. Their differences from real things should be known. In case of models of organs of the human body there are differences of a more vital nature and these should be pointed out clearly. Models of the brain or the heart, for example, studied on a table are so different from the real organs which function as parts of the entire human body. Moreover, these models are likely to be thought of as parts of a machine unless we take care to emphasize that man is not a machine though he is like a machine in some respects.

In any learning situation with a model the differences between the con-



However perfect this model of 'Conquest of Everest' may appear, it does not tell the whole story. (Courtesy : "Statesman", Calcutta)

trivance and the real thing must be emphasized. However perfect a model may appear, it must be incomplete in certain respects. A few years ago we saw an excellent model of "Conquest of Everest" in a newspaper office in Calcutta. It showed clearly the dwellings of the Sherpas and the hazards of the way, but the white cotton representing snow did not help us feel the terrible coldness which we would have experienced if we were with the climbers even for a second. "In contrived situations we resort to an analogy, and all analogies are dangerous. But . . . they are also necessary. We can make good use of analogies offered by contrived experience if we prevent misconceptions by reminding students of both the similarities and the differences between the contrivance and the real thing".[2]

Making of Models

The making of models is a very useful activity for children. It helps develop their creative interests and abilities and also their artistic sense.

Children develop their powers of expression and manual ability as they make models with clay.
(Clay modelling in a junior class in the Surendranath Institution, Calcutta)

[2] Edgar Dale—Audio-Visual Methods in Teaching

When they jointly make models of things like a grocery store, a railway station, a post office, they learn to work in co-operation. Models can be made by children with such simple materials as old newspapers, cardboard, cardboard boxes, match boxes, straw, wood, and clay and with such simple tools as a hammer, a saw, and a pair of scissors. We should not, however, encourage the making of models when real things are readily available and can best serve learning purposes. But when our objective is development of creativity or manual ability, the making of models is a useful activity.

Mock-Ups

We heard of the term mock-up very frequently during the last World

A child is learning to tell time with the help of a clock mock-up in the Primary Section of Lake View High School, Calcutta.

War when mock-ups and models were freely used in the task of training the vast army personnel. They were often chosen in place of real things because they were easier to understand. Now, what is the difference between a mock-up and a model? We have said earlier that a model is a recognizable imitation of a thing, though it may be smaller or larger than the original thing. A mock-up is a three-dimensional imitation of a thing in certain aspects only for the purpose of learning and so it may not be similar in appearance.

In schools in India the mock-up of a clock showing the movement of the hands around the face has been in use since the beginning of the century to help children learn to tell time. Children learn about many other things such as trains, aeroplanes, ships, bridges, tunnels by making their mock-ups with cardboard or blocks. In technical institutions mock-ups of engines concentrating on some special parts are often used for the purpose of training. In some automobile training institutions the mock-up of the driver's seat is first used to make the learner familiar with the brake, the gear, the accelerator, and other features of a real car.

Objects

CHAPTER 17

Objects being samples of real things though minus the natural setting are valuable learning aids. Collections of bones, claws, teeth, fish, butterflies, birds, leaves, flowers, stamps, coins, minerals, stones, and agricultural products are used in the learning of different subjects. A supply, for example, of weights and measures makes many arithmetic lessons interesting and meaningful in infant and primary classes. Samples of agricultural products and rocks and minerals add reality to geography lessons. In nature-study children draw important inferences by studying real things like flowers, leaves, mounted birds, and live or dead insects.

With many objects the natural setting is of great importance, but we cannot have it in any case in the classroom nor can we take out students on a tour of the world to give them a complete picture of reality. For-

This exhibit table of objects from Kashmir brings a distant place into the classroom.

The element of play brought into an arithmetic lesson with real weights and measures makes it easier for the children to learn it in a junior class in the Surendranath Institution, Calcutta.

tunately, however, we have devices like photographs, films, and models to help them form some idea of the natural setting.

These samples of rocks and agricultural products add reality to geography lessons.

Children learning from real things in the South Point School, Calcutta

Certain objects again though lifeless without the natural background cannot be properly studied in direct reality. Some flowers and leaves may not be easily approached. Even if we found them nearer, we could not possibly examine them from different angles. You can watch a butterfly from some distance ; the moment you try to get nearer for a closer study, it instinctively feels your presence and flies away.

Dramatizations

CHAPTER 18

Dramatizations provide enjoyable and meaningful learning experiences in nearly all subjects of the curriculum, history, geography, civics, literature, art. They are equally effective from the lowest to the highest level of education.

Values of Dramatization

It is true a dramatization is a substitute for a real situation, but in a well-acted play there are moments when both the observers and the actors forget that it is something unreal. Some actors get so much inside the characters they portray that they fail to check their emotions. A few years ago a boy while playing the role of Dhruba in the play "Dhruba" in a school actually wept on the stage when Dhruba was about to leave his mother in search of God. Such experiences create impressions in both the actors and the observers which are not easily forgotten.

Dramatizations help children get over their shyness. Some boys and girls who had at first felt nervous to face the audience even for a minute were later found to act freely on the stage for hours.

In a drama not only the actors but many others work co-operatively for days together to prepare for the final show. There are so many things to be attended to—a stage to be built, lighting and seating arrangements to be made, a mike to be procured if it is not available in the school, costumes to be made, invitation cards to be written or printed and distributed. For such a variety of jobs the co-operation of a large number of students from different classes is essential.

In addition to the values discussed above there are other noticeable benefits particularly for those who participate in a drama. These are with regard to gait, voice control, and diction. Dramatizations also help develop imagination and aesthetic taste in both actors and observers.

Chief Types of Dramatization

Let us now consider the chief types of dramatization. We begin with the make-believe play of little children known as 'dramatic play'; then we discuss the planned and rehearsed acting of older children called 'play'; and later we deal with the serious and spectacular 'pageant', the silent 'pantomime' and 'tableau', and the extremely enjoyable 'puppet-plays' and 'shadow-plays'.

Dramatic Play

The make-believe play of little children is known as 'dramatic play' in which they are primarily participants. The sole objective of this play is the development of the whole child intellectually, physically, and socially. This form of drama is also known as 'creative dramatics' because it is created by children. They do not repeat the words of others by memorizing them. Whatever they do or say is their own. There is no direction by an expert.

Dramatic play is the child's natural way of learning and growing. It is his own way of "trying on life", of reliving something that has interested him. He wants to understand in his own way any new or special type of experience he has had. He goes by bus to a distant place. He watches how the driver starts the bus and how he stops it when passengers travelling with him ring the bell. Back home the child plays the driver he has admired. In the same way he plays and understands many other people he has admired, doctor, nurse, postman.

Teachers or parents will do great harm to children if they do not encourage their imaginary play. When children find that their teachers or parents are not taking interest in their play, they will stop their activities and miss all they might have enjoyed and learnt. Whenever possible parents should join their children in the play. A new type of relationship results from this participation which many parents have utilized in preparing their children to face difficult situations smilingly. Winifred Ward in "Play-making with Children" writes, "One small girl had to have a serious operation ; so, she and her mother played hospital and operation over and over again. When the time came she went into the operation with no fear, and afterwards said to her mother, 'It was just like we played'."

The natural tendency of make-believe in children gives educationists the opportunity of making many learning situations effective and real. The teacher may chant some verses or rhymes to introduce the play. Many verses or rhymes have such marked rhythms that children start playing as soon as they hear them. A story told or known to children may be the basis for dramatic play. It is good for the teacher to join children in the play, not for showing them how to play, but for helping them where they must be helped.

Sometimes children's experiences of picnic, railway stations, bazaars, zoos can motivate dramatic play in school. A teacher with experience and

understanding knows how to give the start through discussions. Children can easily be persuaded to narrate their experiences and one of these may serve the teacher's purpose all right.

The dramatic play discussed above may be played in the classroom if it is spacious or it may be played at any other suitable place. The teacher should, however, ensure that people who are not concerned do not watch the play. Children do not feel free in the presence of outsiders. There may be occasions, however, when children may be eager to show one of their favourite plays to parents and others. When such special plays are

A dramatic play by children for parents and others (Courtesy : Shri D. N. Chatterjee, Crafts Teacher, Hindi High School, Calcutta)

arranged children may be helped with suggestive bits of costumes and scenery to make the plays realistic and enjoyable for the invitees.

In schools children may be prepared through dramatic play for such important days as Prize Distribution Day, Independence Day, and Children's

A play by children (Courtesy : the C.L.T., Calcutta)

Day. The make-believe experiences of these 'days' will make them feel at ease on the actual days of celebration.

The Play

The planned and rehearsed acting of a story is called 'play'. As children grow older, their imaginary world gets smaller and their interests in real things become stronger. A play provides a substitute for a real situation.

Like 'dramatic play', 'play' also can help children create, but much depends on the teacher who guides them. Some teachers not only act as directors but do most of the things which should be done by children. They select the story, do the work of dramatization, and find out the children who are likely to be able to memorize and reproduce well their parts. If

we want to make play an educational activity, we should first encourage children to write their own story. If they are unable to write the story, they should at least be made responsible to find out a suitable story and dramatize it. A general discussion in the class about the suitability of the theme has much educational value. Let the class select children for the various parts, but it will be the duty of the teacher to make certain that all children in the class have some work in connexion with the play.

The Pageant

The pageant is more spectacular than the play. In it more importance is paid to setting and action and less to speech. It is usually associated with something serious or solemn. In schools historical scenes are usually chosen for pageants. A pageant has no place in the classroom as it needs a great deal of time and energy. Indeed, to build an effective pageant the co-operation of nearly the entire institution will be required.

Though the pageant provides opportunities for all types of talents, few institutions will encourage this activity except on special occasions as it tends to disrupt the normal programme of work.

The Pantomime

In a pantomime the performers express themselves through bodily actions only usually to the accompaniment of music. No announcement is made to give the audience any clue to what is presented.

There are many problems and situations in our everyday life which pantomimes can represent better than any other form of dramatization. Pantomimes are particularly valuable for children who are shy as they are not required to speak before the audience. This form of dramatization is also useful in developing bodily expression. One advantage of the pantomime is that it can be performed in the classroom in ordinary dress.

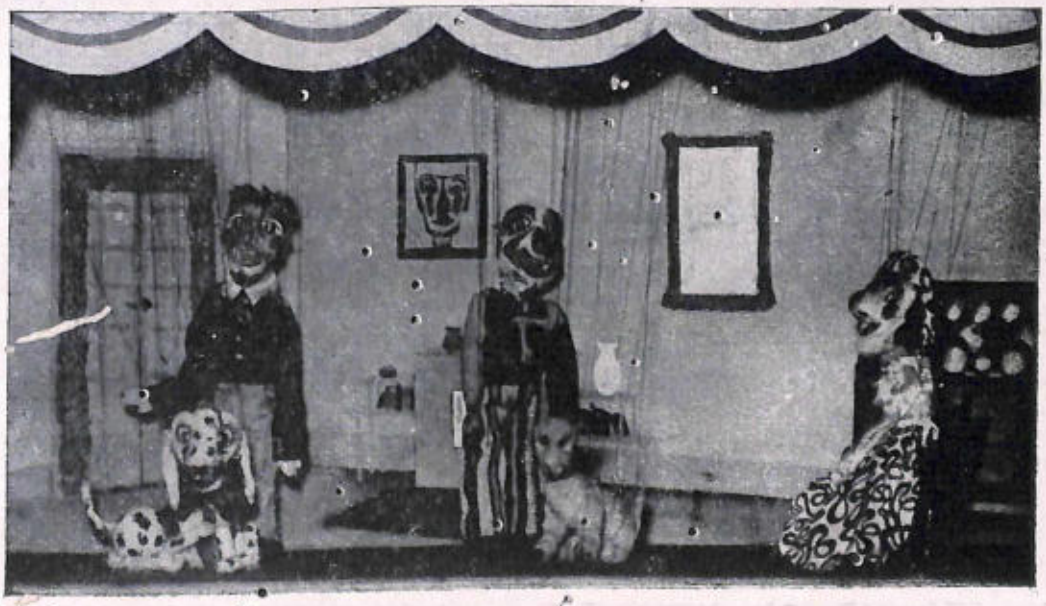
The Tableau

In a tableau the performers neither speak nor move. It can effectively show a historical event or a social problem if it is properly posed with appropriate costumes. Tableaux are usually accompanied with music. This form of drama is popular in France where the word 'tableau' means a picture.

A tableau like a pantomime is generally presented without any announcement and the audience is to guess what is portrayed.

Puppet-plays

Puppetry is an old and popular art in Indian villages though its use has considerably decreased in recent years on account of the popularity of theatres and cinemas. The use of puppets is also ancient in countries like Indonesia, China, Japan, Thailand, Egypt, and Greece. Puppets were also in use in religious plays at some places in Europe during the Middle Ages. Some people believe that the word 'marionette'—puppets pulled by strings—came from the moveable wooden figures of the Virgin Mary.



In the U.K. puppet-making and puppet-playing are regular features of schools. (Courtesy : Bronte House, Yorkshire, England)

Teachers learning to make puppets in the Department of Audio-Visual Education, NCERT, New Delhi (Courtesy : the Department of Audio-Visual Education, New Delhi).

Children love to make puppets. (Courtesy : the C.L.T., Calcutta)

The craft of puppetry can be an effective aid to learning, but unfortunately little use of puppets is made by schools for children in this country. In the U.K. and in the U.S.A. puppet-making and puppet-playing are regular features of primary schools. It is encouraging to note, however, that many educationists in India today realize the important value of puppetry in education and they are making efforts to introduce this old Indian art in schools. Courses of instruction in puppet-making and puppet-playing for teachers have been arranged by the Children's Little Theatre, Calcutta and the Department of Audio-Visual Education of the National Council of Educational Research and Training, Delhi. Efforts such as these will, it is hoped, help in underlining the educational value of puppetry.

History, geography, literature, art, handicrafts can all contribute to a puppet-play. When a puppet show is given by a class, practically all children work co-operatively for days together making puppets, costumes, scenes, and many other things for the performance.

Children develop their imagination by providing the puppets with speech ; they increase their manual dexterity through manipulation of the figures. Great benefit can be derived also from the making of puppet figures to illustrate lessons. History lessons, for example, will gain considerably in interest if miniature figures are made to show the costumes and weapons of the period under study. Puppet-playing helps timid children express themselves more freely because they are separated from the audience by a screen.

Puppet-making

Puppets and the stage and scenes can be made by children without any artistic skill. Puppet-making is a highly enjoyable creative activity. Indeed, to develop creativity in little children we should sometimes encourage the activity without correlating it with any topic of the curriculum.

Here are a few types of puppets which children can make :

Hand-puppets—These fit in the hand like a glove and are operated

These beautiful scenes for the stage are being made with simple tools and materials. (Courtesy : the C.I.T., Calcutta)

from below with fingers. Hand-puppets are very easy to make. The materials used are papier-mache, cloth, thread, and paints. Some excellent hand-

These are hand-puppets. (Courtesy : the C.I.T., Calcutta)

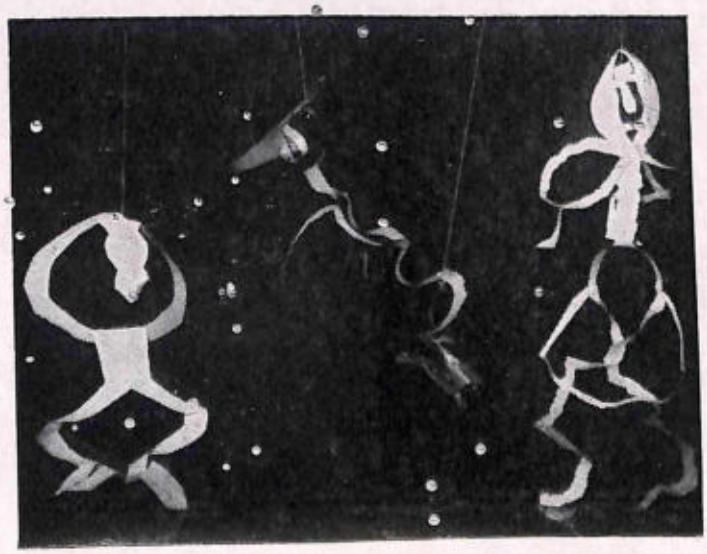
The rod-puppet
(Courtesy : the C.L.T., Calcutta)

The string-puppet
(Courtesy : the C.L.T., Calcutta)

puppets have been made of cloth alone. If both papier-mache and cloth are used, papier-mache is used for the head and cloth, for the body and hands.

Rod-puppets—These are operated from below the stage by a combination of rods and strings. These puppets also can be easily made from simple materials such as wood, cloth, thread, and paints.

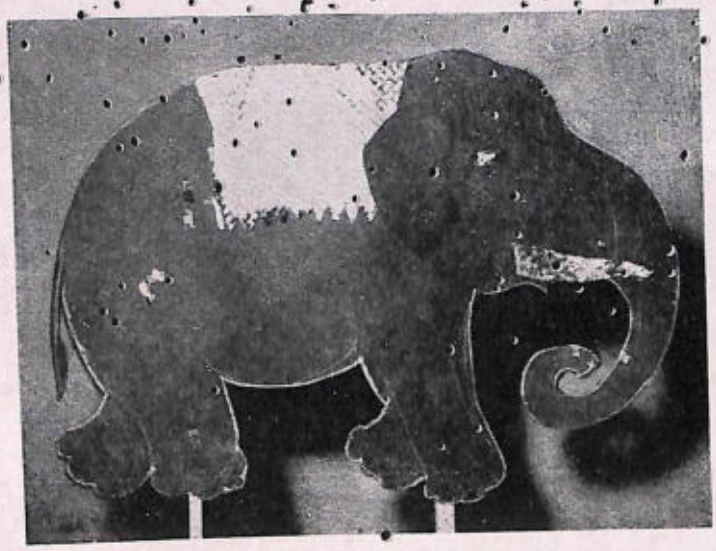
Marionettes—These are figures with movable limbs and are operated from above by means of strings. These puppets also can be easily made by children as there are simplified techniques for them. Some essential materials are cloth, wood, thread, cotton, paints, and sheets of newspaper. The head is made large as compared to the size of the body and both legs and hands have two parts. Costumes should have loose fittings. Some schools en-



These string-puppets are made of thick cover paper. (Courtesy : the Department of Audio-Visual Education, NCERT, New Delhi)

courage the making of marionettes with cardboard or thick paper. These marionettes are no doubt very easy to make.

Simple Cardboard Puppets—The simplest yet quite charming puppets for children to make are cardboard figures attached to sticks.



A simple cardboard puppet (Courtesy : the Department of Audio-Visual Education, NCERT, New Delhi)

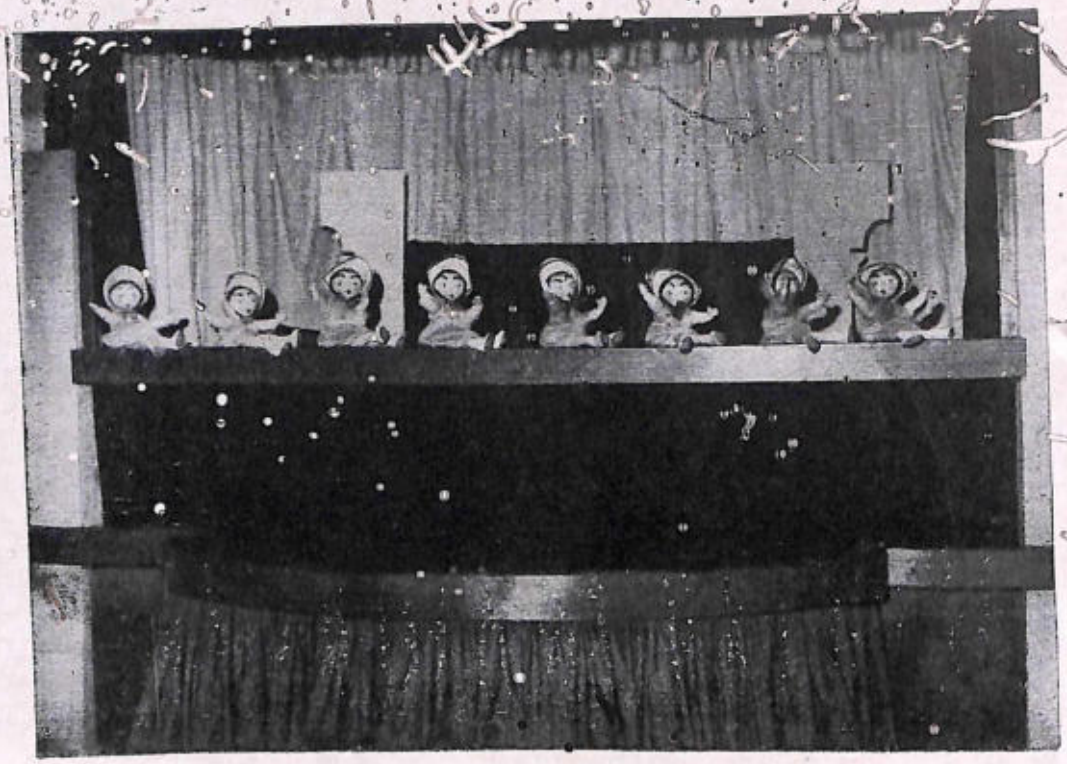
Important points about Puppet-plays :

(i) In selecting a puppet-play it should first be borne in mind that puppets are suitable for those actions which are not very easy for children to perform on the stage.

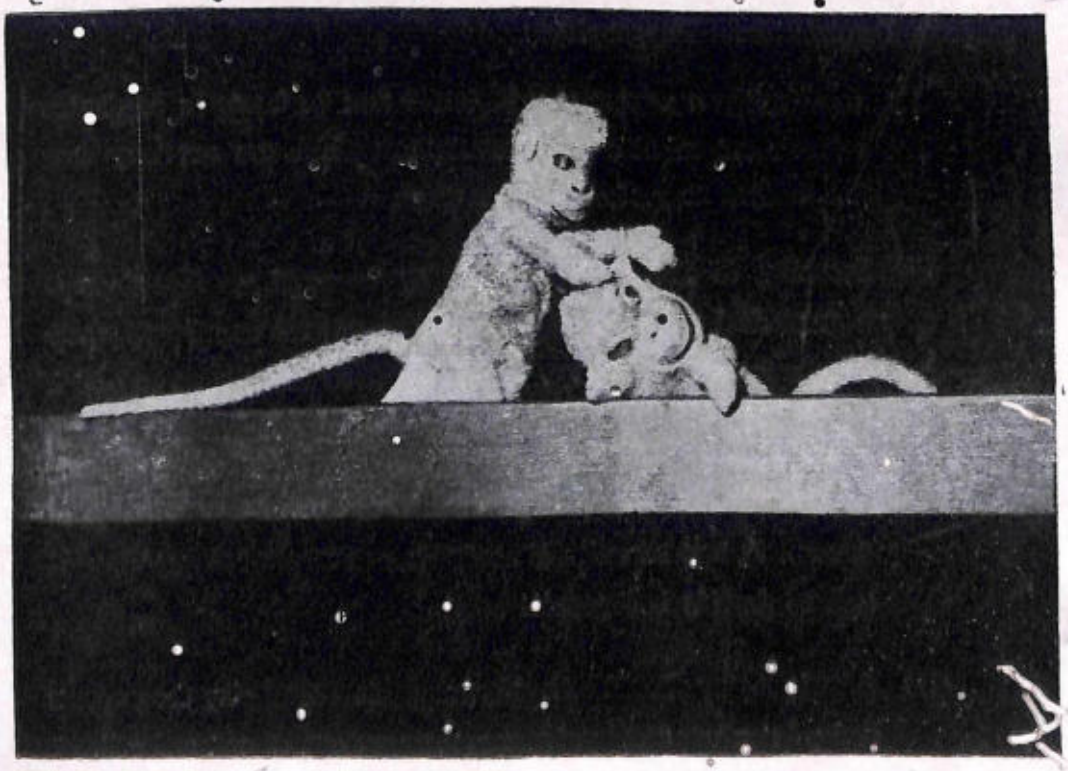
(ii) Secondly, in choosing a puppet-play we must see that there is a great deal of action in it. Children as well as adults love to see the puppets *do* things. A puppet-show is likely to be dull if the puppets remain stationary for long in a scene.

(iii) The play should have plenty of music and dancing as in a regular drama. A tape recorder, if available, can be used to good advantage to provide background music.

(iv) A puppet-play should be a short one. In a long play the puppets and particularly the marionettes may get out of order.



Interesting scenes from puppet-shows by children (Courtesy : the C.I.T., Calcutta)



Shadow-plays

Like the puppet-play the shadow-play is an old and popular art in India. It can be used to good advantage in schools both for senior and for junior pupils.

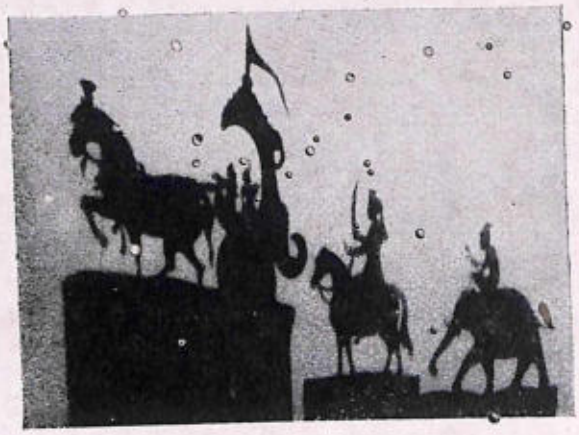
The story chosen for a shadow-play should be one with plenty of action as in a puppet-play. A proper stage with scenes adds to the effectiveness of a shadow-play. A shadow-play may be with or without speech, but music is essential to both.

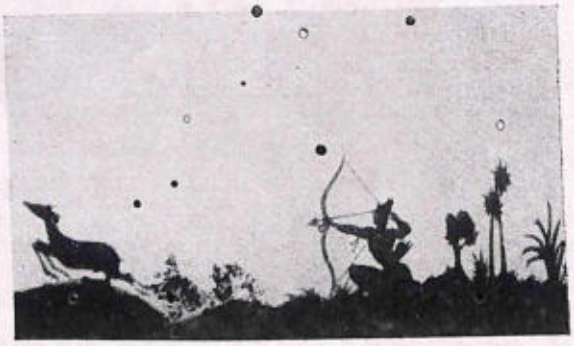
There are two types of shadow-play. In one type shadows of men and women in action are thrown on a screen. They act in front of a light and

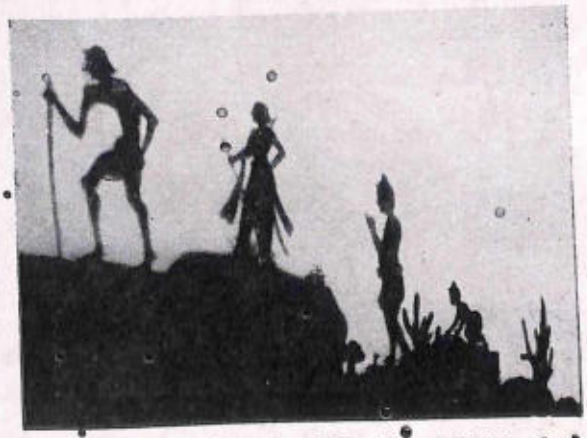
A mask of a demon. (Courtesy : Shri D. Chatterjee, Crafts Teacher, Hindi High School, Calcutta)

their shadows fall on the screen. Masks are used to show demons, witches, or other unnatural things. Another type of shadow-play which was much in

use in the old days in India is given with the help of thin cardboard or plywood cut-out puppets (translucent leather was then used for this purpose) manipulated behind the screen with rods and strings. Movement can be







Scenes from 'Geeta-Bhava Darshan", the shadow-play staged by the children of the Hindi High School, Calcutta (Courtesy : Shri D. Chatterjee, Crafts Teacher, Hindi High School, Calcutta)

shown also by keeping several cut-outs of the same character in fixed positions and then throwing light on these from one end to the other.

The usefulness of this type of shadow-play in education is now being realized in this country and some schools are presenting interesting stories with shadow cut-outs. A unique shadow-play portraying the abstract philosophical ideas of the Geeta was presented in recent years by the children of the Hindi High School in Calcutta. About sixty children of junior classes worked co-operatively for ninety days under the able guidance of their art teacher. The success of this venture is a convincing proof that simpler ideas connected with ordinary school lessons can be easily presented through this medium.

Boys of the Hindi High School making shadow cutouts (Courtesy: Shri D. Chatterjee, Crafts Teacher, Hindi High School, Calcutta)

Slides and Filmstrips

CHAPTER 19

SLIDES

Magic Lantern Slides

The magic lantern slide is one of the oldest forms of projected pictures. The magic lantern or, as it is sometimes called, the diascope has been used over a long period of years by many Indian schools and social education centres. It was invented about three hundred years ago. The equipment for projection is to some extent heavy and bulky. The material to be shown is reproduced on a transparent $3\frac{1}{4}'' \times 4''$ slide. The advantage of the apparatus is that its operation is very simple and it does not require complete darkening of the room. The slides are also very easy to make. The simplicity of the instrument has led some Indian manufacturers to make miniature magic lanterns to be used by children as toys.

Though magic lantern slides are bulky, fragile, and relatively expensive,

the lantern with an acetylene or petromax lamp can prove very useful in village schools in India where no electricity is available. If Audio-Visual Departments of State Governments set up slide libraries in district towns for the issue of slides to neighbouring village schools, it will not be difficult for many village schools to use the apparatus regularly.

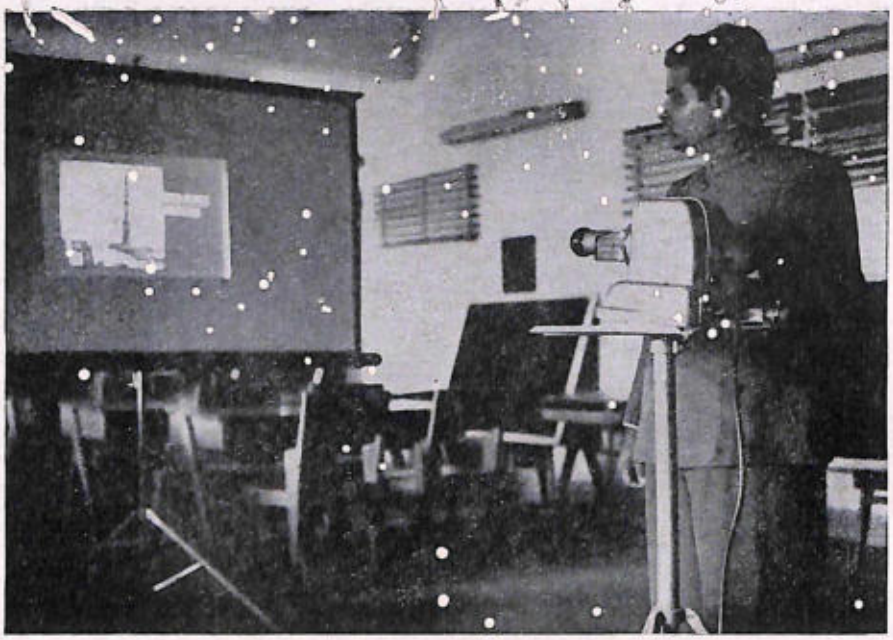
As cheaper slides of good quality are now available from commercial sources on a variety of rural welfare subjects, social workers should be encouraged to make use of the magic lantern. Petromax magic lanterns of dependable quality are now manufactured in India and they are not very expensive. Some of these projectors have the device for the projection of filmstrips.

The New 2″×2″ Slides

Since the manufacture of 35 mm. cameras, the 2″ ×2″ slides have become valuable learning aids in towns and cities where electricity is available. The projector for showing these slides is much smaller and lighter than the magic lantern. Its operation like that of the magic lantern is very simple, and if its lamp is powerful, it does not require much darkening of the room. The new 2″ × 2″ slide projector which has generally the device for the projection of filmstrips is also cheaper than the magic lantern.

Sources of Slides

Excellent slides both in colour and in black and white are now available at small cost from commercial sources. Some slides are available also from the Department of Audio-Visual Education of the National Council of Educational Research and Training, New Delhi and from libraries of some State Governments. Rajasthan, for example, has a good number of slides on a variety of subjects.



A 2″ × 2″ slide projector in use in the Department of Audio-Visual Education, NCERT, New Delhi (Courtesy: the Department of Audio-Visual Education)

Making of Slides

Slides can be made easily and inexpensively by both teachers and students through hand made and photographic processes.

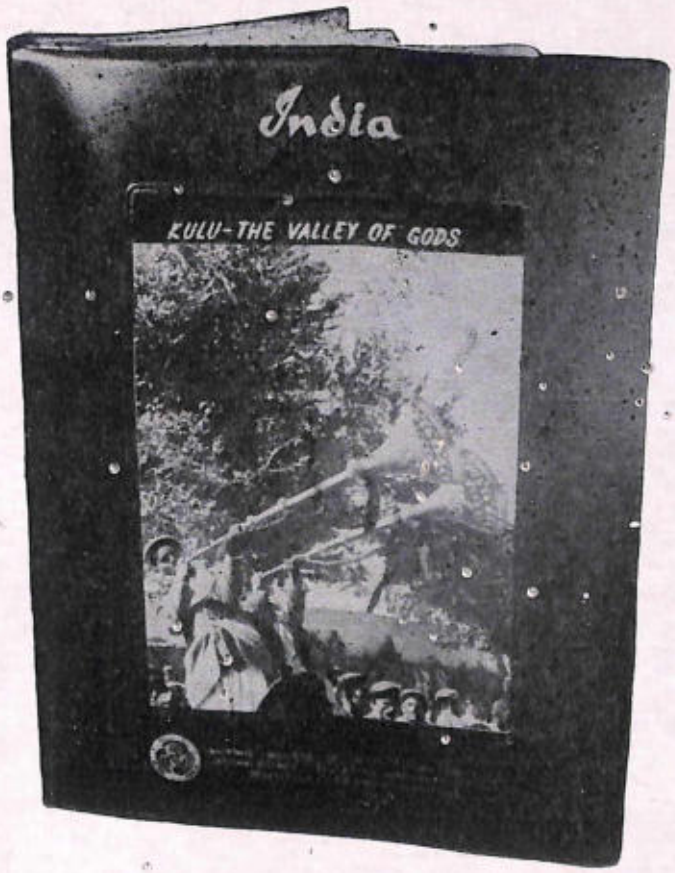
Hand-made Slides

These can be made in both 2×2 and $3\frac{1}{4} \times 4$ sizes, but it is easier to make drawings in bigger slides than in smaller ones. The material required in making these slides consists of such simple things as glass, plastic, cellophane, binding tape, wax pencil, ink, paper, and paint.

Glass or plastic slides are made by writing or making drawings directly on the glass or the plastic with a wax pencil. The glass or the plastic should of course be cleaned thoroughly and dried before it is used. If the slide is to be preserved, it is covered with another piece of glass and secured with binding tape. The glass or the plastic can be treated to take water colours or India ink by covering its surface with a solution of $\frac{1}{4}$ teaspoon of dry

gelatin dissolved in one ounce of hot water. The treated glass or plastic should be thoroughly dry before it is painted and drawn. Silhouette glass or plastic slides, extremely interesting and valuable in infant schools, can be prepared by simply cutting out an object and placing it between two pieces of glass or plastic or by placing the paper from which the object has been cut between them.

Cellophane slides can be made by writing or typing directly on the cellophane. For making typewritten slides, fold a piece of carbon paper



Coloured slides have earned popularity next in importance to 16 mm. films. This book of slides on Kulu Valley prepared by the Department of Audio-Visual Education, NCERT, New Delhi, has twelve slides in colour with a descriptive note on each slide. It is hoped many such slide books on different aspects of life in India will soon be produced by the Department.

and place the cellophane between the carboned sides. Then type without using the ribbon on the cellophane through the carbon. For projection, cellophane slides are placed between two glass slides secured with binding tape.

Photographic Slides

These are, unlike the usual film negatives, positive prints on the slide or the film. The $3\frac{1}{4} \times 4$ slide is made by using a $2\frac{1}{4} \times 3\frac{1}{4}$ camera. The negative obtained is exposed to a $3\frac{1}{4} \times 4$ positive slide plate. The 2×2 slide is made in the same manner by using a 35 mm. camera. When photographs are taken in 35 mm. positive coloured film, they come back developed as slides in 2×2 cardboard mounts ready for projection.

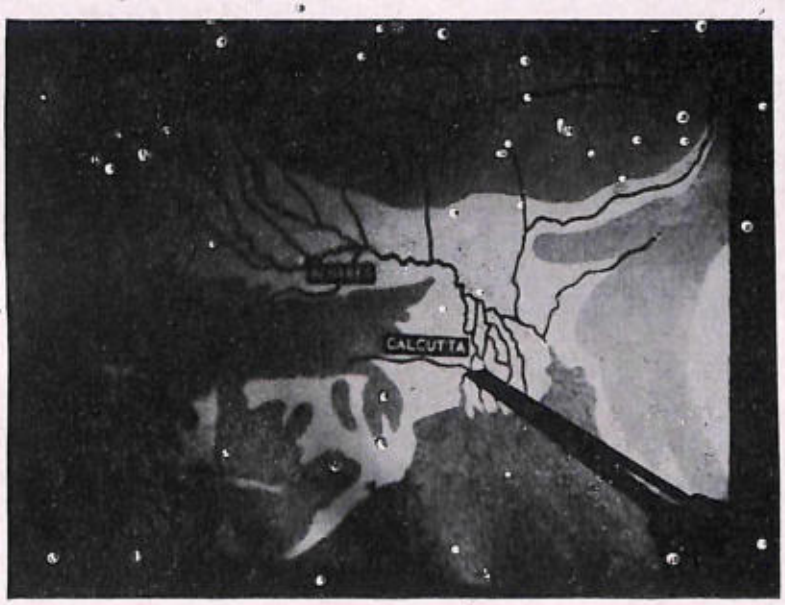
FILMSTRIPS

A filmstrip is a continuous strip of 35 mm. non-inflammable film consisting of individual frames or pictures arranged in sequence, usually with explanatory titles. The filmstrip can have as many as one hundred frames, but the usual number is about sixty. The picture may be single or double

A double frame filmstrip (Courtesy : the U.S.I.S., Calcutta)

A single-frame filmstrip (Courtesy : the B.I.S., Calcutta)

frame. In case of single frame, the picture is about three-fourth by one inch and in case of double, one by one and half inches. The single frame is most commonly used and it is run through the projector vertically. The double



A frame on the screen from the Common Ground filmstrip "The Ganges Basin"

frame picture is generally printed horizontally and it is run through the projector horizontally. Some projectors have swivel heads so that pictures may be shown vertically or horizontally.

The filmstrip projector came into being about 1920 and has grown rapidly in popularity. It became particularly popular during the last World War when it was widely used by army training centres.

Selecting a Filmstrip Projector

When a filmstrip projector is to be purchased, it will be wise to keep in mind the following points :

(i) Has the projector a good lens system?

(ii) Is it capable of showing both single and double-frame filmstrips?

(iii) Has it the device for using 2″ × 2″ slides?

(iv) Has it a powerful lamp? (The lamp should not be less than 300 watts.)

(v) Has it a ventilating fan? (The fan prevents the slides from being overheated.)

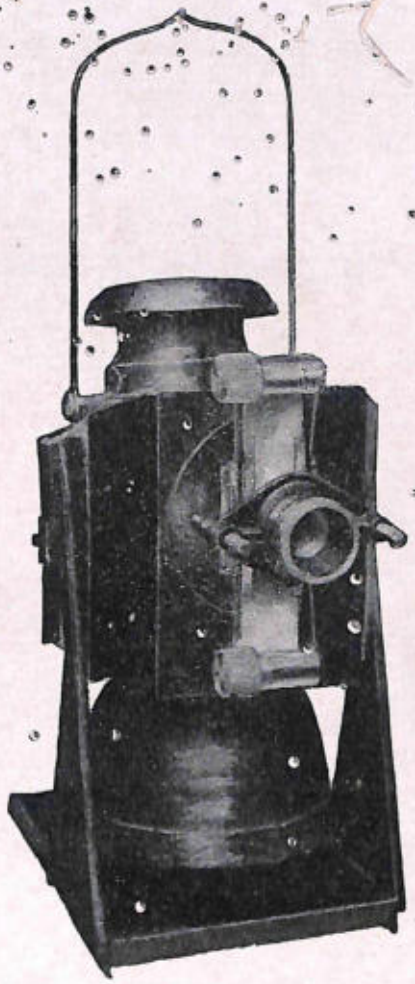
(vi) Is it sturdy?

(vii) Has it the device for tilting?

(viii) Can it be easily dismantled for oiling and cleaning?

Advantages of Filmstrips

The filmstrip is one of the finest learning aids and should be used by all educational institutions in India. The filmstrip projector is much cheaper than a film projector. A fairly good projector costs about three hundred rupees. There are now excellent filmstrip projectors with kerosene lamps for use in rural areas where electricity is not available. The filmstrip projector, is not very different in principle from the old magic lantern or the new 2″ × 2″ slide projector, but its chief advantage is that instead of individual slides to be inserted or removed by hand, a strip of film containing a large number of pictures can be used mechanically. It is, therefore, much easier to use. The projector is much lighter also than the magic lantern, and the strip of film which is used in it, unlike heavy and bulky lantern slides, is light and compact. Moreover, the strip has no risk of breakage. The strips are inexpensive also and so many schools and social education centres can easily build up libraries of those filmstrips of which they are likely to make regular use. These strips unlike costly films can be discarded also as soon they are outdated. As in the case of the magic lantern or the slide projector, the filmstrip projector does not require complete darkening of the room, and the strips, like the slides, can be made without much difficulty if the necessary apparatus is made available.



The Keroscope (a film-strip projector with a kerosene lamp) ready for use

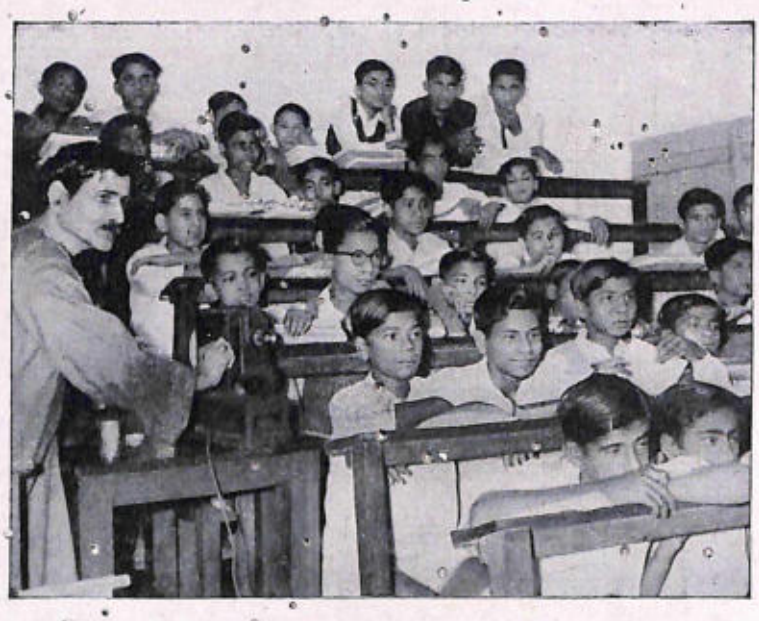
Using the Filmstrip

Suggestions for using the filmstrip do not really differ from those already given in connexion with audio-visual aids in general. The following points may, however, be noted.

The first step in using a filmstrip is to know its content. This can be done by previewing the strip and reading the accompanying notes. The strip to be used should have definite value in relation to the topic under study. There is little point in using a strip if it just touches upon one or two unimportant points in connexion with the topic.

The strip should be properly introduced. The teacher should tell the class what the filmstrip is about, how it relates to the topic under study, why

it is being shown, and what items should be particularly looked for in the strip. It is a good practice to write all the main points in the strip on the chalkboard.



The interest that a filmstrip can arouse in children is obvious here. (A filmstrip lesson in the Secondary Department of the Surendranath Institution, Calcutta)

The strip should be properly presented. A filmstrip projector is quite a simple machine and the person who uses it should be able to operate it with ease and confidence. It is wise to check the projector and thread the strip before the class meets. The room should be dark enough to produce clear image on the screen. This is particularly important for coloured filmstrips which require more darkness than black and white. If for the sake of ventilation the room cannot be made sufficiently dark, make the picture smaller to ensure sharpness. And if the room cannot be darkened at all, as it sometimes happens, increase the wattage of the bulb or the power of the lamp, make the picture smaller, and use a shadow box round the screen. A makeshift shadow box can be made of cardboard. If available use a beaded

screen,* though it should be noted that a beaded screen is unsatisfactory for those seated at the sides of the room. If the wall is light coloured, it can very well serve the purpose of a screen. The reverse side of a map, if it is white, can also provide a very good image. If the filmstrip has titles, sufficient time must be given to children to read them. Each picture should be on the screen long enough for thorough investigation. Some pictures of course make their point so quickly that only a glance is enough. Questions and discussion are helpful during the showing of the strip.

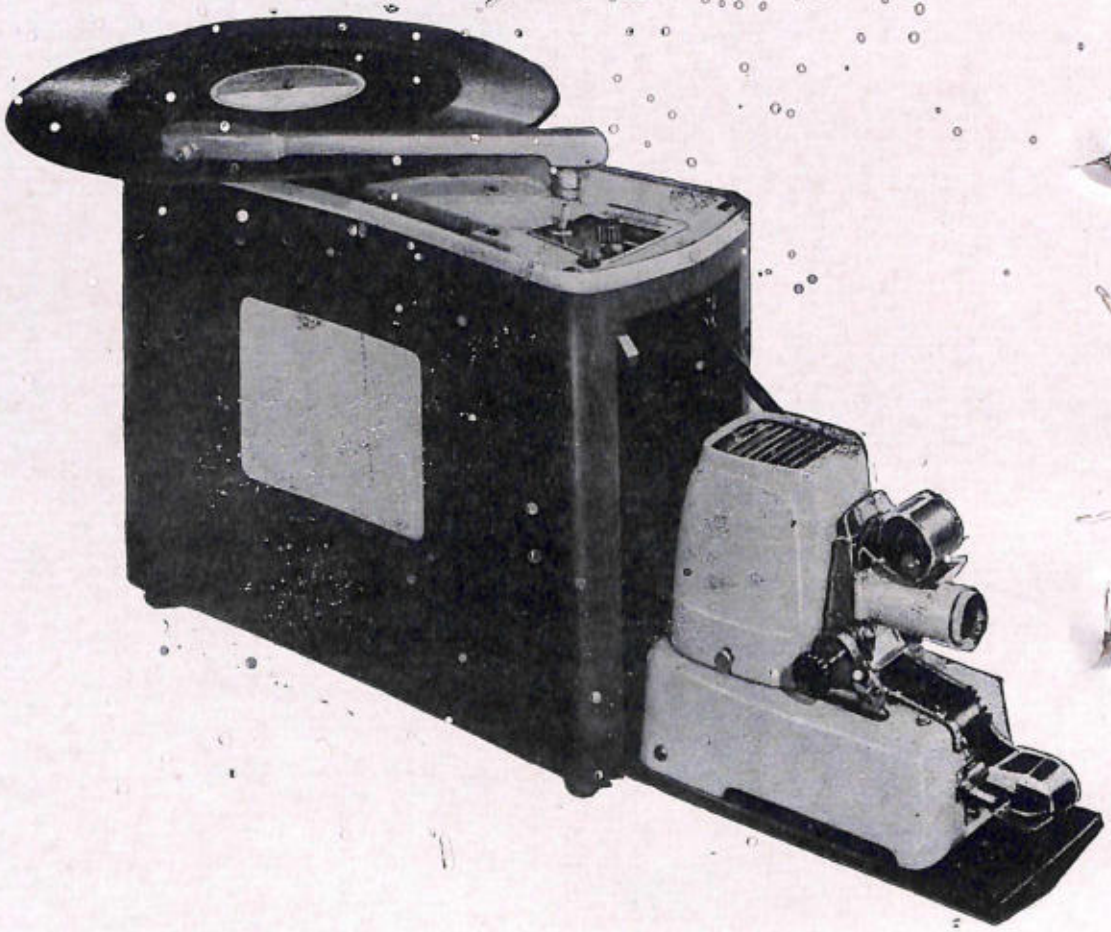
The follow-up of a filmstrip can take many forms depending upon the nature of the subject. A general discussion and tests, oral or written, are usual follow-up activities. The filmstrip may be shown again to emphasize some special points. Sometimes a single frame is projected and used as a basis for written or oral composition. In some subjects particularly in junior classes creative activities like drawing or painting are based on the filmstrip. If the filmstrip is on some technical subject involving demonstrations of skills, the follow-up should include actual practice of techniques shown. Sometimes in some subjects a filmstrip may arouse an interest in a school journey or a field trip. Since the desire to learn may not last long, such trips should be undertaken as early as possible.

Two Types of Filmstrip

There are two types of filmstrip—the silent and the sound. A filmstrip which has a synchronized sound recording accompanying it is called a sound filmstrip. A faint ring of a bell indicates when the picture on the screen is to be changed. The recorded voice and the music will undoubtedly arouse additional interest. The machine is under complete control at all times and so, if desired, a particular picture can be held on the screen as long as needed by stopping the record. The record can also be stopped where the teacher wants his pupils to make their own investigation without any explanation.

* a screen whose surface is covered with tiny glass beads

The sound filmstrip was introduced in the U.S.A. about thirty years ago and since its introduction the device has been used by a large number



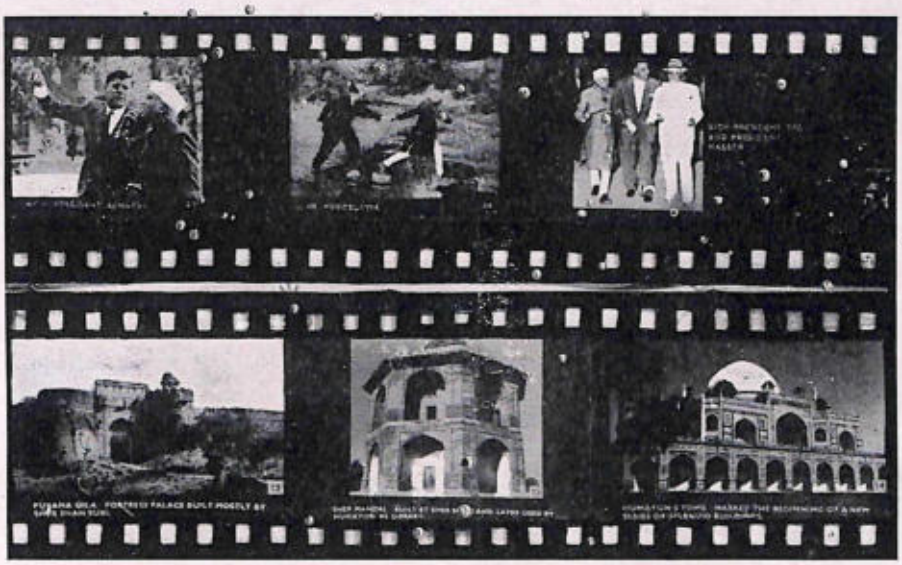
Schools which can afford to have a film projector should try to acquire this latest device in filmstrip projection. (Courtesy : Electro Engineering Co., Detroit, U.S.A.)

of educational institutions. There is a new type of projector available now which advances frames automatically.

Sources of Filmstrips

Filmstrips can be obtained free on loan from several organizations in our country such as the Department of Audio-Visual Education of the National Council of Educational Research and Training, New Delhi, the British Council, the Communications Media Centre of the U.S.A.I.D., New

Delhi and from Audio-Visual Education Departments of some State Governments. They are available also from commercial firms. The commercial



These filmstrips on the late Prime Minister Nehru and the historical monuments of Delhi have been produced by the Department of Audio-Visual Education, NCERT. (Courtesy : the Department of Audio-Visual Education, New Delhi)

filmstrips are inexpensive, the price being often a matter of ten or twelve rupees. And generally these strips can be ordered on the understanding that if after preview they are not liked, they can be returned without any obligation. The filmstrips, both commercial and non-commercial, cover a wide range of subjects and can be used at all levels of education including the university level.

Some enthusiastic teachers prefer to have filmstrips made for use in specific learning situations. They plan the whole thing, take necessary photographs, and then seek assistance of technical people who have special arrangements for making filmstrips. The photographs which are used for making filmstrips are normally 8″ × 10″ enlargements. The enlargements arranged in correct sequence are rephotographed on 35 mm. film.

CHAPTER 20

Projections with the Episcope and the Tachistoscope

THE EPISCOPE

The episcope, known in America as the opaque projector, is an instrument for the projection of any non-transparent material such as pictures, photographs, maps, diagrams, stamps, coins, leaves. The principle is quite simple. The flat item is placed in the projector through an opening of about six inches by six inches. By means of a strong light and a mirror placed at 45° the image is reflected on the screen.

An Aid of great Educational Value

The instrument is of the highest value in educational work and all schools and colleges in our country which have facilities for electricity should make use of it. It can be used in all levels of education—pre-primary, primary, secondary, and university.

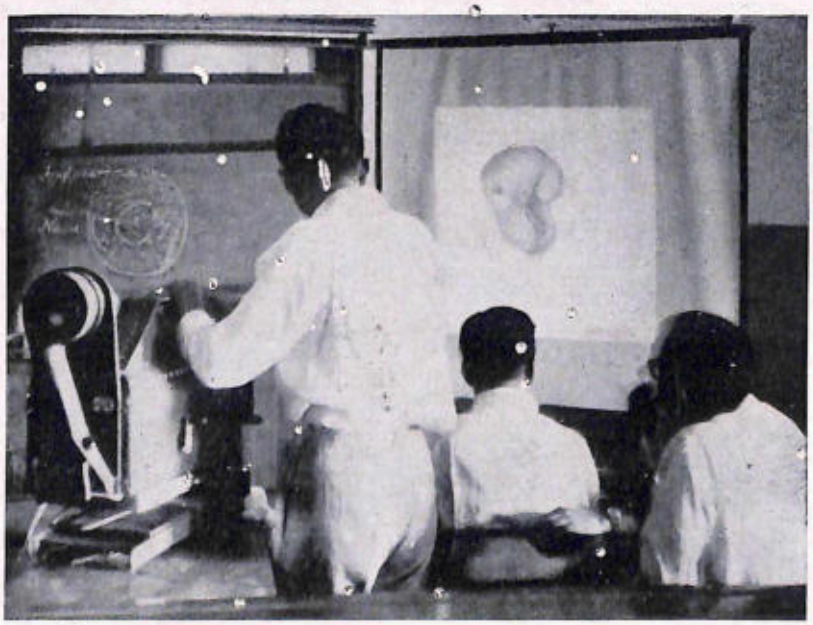
A teacher showing some pictures to children with the help of an episcope (Courtesy : P.V.T.D. College of Education for Women, Bombay)

There are certain special advantages of this projector :

(i) The main advantage is that it can be used practically in all learning situations as it does not require any prepared slide or film. Anything printed, written, or drawn can be projected once the instrument has been secured. Even three-dimensional materials which are not very thick can be projected to advantage. In an agricultural course at the University of Wisconsin in America, reports Prof. Kinder, a demonstrator put egg specimens (yolk and white) in shallow dishes in an opaque projector to explain colour, shape, and viscosity of egg yolks.

(ii) Though the episcope may be quite costly it is inexpensive to use because the materials which are projected are not to be paid for.

These Social Education Organizers are receiving instruction in the operation of an episcope.
(Courtesy of the S. E. O. T. C., Belur Math)



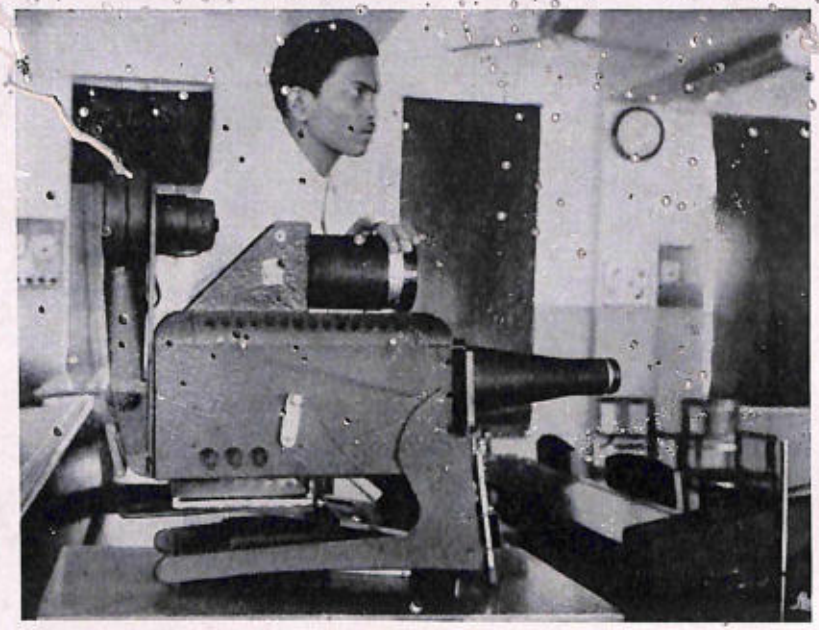
An episcope is an invaluable learning aid in medical, engineering, and agricultural colleges. The Institute of Medical Education, S. S. Karnani Memorial Hospital, Calcutta regularly uses the apparatus.

(iii) Small photographs or pictures which are usually passed round for individual investigation can be projected on the screen for the entire class to see.

(iv) The projector can be used for tracing maps, diagrams, etc. on the chalkboard or on a large sheet of paper.

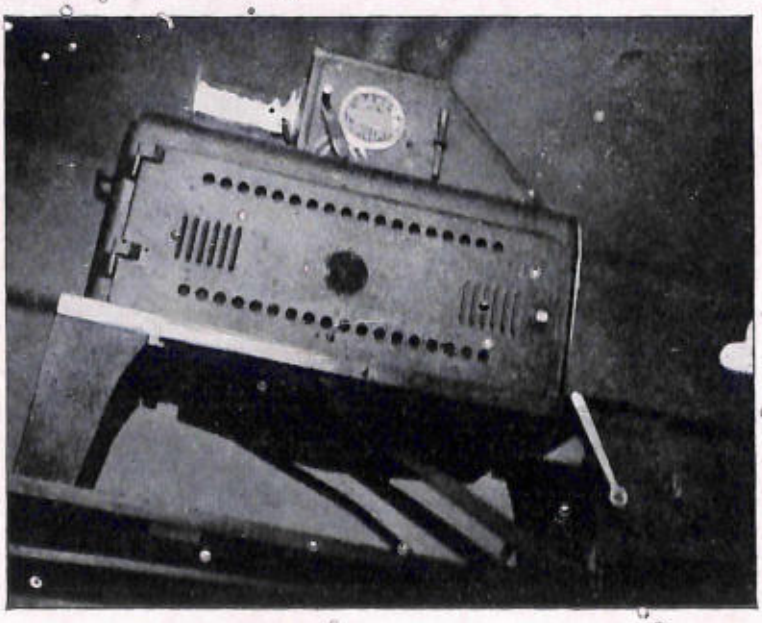
The episcope is of great help in infant and junior schools. It is indeed a great pity that junior departments of many well-known institutions in our country do not make use of this apparatus. In the primary school a page from a book can be magnified on the screen in the classroom and all children can read it together. When children are learning to write, some of their common errors can be pointed out by projecting samples of their writing. Examples of good writing also can be of great help when projected. Magazines are now available in our country which abound in coloured pictures of animals, birds, flowers, fish, buildings, monuments. These pictures, projected and magnified on the screen, can be used to good advantage in a variety of lessons. Teachers should encourage children to collect such materials from old magazines. The episcope is of great help to children in learning new words and spelling. It is invaluable also in the junior school in the learning of science, social studies, and languages.

Although the episcope is very helpful from the educational point of view, it has some disadvantages. The apparatus is rather heavy and bulky, and so it is difficult to carry it from one room to another. This difficulty, however, can be overcome by fixing the episcope in a special room. Another difficulty is that as the episcope uses reflected light, a completely darkened room is essential for its projection. This is indeed a serious disadvantage for a hot country like India, but if the room has adequate provision for ventilation, there is no reason why it cannot be properly darkened for the short period the episcope will be used. It may be noted here that the newer models of episcope which use lamps of higher power do not require complete darkening of the room. These projectors are also lighter as they are built of



The newer models of episcope which use lamps of higher power do not require complete darkening of the room. (Courtesy : The Institute of Medical Education, S. S. Karnani Memorial Hospital, Calcutta)

lightweight metals and they have larger openings for the use of wider range of material. The cooling system also is now much improved. Most of the



This episcope can project flat pictures as large as 8″ × 11″

new projectors have also the device which enables the teacher to throw an arrow of light to any point he desires on the projected picture.

The Epidiascope

The epidiascope, as the name indicates, is a combination of episcope and diascope (magic lantern). Though the apparatus is rather bulky and heavy, it is a great advantage to have a machine that can project non-transparent material as well as slides and filmstrips.

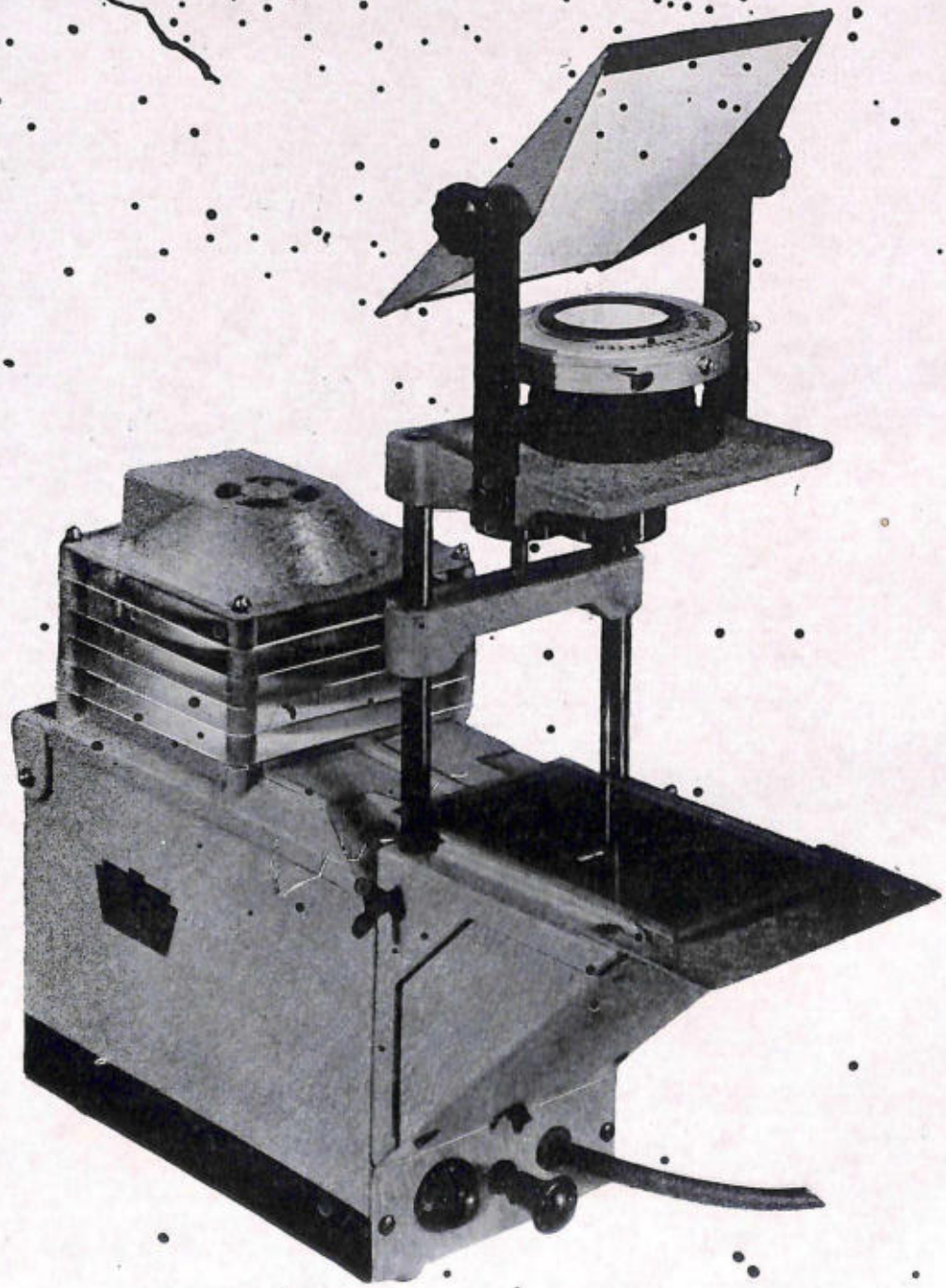
THE TACHISTOSCOPE

The name tachistoscope is from two Greek words 'tachistos' meaning quick and 'skopein' to look at. With the help of a camera shutter (more durable than a photographic shutter) attached to a projector, this apparatus flashes exposures of words, phrases, sentences, numbers, and pictures on the screen at from one full second, through several intermediate exposure times, to 1|100 of a second. As perceptual skill increases, the speed of flash is increased accordingly with the help of the flashmeter.

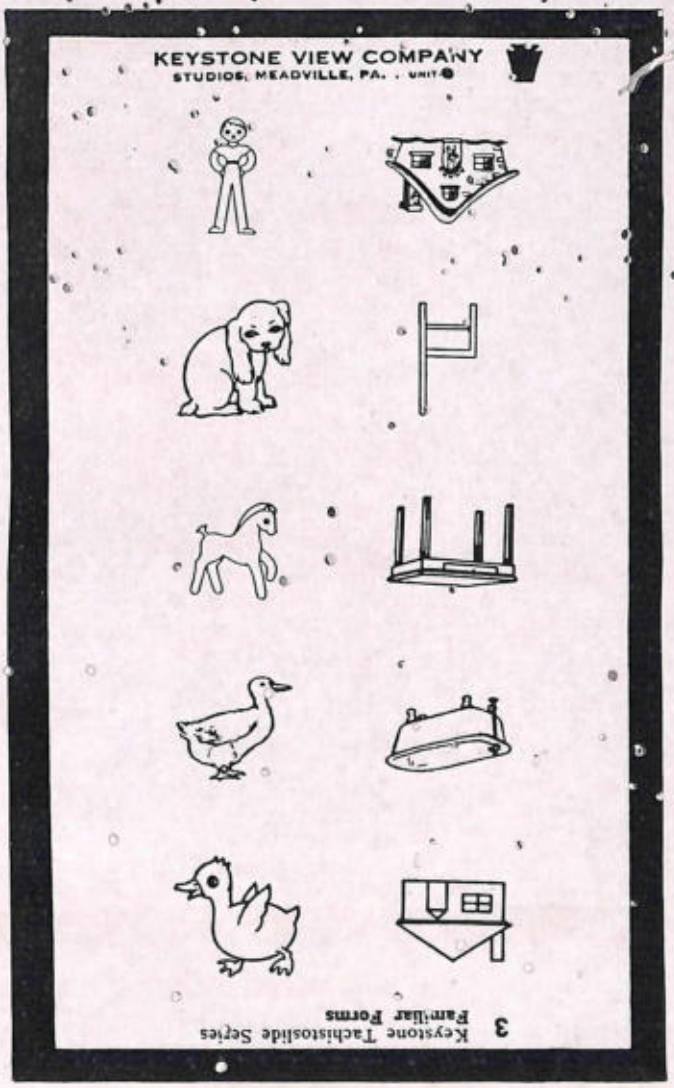
A scientific development of the flash card, the tachistoscope helps children perceive more at each eye fixation. The average child can read with understanding much more rapidly if he cares to do a little practice every day and the tachistoscope is an excellent device for this purpose. Many children have got over their lazy habits of seeing with the help of this apparatus. The device is valuable also for increasing vocabulary and for learning spelling and arithmetic.

The flashmeter or the tachistoscopic attachment can be attached to the barrel of the lens of any standard slide projector. In the absence of the flashmeter, flash projection is possible by turning the lamp on and off or by closing the lens with any opaque object. There is no harm in making an experiment of increasing reading speed of children in this simple manner.

In the U.S.A. tachistoscopic slides on a variety of learning situations

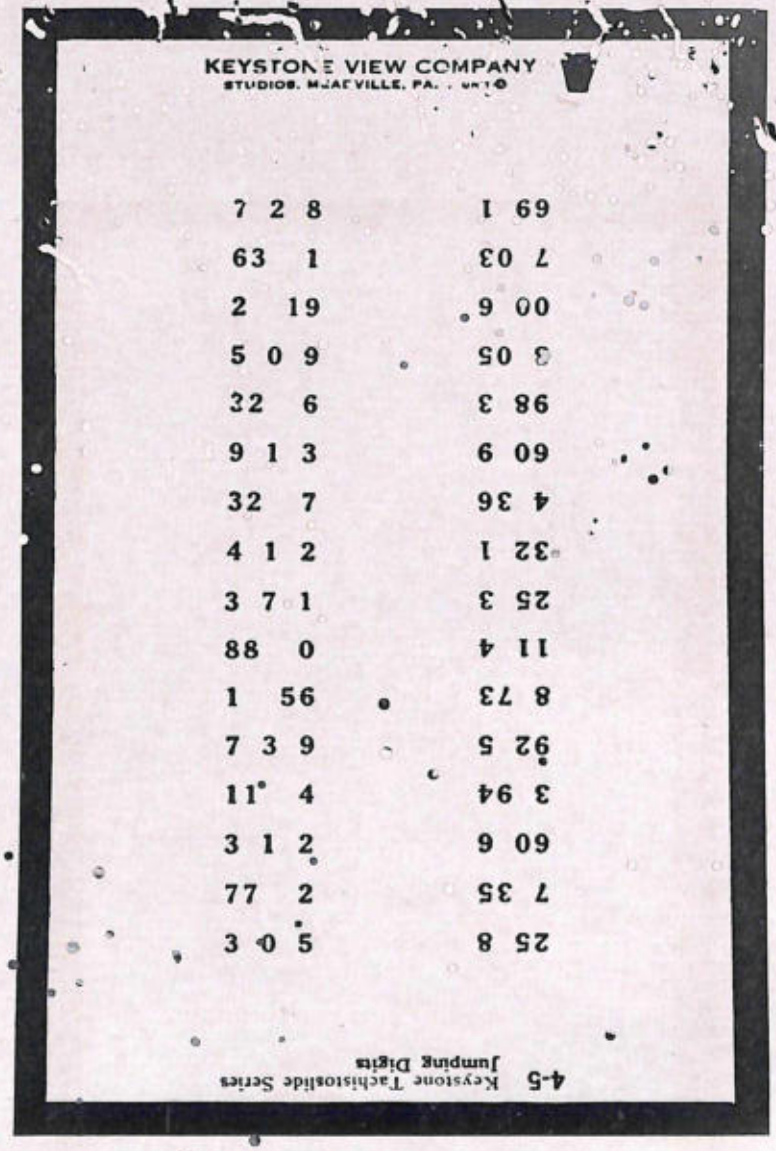


The Tachistoscope—a specially designed overhead projector fitted with a flashmeter (Courtesy: Keystone View Co., Meadville, Pa, U.S.A.)

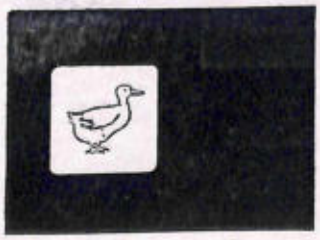


These slides are for use with the specially designed Keystone overhead projector.
(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

are available from commercial sources. These slides are for multiple exposures varying from ten to forty exposures of forms, digits, words, phrases, or sentences.



(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

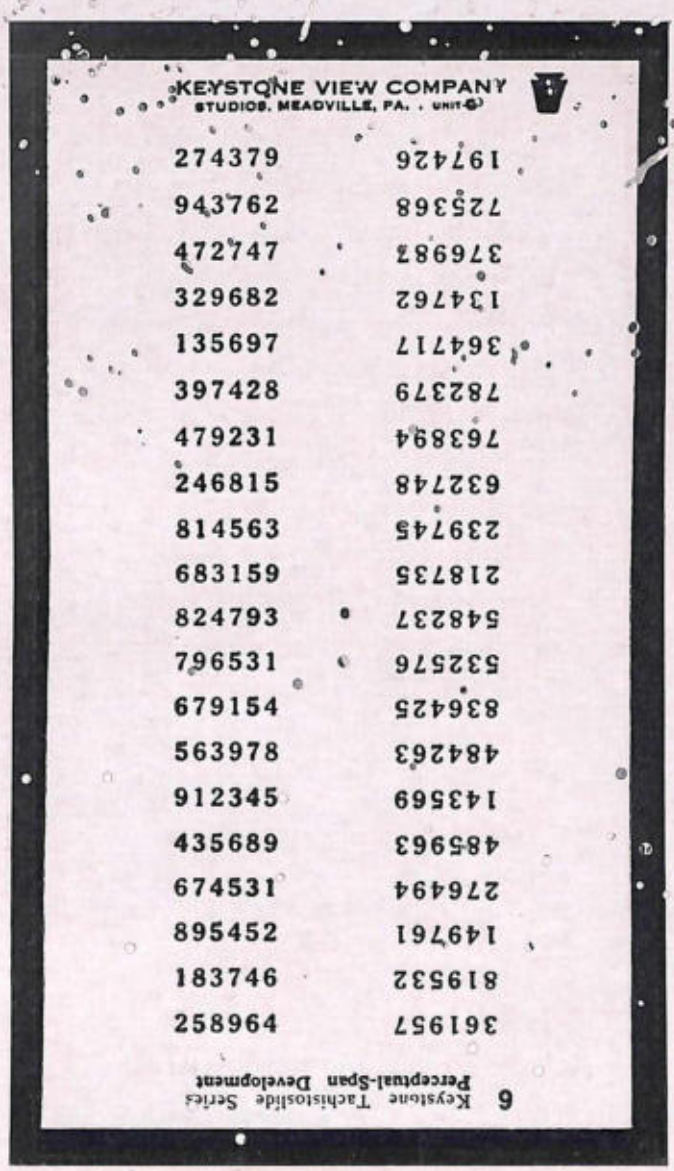


Mask for Exposure of Quarter Section of Slide

Mask for Digit, Word, or Phrase Exposure

Mask for Full-Sentence Exposure

(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)



(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

For the initial development of speed in perception, slides on familiar things are very useful. These are projected with the help of the quarter-size mask.

As training goes on, exposures are made of digits, words, and phrases by means of the half-slot mask.

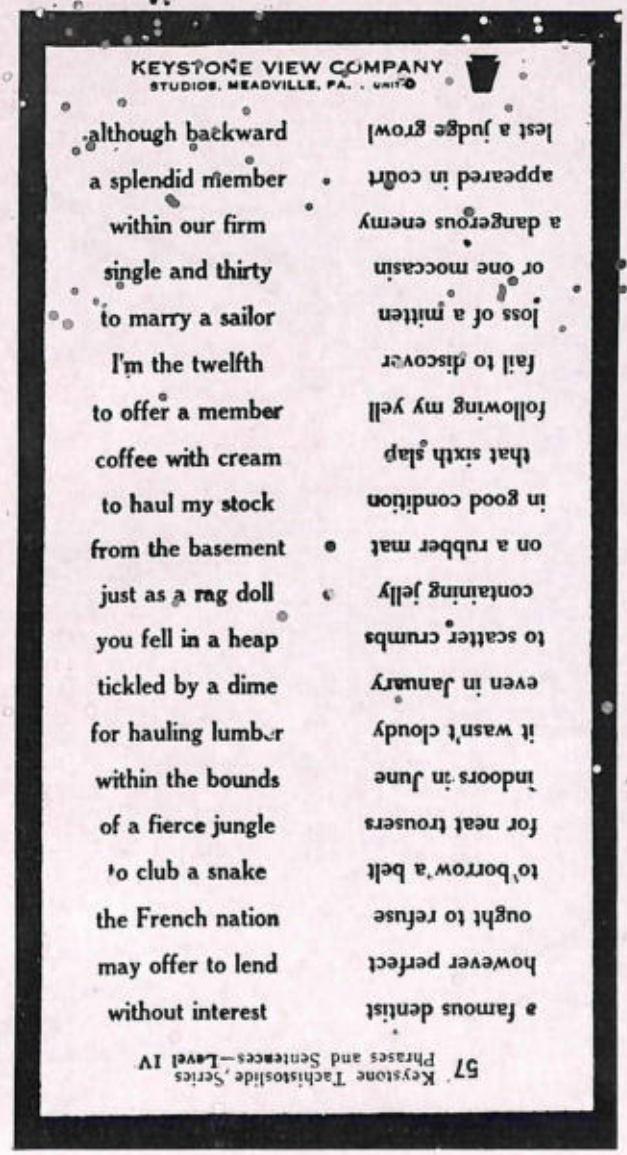
In the final stage of training, complete sentences are exposed through the full-slot mask.

(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

Where there are two columns as in most cases, we simply revolve the slide around and start again with the item which is at the bottom of the right-hand column.

Making of Tachistoscopic Slides

There is no need for purchasing commercially produced tachistoscopic slides. Teachers can make their own slides on treated glass, as in the case



(Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

of ordinary slides explained earlier. Number, words, and sentences can be typed on the cellophane as well. One important point, however, in making these slides for young children is that only simple material should be used. Difficult things should come gradually. Children must continue to be successful in all stages of learning.

CHAPTER 21

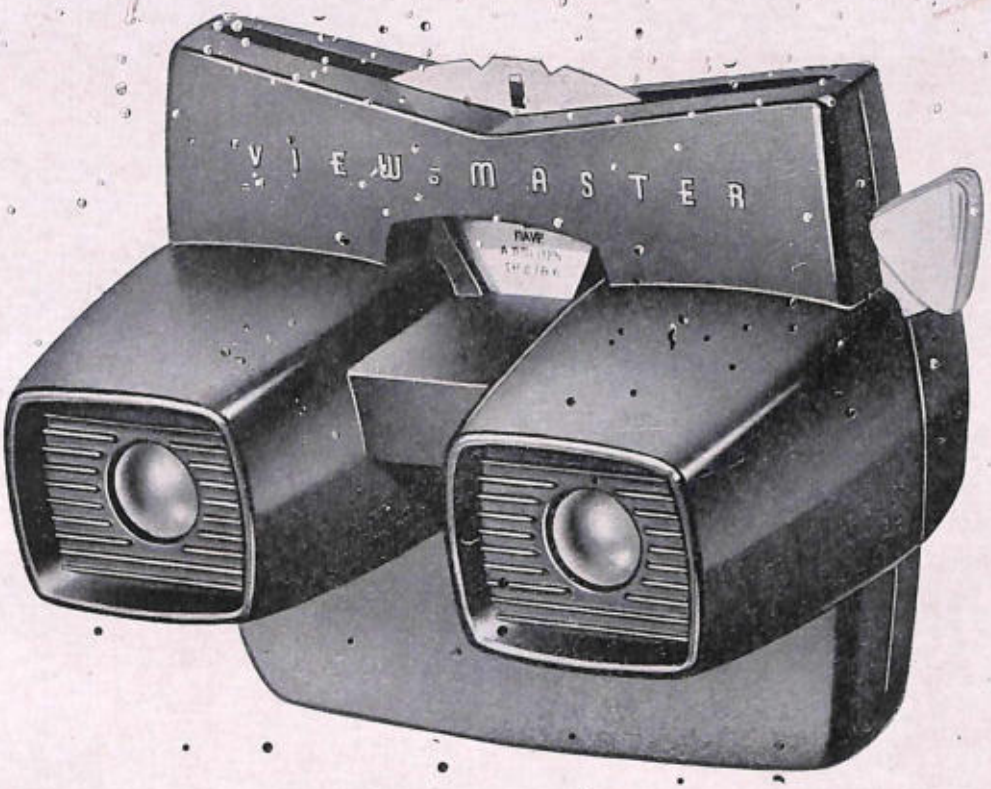
Projections with the Stereoprojector, the Overhead Projector, the Ceiling Projector, and the Microprojector

STEREOGRAPHS AND THE STEREOPROJECTOR

For about a decade after the first World War educational institutions in India as well as in other countries made considerable use of the hand stereoscope. Almost all schools in cities like Calcutta, Bombay, and Madras acquired the viewing equipment and numerous stereographs.

The stereograph consists of two pictures of the same subject taken from slightly different angles with a camera having two lenses. The lenses of the stereoscope merge the two photographs into a single highly realistic three-dimensional picture.

The use of the stereoscope declined steadily from about 1930 mainly because it was an individual equipment. After the Second World War inexpensive plastic viewers and excellent 16 mm. coloured transparencies mounted on a paper disc appeared in the market, but these became popular in some homes only in this country.



The well-known Viewmaster stereoscope (Courtesy : Sawyers Inc. ,Portland, Oregon, U.S.A.)

A projector is now available with the help of which stereographic slides can be used for group viewing. Special polaroid glasses, however, should be worn to have a clear three-dimensional view. A special aluminium screen is to be used also. The special glasses and the special screen are no doubt limitations of this aid, but certain subjects particularly geography, physics, and mathematics are so wonderfully enriched through three-dimensional images that we can very well ignore these minor drawbacks. As Edgar Dale says : "Why do teachers not make more adequate use of stereographs in geography, physics, social studies? The Pyramids, the Acropolis, or Notre Dame Cathedral takes on an aspect of reality in a stereograph that no flat pictures can rival, and when colour is added the student is practically there. If you doubt the value of this added dimension, spend ten minutes looking

The Stereo Projector (Courtesy : Sawyers Inc., Portland, U.S.A.)

at photographs and stereographs of the same or similar subjects. The difference is unforgettable".[1]

A cheaper equipment including the metal screen and spectacles is now available for three-dimensional projection. There is also a comparatively inexpensive twin-lens easy-to-use camera for making 2″ × 2″ coloured slides. The lenses can be focused simultaneously. The Department of Audio-Visual Education of the National Council of Educational Research and Training may well produce some three-dimensional coloured slides for use in certain learning situations.

[1] Edgar Dale : Audio-Visual Methods in Teaching

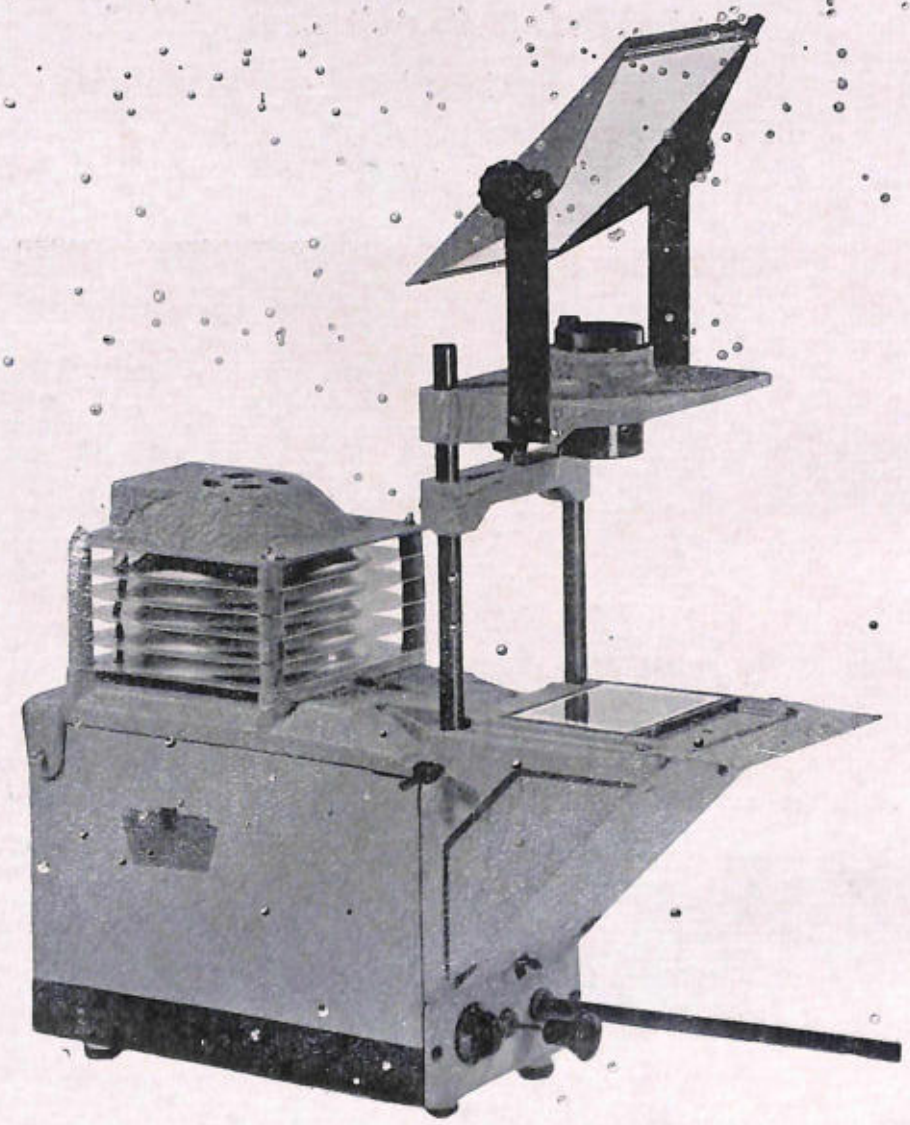
THE OVERHEAD PROJECTOR

One of the latest types of projector is the overhead one. This equipment which has a short focal-length lens and a set of mirrors enables teachers to face their students even while projecting something on the screen behind

A small overhead projector in use in the Department of Audio-Visual Education, NCERT, New Delhi (Courtesy : the Department of Audio-Visual Education)

them. They can write or draw in the course of lessons and this writing or drawing is shown on the screen. As light is furnished by a powerful lamp (a 750-watt or a 1,000-watt lamp), the machine can be used in an undarkened room.

A piece of glass varying in size 5″ × 5″ to 10″ × 10″ serves as projection stage. Drawings can be made with a wax pencil on this glass or on a cellophane stretched over it. The cellophane can be wiped easily and used again. What is shown on the screen with the help of the overhead projector can be seen more clearly than what is written or drawn on the chalkboard. The term "Whiteboard" has been applied to this type of projection as it can take the place of a chalkboard.



The standard overhead projector. (Courtesy : Keystone View Co., Meadville, Pa, U.S.A.)

Some unique Advantages of the Overhead Projector

As already touched upon, the overhead projector has some unique advantages :

(i) It enables the teacher to face the class even when he is using the projector.

(ii) It can be used in an undarkened room.

(iii) Transparencies as large as ten by ten inches can be projected.

Uses of the Overhead Projector

Though teachers can write or draw on the projection surface during lessons as they write or draw on the chalkboard, prepared materials particularly maps, charts, lists, graphs, and diagrams can also be used advantageously. These prepared things need not be shown all at once. With the help of masks they can be projected part by part or item by item as discussions get on. In subjects like history, geography, geometry, physiology, physics, we build up a presentation to make learning meaningful. Transparencies prepared on the different stages or sequences can be placed one over another to build up the whole lesson on the screen.

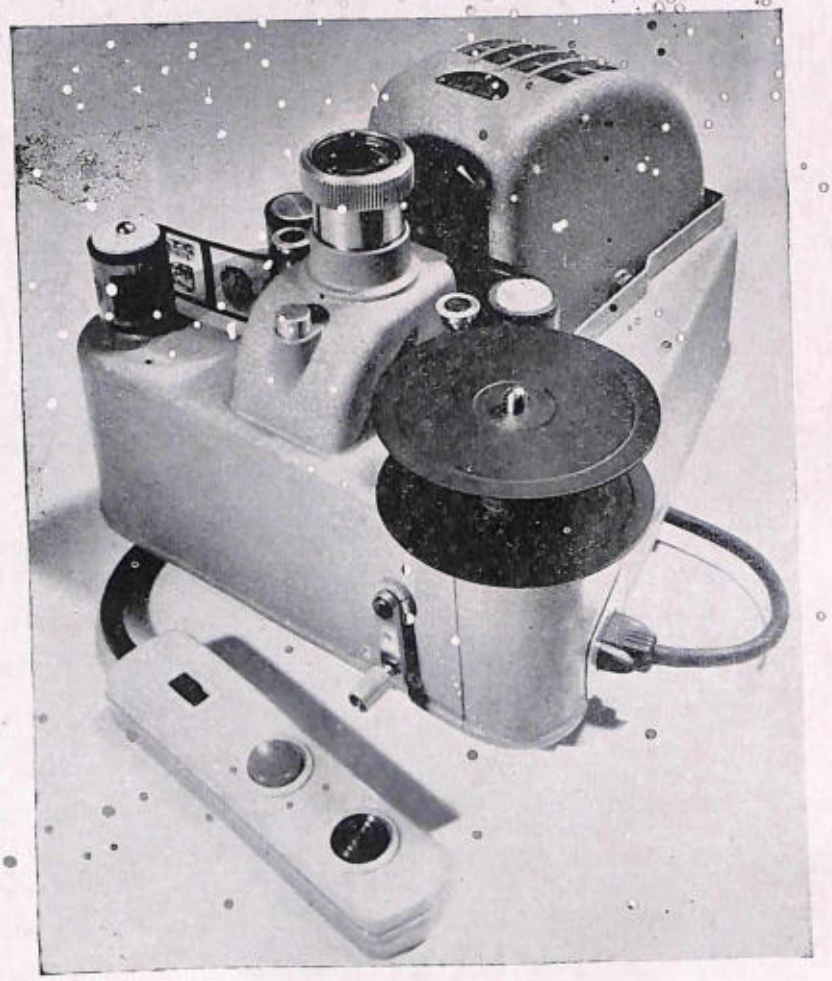
THE CEILING PROJECTOR

The ceiling projector is perhaps the latest addition to the audio-visual family. It is not an apparatus for classroom use, but it is a valuable learning aid. All teachers in our country should have an idea of the projector and the material that can be used with it. Opportunities may come to them in future to help students in their care use this aid when they are unable to attend classes for long periods on account of illness.

The ceiling projector is a machine that can project microfilmed books onto the ceiling above the beds of patients who are too weak to hold a book and read it in the normal way. It is basically a wall projector designed to throw an image of the book page vertically on any clean light-coloured ceiling.

The pages of a microfilmed book can be easily advanced or reversed by any patient from his bed through a very simple device—a control button that can be worked with the slightest touch of the chin, the hand, or foot. There is no record of a patient yet who could not operate a ceiling projector.

The idea of such a projector first occurred to Eugene B. Power, President of University Microfilms of Ann Arbor, during his visit to a military hospital in 1942, where he had noticed invalids unable to hold a



The Ceiling Projector. (Courtesy : Projected Books Inc., Ann Arbor, U.S.A.)

book or even turn a page staring at the blank ceiling for endless days. He took his idea to the Argus Camera Company, and this firm after two years of experimentation was able to develop a satisfactory projector.

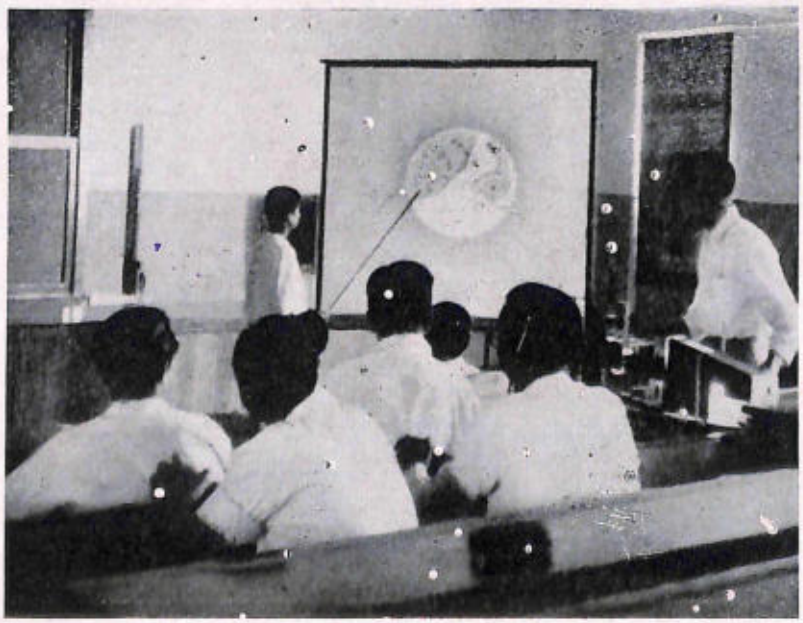
A non-profit organisation under the name Projected Books Inc. was set up and this institution got permission from publishers and authors to microfilm books without paying the usual royalties. Today thousands of microfilmed books for projection on the ceiling are available in the U.S.A. on almost all subjects including text books for children of different age groups.

A bedridden patient reads the page of a book projected on the ceiling to a blind gentleman.
(Courtesy : Projected Books Inc., Ann Arbor, U.S.A.)

It is hoped India will soon have a similar non-profit organization for the purpose of distributing reading equipment and materials to those invalids in hospitals who have a great desire to read but are too weak to hold books in their hands. The Department of Audio-Visual Education of the National Council of Educational Research and Training may well take the initiative in this respect. "Projected books are as vital to the bedridden as Braille is to the blind".

THE MICROPROJECTOR

With the help of an attachment placed on a microscope, microscopic slides can be projected so that the entire class can see what otherwise could be seen by only one person looking into the microscope. This device is of great help to teachers as without it they could never make certain that their students actually see what they intend them to see. Moreover, a microscope is not a simple equipment to handle. Students very often waste a lot of time in focusing the lens correctly and in adjusting the mirror. As the micro-projector projects the things on the slide in a greatly enlarged form for the entire class, there can be useful discussion when the image is on the screen.



A microprojector in use in the Institute of Medical Education, S. S. Karnani Memorial Hospital, Calcutta (Courtesy : Dr R. K. Panja)

The microprojector has one great limitation. It needs an absolute dark room to have a clear picture. This disadvantage, however, can be got over if there is adequate provision for ventilation.

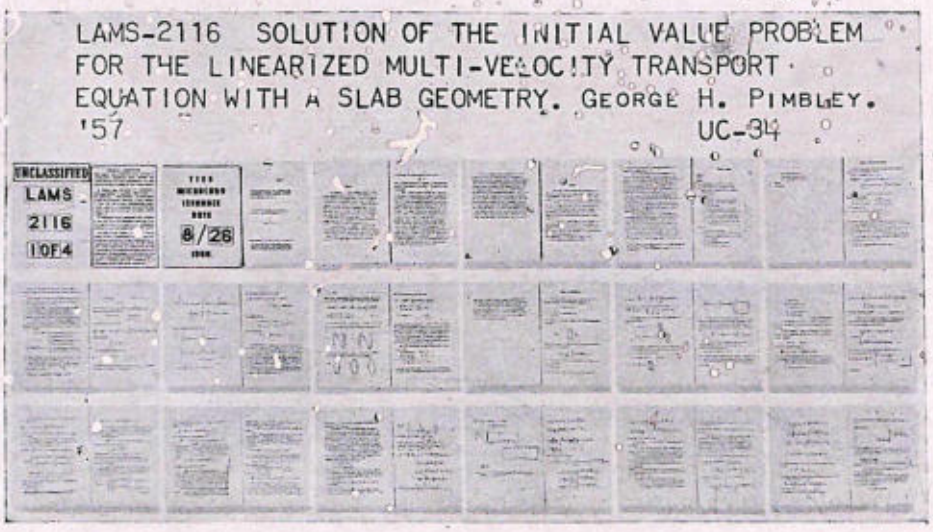
The Microfilm and the Microcard

It is now possible with the help of a special type of camera to reproduce pages of books, newspapers, or manuscript on 35 mm. or 16 mm. film. The original matter is reduced to such an extent that it cannot be read without magnification. A page of a newspaper is reduced to the size of a postage stamp. To read a microfilm a reading machine is used. The operation of this machine is very simple. The user can insert the film and focus without moving from the chair. The image may be projected onto a white sheet

This special type of microfilm reader has the device for throwing the image on a screen for use by a small group. (Courtesy : National Library, Calcutta)

of paper on the table or by a simple adjustment of the mirror on a screen for use by a small group.

Many libraries in India and the National Archives in Delhi have micro-



A microcard
(Courtesy : Institute of Fundamental Research, Bombay)

A microfilm
(Courtesy : Geological Survey Library, Calcutta)

filmed rare and valuable books and manuscripts to ensure preservation and to facilitate reading.

Microfilm readers are available in some libraries for use by research workers. Nowadays it is possible to get by post microfilmed copies of rare books of foreign countries.

A variation of the microfilm is the microcard. It is now possible to put on a microcard more than hundred pages of a book. Like the microfilm, the microcard requires a reading machine.

It is reported that rare manuscripts all over India will be microfilmed. According to an agreement between UNESCO and the Government of India on a cost-sharing basis, microfilming has already been taken up by the National Library in Calcutta. An expert committee has been set up by the Government of India to select the manuscripts. Necessary equipment and the services of an expert have already been provided by UNESCO. This expert is now microfilming rare manuscripts in the National Library and other libraries in and around Calcutta. He is scheduled to visit sixteen other important library centres in India to microfilm selected manuscripts in different languages.

The Film

CHAPTER 22

Increasing Use of Educational Films in India

Progressive educators in India have long recognized the value of films in all stages of education. Film libraries have been set up throughout the country, and schools, colleges, universities, and social institutions are borrowing films in an increasing number. The Central Film Library of the Department of Audio-Visual Education of the National Council of Educational Research and Training has now about 6,000 16 mm. films for use in educational institutions in the country. The films are loaned free of charge to these institutions. The Films Division of the Government of India in co-operation with the Department of Audio-Visual Education of the National Council of Educational Research and Training has taken up the work of producing films to aid the learning of specific topics in classrooms in connexion with subjects such as history, geography, hygiene, and science.

The film societies movement has made considerable progress during the past few years. The film societies under the Federation of Film Societies and the University film societies represented on the University Film Council are using documentary films in an increasing number in their programmes.

Contributions of Films to Learning

The ideal method of learning about anything—an industrial process, a natural phenomenon, or an important event—is to see the thing firsthand. But where this is not possible, we must turn to indirect observation for learning. Fortunately we have a useful means of indirect observation in the film. Even where firsthand viewing is possible one may not learn what he needs to learn on account of the non-selective and confusing nature of the situation. The firsthand experience may well need to be supplemented with the film or some other audio-visual aid.

Films help education in so many ways that it is not possible to deal with them all. A few major contributions are noted here :

(*i*) *Films can show movement*

The great difference between the ordinary picture and the film is that the latter can show movement, and it is this power of showing movement that makes the film so valuable. "Life consists of movement, and the introduction of movement makes the presentation of anything to do with life much more real. If geography is to deal with realities, it is obvious that the introduction of movement is necessary if we are to give the children any true conception of things with which geography deals".[1] For the study of topics such as monsoons, currents and tides, glaciers, volcanoes, days and nights, no other medium is so effective as the film.

(*ii*) *Films can show things which are too fast or too slow to be seen by the human eye*

For the study of certain actions which are rather too fast, e.g., the

[1] J. Fairgrieve—Geography in School

movement of the body in certain games and exercises, slow motion films can be made by increasing the number of exposures when the film is shot. Similarly, by decreasing the number of exposures and with the help of time-lapse photography the growth of a flower or a plant during a period of several weeks can be shown in a few minutes' time. The camera is focused on an object and periodically with the help of special gadgets frames are exposed. When the completed picture is projected on the screen, the process of several days is seen and studied in a few minutes.

(*iii*) *Films can show things which are too small to be seen by the human eye except with the help of a microscope*

With the help of a microscopic lens it is possible to photograph objects, e.g., plants or cells which can be seen only with the help of a microscope. When these photographs are projected on the screen, the entire class can study them. Such films thus provide the classroom with the benefit of an expensive instrument like a microscope.

(*iv*) *Films can show a process that cannot be seen by the human eye*

A film can be made with the help of a series of drawings to show something which cannot be otherwise seen, e.g., how we hear, how we see. The Bray film "How the Organs of the Body Function" and the EBF film "The Eyes" are typical examples.

(*v*) *Films can show a technique or a process from beginning to end*

In many learning situations particularly in crafts and technical training we are to demonstrate techniques and processes : how to use a tool in agriculture, how to thread a film into a projector, how to seal a bottle in fruit preservation. If films are made of these demonstrations, we can use them conveniently and effectively. Those who have demonstrated any manufacturing process know how difficult it is to arrange for the demonstration in the classroom.

Films can show a technique as in this and in the two pictures that follow. (From the film 'Highland Farming' produced by the author at West Linton near Edinburgh)

(vi) *Films can show the incidents of the past effectively*

The past cannot be seen, but with the help of films we can turn the clock back. We reconstruct it in dramatic form and photograph these reconstructions. Many films on historical events and on the lives of famous men and women have been made in this manner. Films like 'Gotama the Buddha',

'Chhatrapati Shivaji', 'Rabindranath Tagore', 'Bal Gangadhar Tilak', Madame Curie', 'Abe Lincoln in Illinois', 'Lenin in Poland', and 'Ten Days that Shook the World' are a few typical examples.

A still from the film "Gotama the Buddha" (Courtesy : Film Division, Government of India)

Some Cautions in Using Films

(i) An expensive aid

The film is undoubtedly an excellent audio-visual aid, but it has already been pointed out that it is an expensive aid and it should not be used if equally good results can be obtained by the use of cheaper aids like pictures, slides, filmstrips, charts, models.

(ii) Films may give a wrong idea of time and size.

The formation of a flower or a fruit which takes weeks to happen is shown through time-lapse photography in a minute and so there may be a wrong idea about the actual time taken in the growth. Again, as films can show small things as large ones, there may be a wrong idea of size. Some natives of South America after seeing close-ups of mosquitoes in a film remarked : "We need not worry about our mosquitoes, they are so tiny. Yours in America are indeed very large and possibly very dangerous".[2] In using films, therefore, teachers should make certain that wrong ideas of time and size have not been formed by the viewers.

(iii) The film is not always the best aid

The film is not always the best aid though certainly it is a very valuable audio-visual aid. In some learning situations a model or a diagram may be a better aid. In some cases nothing is better than a field trip. For subjects which are static by their nature, filmstrips or still pictures are better aids than films. And there are topics in arithmetic, geography, and hygiene for which a flannel board can be a more interesting and effective aid to children than the film.

The Educational Film

Educational films are those films which are produced either for classroom instruction or for general education. They are distinguished from

[2] E. Dale : Audio-Visual Methods in Teaching

feature films which are made exclusively for entertainment. Though all feature films have some value from the point of view of general education, some are particularly noted for their educational value. Films like 'Madame Curie', 'The Story of Louis Pasteur', 'Raja Rammohan Roy', and 'Abe Lincoln in Illinois' are a few typical examples. Educational films may be classified under three main heads :

(i) Instructional films
(ii) Documentary films
(iii) Newsreels

Instructional Films

These films are aids to the learning of specific topics in the classroom in connexion with subjects such as mathematics, physics, chemistry, botany, history, geography, hygiene. In India most of the classroom films are imported ones. The Films Division of the Government of India has lately, however, taken up the work of producing instructional films in co-operation with the Department of Audio-Visual Education of the National Council of Educational Research and Training. There is a great shortage of films particularly on history and geography, and films on these subjects are now being planned.

Documentary Films

Documentary films are extremely valuable from the point of view of general education.

The word 'documentary' when applied to films means to teach (from Latin 'docere'). By dramatizing actual material the documentary film conveys information and creates attitudes. It tells its story in terms of human beings and human interests.

It is about forty years ago that John Grierson, the British film expert, first used the word 'documentary' to describe Robert Flaherty's film on the daily life of the South Sea Islanders. He defined a 'documentary' as "a

creative treatment of actuality". Though we frequently came across the new word in the early thirties, it was only after World War II that we fully realized the importance of this medium in the field of education.

Though a documentary film aims at a truthful representation of a theme or an incident, it cannot be completely true for various reasons. In many cases technical difficulties stand in the way of a truthful representation. Though generally, the actors of a documentary film are people in real life situations there are occasions when the help of professional actors becomes a necessity. Some real people being camera shy fail to act in a natural manner.

Again, a documentary to be completely true needs exhaustive treatment and on-the-spot study, and these are hardly practicable. Further, films produced by the Government or commercial firms cannot portray the whole truth. Even if a film of a Government project gives more importance to the activities of the ordinary labourers than to the visit of the Minister and the functions of the General Manager and other top executives, it does not show, and there may be good reasons for not showing, the darker aspects of the undertaking.

Robert Flaherty's 'Nanook of the North' on the daily life of Eskimos of Canada's frozen north, his 'Man of Aran', the story of a family struggling to survive on a barren island, and his 'Louisiana Story' which describes the development of swampland and oilfields in Louisiana, John Grierson's 'Drifters' on the daily life and work of Scottish fishermen, John Heyer's 'Back of Beyond', the story of a mail van travelling into the burning desert of Australia, Alexander Dovzhenko's 'Earth' on the life of farmers in Russia, and Pare Lorentz's 'The Plough that Broke the Plains', a picture of erosion in America are some of the outstanding documentaries produced in Western countries.

Excellent documentary films have been produced in India also by the Films Division of the Government of India. Some of the well-known Indian

documentaries are: 'Drums of Manipur', 'Our Neighbour Nepal', 'Holy Himalayas', 'Spring Comes to Kashmir', 'Glimpses of Assam', 'Mahabalipuram', 'Bharat-Natyam', 'Khajuraho', 'Konarak', 'Madurai', 'The Himalayan Tapestry', 'Mandu—The City of Joy', 'Call of the Mountains', 'Taj Mahal', 'Radhakrishna', 'Kangra and Kulu', 'Rabindranath', and 'Our Feathered Friends'.

The documentary films of India cover a wide variety of subjects. They give not only an idea of the various development projects under the Five-Year Plans, but, what is equally important, they portray the great cultural past of our country in the realms of art, architecture, and music. The Films Division of the Government of India is now

A still from the film "Call of the Mountains". (Courtesy: Films Division, Government of India)

one of the largest units in the world for the production of documentary films. During the past few years it produced on an average about 100 documentaries a year.

A still from the film "Bharat Natyam". (Courtesy : Films Division, Government of India)

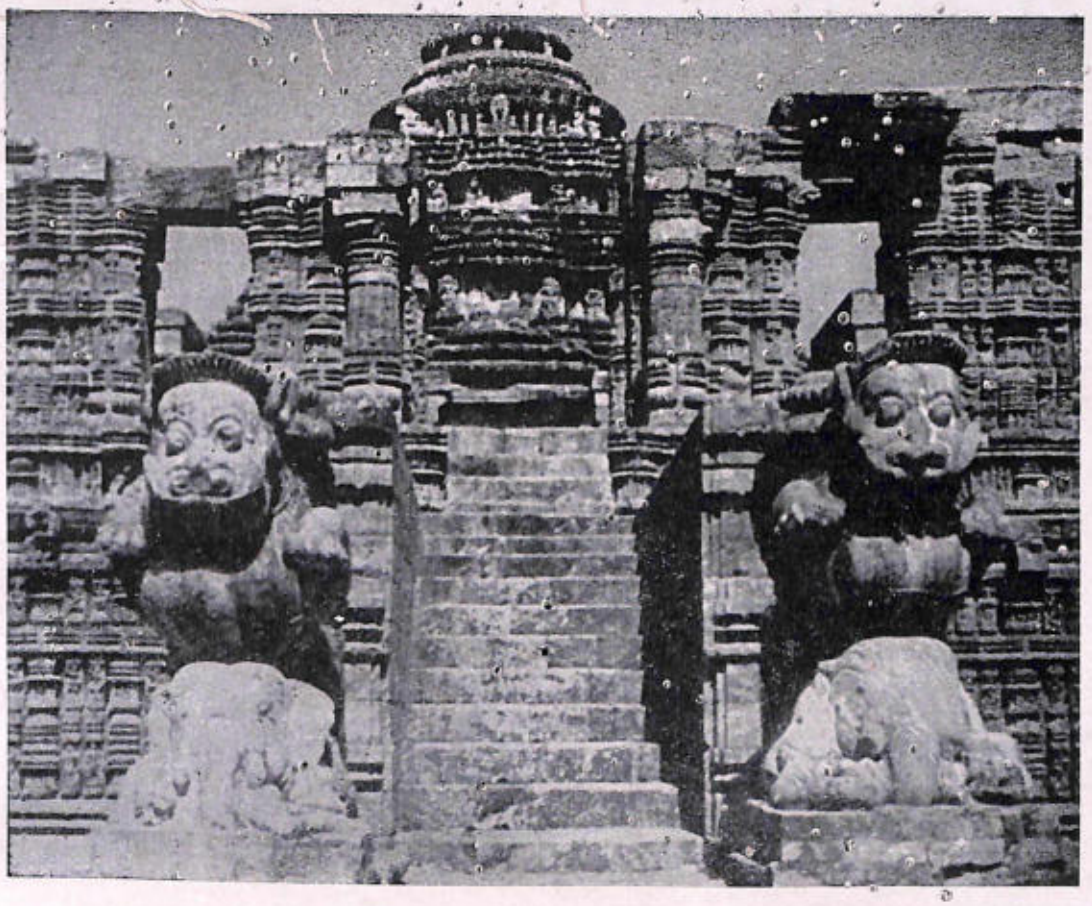
Newsreels

These have an important place in education as they deal with recent events, both at home and abroad. One great difficulty in using newsreels is that educational institutions use 16 mm. projectors whereas newsreels are produced in 35 mm. It is hoped, however, that in future 16 mm. newsreels will be produced for circulation to educational institutions. It is also hoped

A still from the film "Khajuraho". (Courtesy : Films Division, Government of India)

that these reels will reach educational institutions as quickly as they reach cinema houses.

The newsreel has little in common with the characteristics of a documentary film except that they both deal with natural material. The newsreel presents in simple descriptive terms the events of the day without any



A still from the film "Konarak". (Courtesy : Films Division, Government of India)

colouring or bias, but the documentary film is concerned with the purposeful shaping of the newsreel material.

Films sponsored by Commercial Organizations

Although films sponsored by commercial firms have not been dealt with under the educational film, many of these have considerable educational value. They cover a wide range of subjects. Some commercial firms have sponsored films for the learning of science in schools and colleges. These films are quiet reliable as they are carefully prepared under the guidance of experts. The films of commercial firms are both in colour and in black and white and are excellent in photographic quality. They are loaned to educational institutions free of charge.

Some educationists in this country do not like the use of commercial films in classrooms because they think that these films are mainly for advertisement purposes. It should be pointed out, however, that films are produced nowadays by leading commercial firms as part of a broad public relations programme. If there is any advertising message in a film, it is generally the name of the firm. It can be argued also that it does not matter much even if there is a bit of direct advertisement in a good film on a classroom topic. It is essential no doubt for teachers to make certain that the commercial film used is the best available aid to make the lesson meaningful and that it does not contain anything untrue.

'Water' (I.C.I.), 'Ammonia' (I.C.I.), 'Distillation' (I.C.I.), 'Refrigeration' (I.C.I.), 'The Story of Penicillin' (I.C.I.), 'Radio Story' (Phillips), 'Magic Window' (Phillips), 'The Miracle of Light' (Phillips), and 'The Story of Storage Battery' (Esso), are a few typical examples of commercial films designed for use in classrooms.

Entertainment Films for Children

Films not only aid learning but they play a great part also in building the character of children. When certain ideals and virtues are repeatedly shown in films, people and particularly children absorb them and adapt themselves accordingly. But lessons in character through films are best given when they are presented in an indirect way through entertainment.

Very unfortunately there are not many suitable entertainment films for children and so no regular screenings of such films are arranged either by schools or commercial houses. Some parents, therefore, allow children to see pictures that are meant for grown-ups. Perhaps they are not aware of the harmful effect of such films on young minds. Attempts have been made in countries like Great Britain and the U.S.A. to find out the extent of unhealthy influences of films produced from an adult angle on children. Those who carried on research in this field unanimously pointed out the

undesirable influences of some commercial films relating to sex and crimes. Grown-ups and children whose background is sufficiently strong may not be affected by the scenes, but for the bulk of children the case is quite different. The Wheare Committee, a committee on Children and the Cinema appointed in Great Britain, pointed out: "A large number of films are exposing children regularly to the suggestions that the highest values in life are riches, power, luxury, and public adulation and it does not matter very much how these are attained or used . . . . We are convinced that the regular portrayal of false values is more perversive and dangerous than the depiction of crime or impropriety".

Although censorship regulations in our country today prevent some commercial films from being shown to children, films certified for universal exhibition may have themes which may be either beyond the comprehension of children or give them a distorted sense of values. As Mary Field has aptly said: "The plots and the characters and the motives are all outside their experience. And if they cannot understand the film on the screen, they may do one of two things. They may allow their eyes to be amused and excited while their minds remain passive and blank. On the other hand, they may become bored and noisy and a nuisance to themselves and to everyone near them . . . . But if boring the child is bad, the first alternative is far worse. It is criminal to allow children who go to the cinema in order to be active and to enjoy the film, to sit passively with their minds not working." Sir Ronald Gould, President of the World Confederation of Organizations of the Teaching Profession, in his comments in connexion with the symposium on 'The Role of Children's Film in the Development of the Personality of the Child' organized by the Children's Film Society in Delhi in January 1961 quoted the following words of Dr Horace King, a Member of Parliament in Great Britain: "I can never get this out of my mind the picture of little children sitting in the cinema cowering away from the screen that was meant to entertain them and peering through their

fingers to see if the bit they didn't like was over as compared with the happiness of children looking at a film and really enjoying it, as one wants them to . . . "

Suitable children's film in sufficient numbers should be produced within the shortest possible time for regular exhibition in schools, clubs, and other welfare organisations in a non-commercial way. The whole thing is to be planned properly and sufficient funds should be allotted for the purpose. There is no doubt that the investment will be worthwhile as no investment can be more important for our country today than that which can help build the character of the nation. Dr Radhakrishnan very rightly observed : "Though the Five-Year Plans are important for the welfare of the nation, yet much more than changes in the environment is the need to change the nature of human beings. The transformation of man is more essential than the transformation of the environment. If we do not change the minds and hearts of people, we cannot change anything else, and to bring about a change in minds and hearts there are many media. But the most potent of them is the film itself, specially a film produced for children".

We have in India plenty of excellent material for children's films in Hitopadesh and in the stories of Vikramaditya. These stories undoubtedly suggest to children such noble virtues as love, honesty, courage, integrity, tolerance, kindness, and courtesy. Events of historical interest especially those portraying the noble deeds of our ancestors and the sacrifices made by our illustrious leaders in the struggle for Independence provide excellent themes on which very useful and interesting films for our children can be made. Fllms on fairy tales can help develop children's imagination to some extent, but we should make sure that they do not contravene certain limits of reality. Adventure films on heroic achievements arouse in children a desire to perform such deeds themselves. Films on stories from science help develop in children a scientific outlook. Films based on tales about travellers and children of different parts of the world are invaluable to children. Such

films not only give geographical knowledge in a meaningful and enjoyable manner but, what is more important, they help create a common brotherhood. Commenting on some films produced by the Children's Film Society of India Father Pire, a Nobel Prize winner for peace, said : " . . . . But in the world which has suddenly become so small there remains so much prejudice and so many gulfs which divide mankind. Your films for children should not only acquaint them with world geography but, above all, with human beings. Knowing each other better will mean reduction of prejudice, gulfs, tensions, and it would also be likely to arouse an increased interest in the *other* with reciprocal sincere friendship."

Children's films should be as aesthetically pleasurable as possible. It should be remembered that children are drawn to films more by the art and the movement than by the plots or the great ideas they contain. The latest techniques and equipment should, therefore, be used in the production of children's film. And as coloured films appeal to the aesthetic sense of children, films for children should be in natural colour as far as practicable. Pictures in natural colour are not only attractive but they appear more real.

With a view to focusing the attention of the public and the Government, the Cultural Film Society, a voluntary organization in Delhi, organized a Film Festival for children in 1952. A large number of children with their parents attended the shows. A year later another festival of children's films was arranged in Delhi. Dr Radhakrishnan who inaugurated this festival observed : "When we talk about putting before our nation certain great ideals, these ideals do not become functioning realities simply because they are stated in books or in our Constitution. They require to be assimilated by the people of the country. This assimilation takes place spontaneously, more or less unconsciously, by the way in which these ideals are portrayed in pictures, in literature, in cinemas, etc. Therefore, if you want to make the young people get some ideas of human dignity, human rights, the need for truthfulness, for integrity, it is not by asking them to be truthful or to

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love their neighbour but it is by presenting to them concrete examples of truthfulness and integrity by means of the films themselves".

A cinema for children was opened in the year 1954 in Delhi, but it did not prove very successful for want of suitable films. The Third Film Festival for children was held in December 1954 under the chairmanship of Shrimati Indira Gandhi in the newly constructed Sapru House auditorium. At the concluding show of this festival Dr B. V. Keskar, then Minister for Information and Broadcasting, announced the intention of the Government to open a society called the Children's Film Society. The Society came into being almost immediately, and within a short period it produced quite a number of good films for the young. Its first production "Jaldeep" won the first prize at the Ninth International Exhibition of Films for Children at Venice for "its charm and the exaltation of generous feelings".

A scene from the film "Bush Christmas" (Courtesy : the Department of Audio-Visual Education, NCERT, New Delhi)

To organize the children's film movement throughout the country the Society has set up State Committees. These committees arrange shows in schools and cinemas in their respective States at a nominal rate of admission.

The United Kingdom, the U.S.S.R., Czechoslovakia, and France are the early pioneers in the field of making children's films and the Central Film Library of the National Council of Educational Research and Training has acquired some of their outstanding productions. Amongst these are : 'Bush

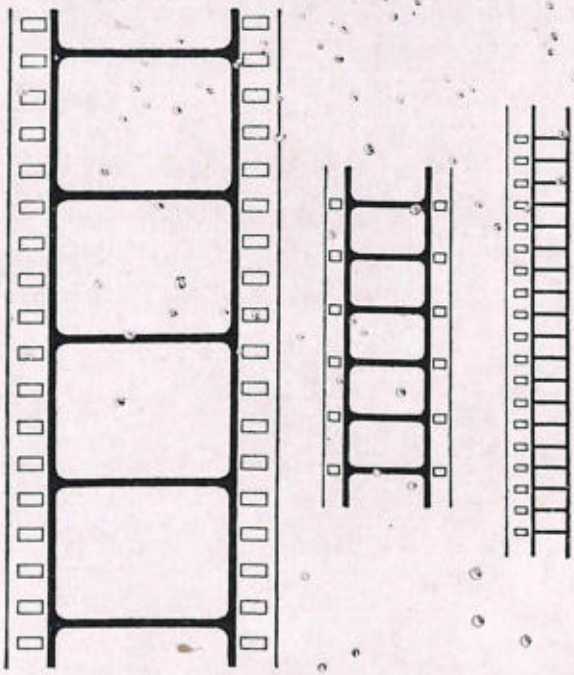
A scene from the film "Boil, Boil, Little Pot" (Courtesy : the Department of Audio-Visual Education, NCERT, New Delhi)

Christmas', 'Chuk and Gek', 'Bim', 'Circus Boy', 'Proud Princess', 'Boil, Boil Little Pot', 'The Boy who Stopped Niagara' and 'Cinderella'. A list of some of the productions of the Children's Film Society is given in Appendix A.

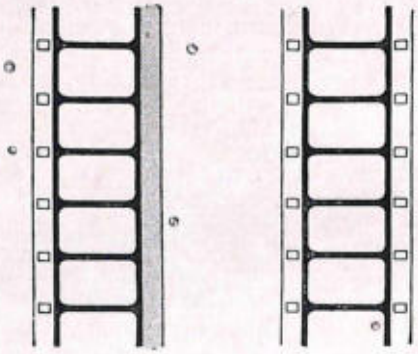
Sizes and Types of Films

Films are of different sizes—16 mm., 35 mm. and 8 mm.* The 16 mm. is now generally the standard size for educational films and the 35 mm is the standard for films shown in the cinema. The 8 mm. film though used by amateurs in the past for the production of home films is now being used in education in some countries.

* Films have also been made in 9 mm. and 70 mm. sizes.



35, 16, and 8 mm. films



16 mm. silent and sound films

There are silent and sound films. A great advantage of the silent film is that it can be adapted to various learning situations as the teacher can give the appropriate talk. In the sound film, the sound is recorded on one side of the film. The main advantage of the sound film is that in most cases it makes the picture more real.

Increasing Use of 8 mm. Films

On account of dramatic technical advances during the past few years the 8 mm. film is no longer an amateur thing. It has now a place, and an

important place in education. Most of the progressive countries in the world are taking greater interest in this medium. Japan is planning to add to its already large collections of 8 mm. silent and sound educational films. The U.K., the U.S.A., and Canada are making extensive use of a cassette-loading 8 mm. silent projector. The film (about four minutes' duration) is encased in a small plastic cassette. The operation of the projector and the loading of the cassette are extremely simple. The rear-projection model of this projector (800 E Model), which looks like a television set, can be used in undarkened rooms. Encyclopaedia Britannica Films, McGraw Hill Films, and the National Film Board of Canada have all announced plans to produce or distribute 8 mm. silent cassette films. The University Film Council of the U.K. has recommended the use of 8 mm. films in universities. The Council, at its annual meeting held at the University of Leicester in 1964, recorded the following about the usefulness of the 8 mm. film :

> "Its special contribution would appear to be the way in which it will enable individual teachers to make comparatively easily and cheaply films which are precisely suited to certain teaching situations. Of equal importance will be the use in research projects, where qualities of lightness, simplicity, and cheapness are important and the special properties of the wider gauges are not called for".[3]

Two types of 8 mm. sound projectors are now available—cassette-loading and reel-using. These projectors have no threading problem. The film is simply inserted into a slot. When the starting button is pressed, the threading is done automatically. The reel-using machine can handle both optical and magnetic sound tracks. It may be noted that though films with magnetic track give better sound, they are more costly.

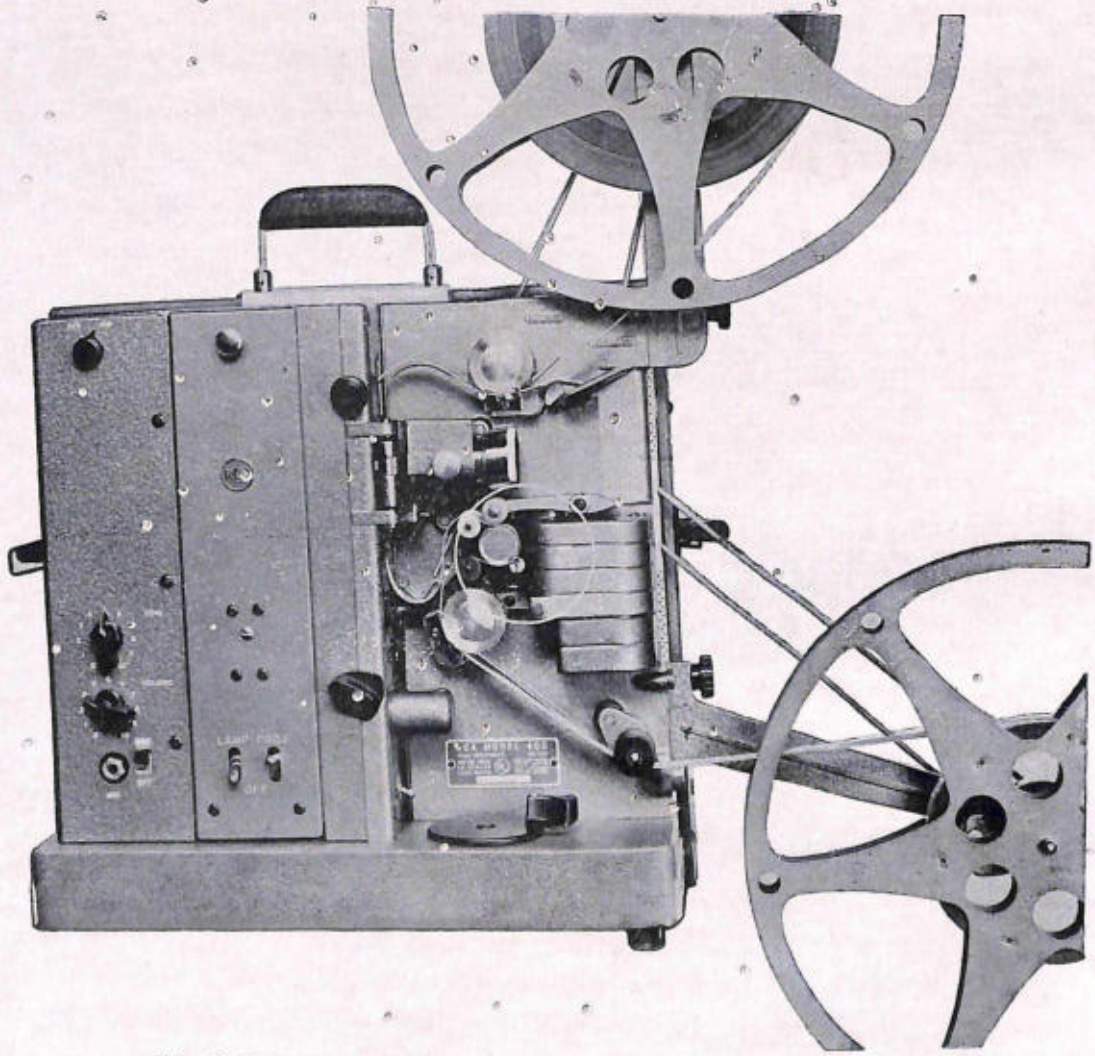
On account of the increasing use of the 8 mm. film some experts in the U.S.A. are of the opinion that the perforations in the film should be reduced

[3] "Visual Education" (August-September, 1964).

in size to allow more space for the picture. This will ensure brighter and larger image on the screen.

Sizes and Types of Projectors

As there are three sizes of films, so there are three sizes of projectors to use them. And as the 16 mm. film is the standard size for educational films, so the



The R.C.A. 400 senior 16 mm. sound projector now being manufactured in India (Courtesy: General Radio and Appliances Private Limited, Calcutta)

16 mm. projector has been accepted as standard for use in educational institutions. It uses safety films and is much cheaper than the 35 mm. projector.

There are silent and sound projectors as there are silent and sound films. As most of the educational films are now sound films, and also because a silent film can be run on a sound projector, institutions usually prefer to buy a sound projector.

The portable and easy-to-operate 16 mm. sound projectors of today are in sharp contrast to the bulky and complicated machines of a few years ago. Any teacher can learn to operate these in two or three days' time by following carefully the manufacturers' instructions.

The Magnetic Sound Projector

This modern equipment enables a teacher to add his own commentary to the film. A magnetic stripe is to be added to the film for this purpose. A magnetic sound projector is not very costly, but the cost of striping the film at the rate of about twenty paise per foot is rather too much for educational institutions in our country. Both silent and sound films can be striped.

Reels for 16 mm. Projectors

Film reels are generally made in sizes of 400, 800, 1,200, and 1,600 feet. Most of the 16 mm. projectors can use all these reels. The running time of a 400 foot reel of sound film is about ten minutes. A silent film of the same length takes about 15 minutes to be projected.

The Light Source for 16 mm. Projectors

Two types of lamps can be used for the projection of 16 mm. films, the ordinary electric bulb and the carbon arc-lamp as used in the professional cinema. Most of the 16 mm. projectors use ordinary electric bulbs. For classroom use, a 750-watt bulb is quite sufficient. In large auditoriums a 1,000-watt bulb can be used provided the projector is able to stand the additional heat of the more powerful bulb.

An arc-lamp projector no doubt provides a brighter image on the screen, but it is more expensive, gives greater mechanical trouble, and is more complicated to operate. It is not suitable at all for use in classrooms. It is suitable only for static installation in a large auditorium.

Selection of 16 mm. Projectors

In selecting a projector, the following points should be borne in mind :

(i) The projector is sturdy, but not too heavy.

(ii) The projection lamp and the sound lamp are easy to replace.

(iii) The projector has the device for tilting.

(iv) It has a microphone jack for the use of the gramophone or the tape recorder.

(v) It has the device for still projection.

(vi) It has the device for reversing the film.

It may be noted, however, that the projectors which are now manufactured in our country do not have the last two facilities.

Repairing of Films

Though films are generally found in good condition, occasions may arise for the repairing of a damaged or broken film. The process of repairing is very simple provided there is a splicer (this is an inexpensive equipment costing about Rs 50/-) and a bottle of film cement. The film cement should be purchased from a reliable shop. A booklet showing how to use the splicer is generally packed with the equipment.

Care of Projectors

Reliable handbooks are now available on projector maintenance. These books should be studied carefully by all who want to keep their projectors in order. The following points, however, may be noted :

(i) If the projector is to give consistently good service, it must be kept clean at all times. It should either be replaced in its case or kept under a cover immediately after use. Clean all optical surfaces before each show by gently wiping them with lens tissue. Emulsion particles on the film channel should also be cleaned with a wooden scraper or some other softer-than-metal material.

(ii) The projector should never be over-oiled. It should be lubricated as advised by the manufacturer. The lubricating chart generally given in the Instructions Manual of the manufacturer should be read carefully and the instructions given should be carried out.

(iii) The projector should be handled with care. Many good projectors give mechanical trouble only for rough handling.

(iv) Use a sufficiently high projection stand instead of tilting the machine too much.

(v) It is always better to make one person responsible for the machine. Projectors are often damaged through handling by people without proper training.

(vi) The power and the speaker cables should be so placed that nobody can trip over them and that they are neatly coiled when not in use.

(vii) The projector should be serviced once a year by a reliable firm even if it is found to be in good working order.

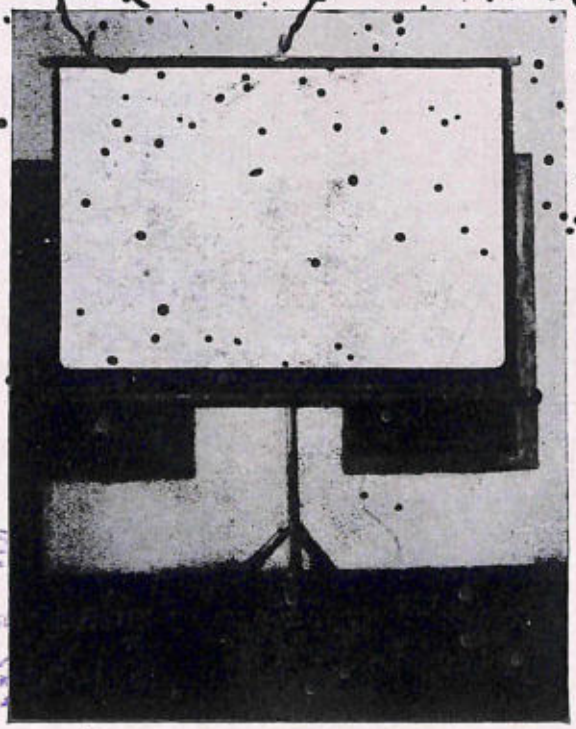
Care of Films

Films should be handled cafefully with clean hands by the edges. It is a very bad practice to allow films to trail on the floor. Periodically films should be checked for necessary repairs. When films become dirty, they should be cleaned by passing them between folds of cloth soaked with carbon tetrachloride. Films should be stored in a room with a temperature not higher than 65° Fahrenheit.

Screens

For both classroom and outdoor screenings, a matt screen is better than a beaded one (a screen whose surface is covered with tiny glass beads) because it presents a more uniform brightness to all the viewers. A beaded screen is brighter than a matt screen only along the line from the centre of the screen to the projector.

The size of the screen should be such that those sitting in the last row can read the smallest type in the title of the film. The screen should be roughtly 1/16 as wide as the distance from the screen to the last row. There is no harm



A glass beaded screen (Courtesy : the S.E.O.T.C., Belur Math)

if the screen is larger than the ratio given above. The distance between the front row of seats and the screen should not be less than two screen widths.

Operation of 16 mm. Sound Projectors

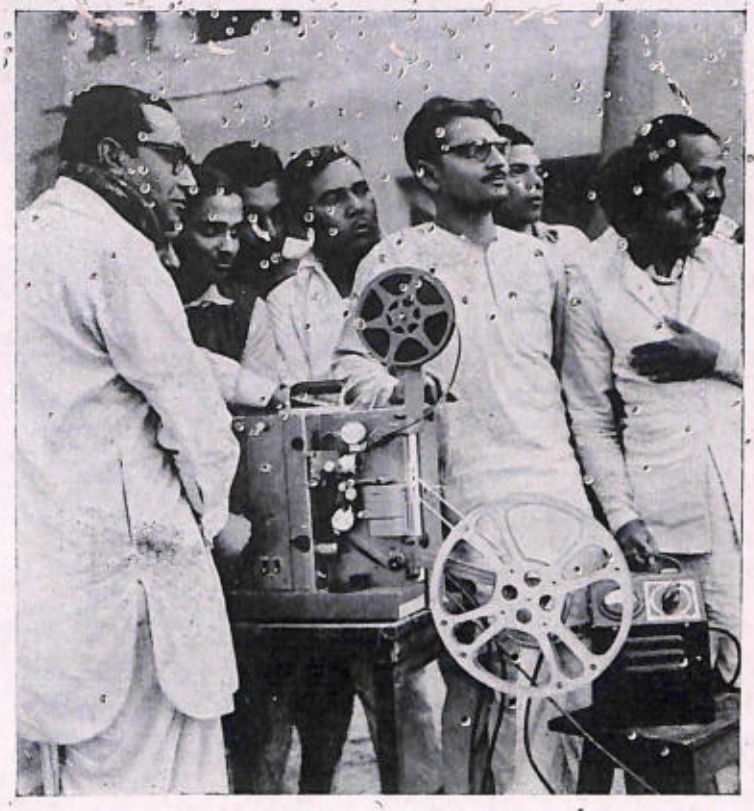
The operation of 16 mm. sound projectors is a very simple affair. It does not require any special mechanical ability. Teachers should know the following to operate the projector :

(i) how to set the machine up (The projector should be placed on a sturdy table, and the distance from the front edge of the table to the screen should be about six times the width of the screen if the projector has a two-inch lens. The speaker should be placed just behind the screen at a height of about four feet from the floor.)

(ii) how to attach the reel arms to the projector and put the spring belts on their pulleys

(iii) how to make connexions with the power and the speaker cables

(iv) how to thread the film into the projector



These Social Education Organizers are receiving instruction in the operation of the R.C.A. 16 mm. sound projector. (Courtesy: the S.E.O.T.C., Belur Math)

(v) how to use the correct voltage

(vi) how to turn the projector on (Turn the amplifier switch on and wait till the sound lamp lights, and then switch on the motor making sure that the speed selector is at the sound position and the threading is correct, and finally turn the lamp switch on.)

(vii) how to focus (Titles, are suitable items on which to focus.)

(viii) how to use the volume and tone controls

(ix) how to tilt the machine

(x) how to rewind the film with the help of the machine and with a hand rewinder

(xi) how to turn the projector off (First put the lamp switch off, then put the amplifier switch off, and later bring the volume control to '0'. Wait a few moments for the machine to cool and then switch off the motor.)

(xii) how to change tubes, the projector lamp, and the sound lamp

(xiii) how to pack up the projector, the speaker, and the screen.

CHAPTER 23

Television

Television or *Dūrdarshan* means seeing at a distance. If the distance is not very long, broadcasts are carried from the starting point to the receiving point by cable (or now, sometimes microwaves). This type of television is known as closed-circuit television. The closed-circuit system is an important source of educational programmes in the U.S.A. Over 200 closed-circuit installations are now in operation in that country. Some of these installations are big enough to serve an entire district. For example, in Maryland 18,000 children in 25 schools throughout the country receive education through the closed-circuit system.

The closed-circuit television is like a private system set up for a special audience. It is under the control of a proprietor and is not intended to serve the general public. What people understand by television in our country is open-circuit or broadcast television which provides entertainment and information for the general public and educational programmes for

students. The television signal transmitted through the air by the broadcasting station can be received by anyone in the area possessing a television set.

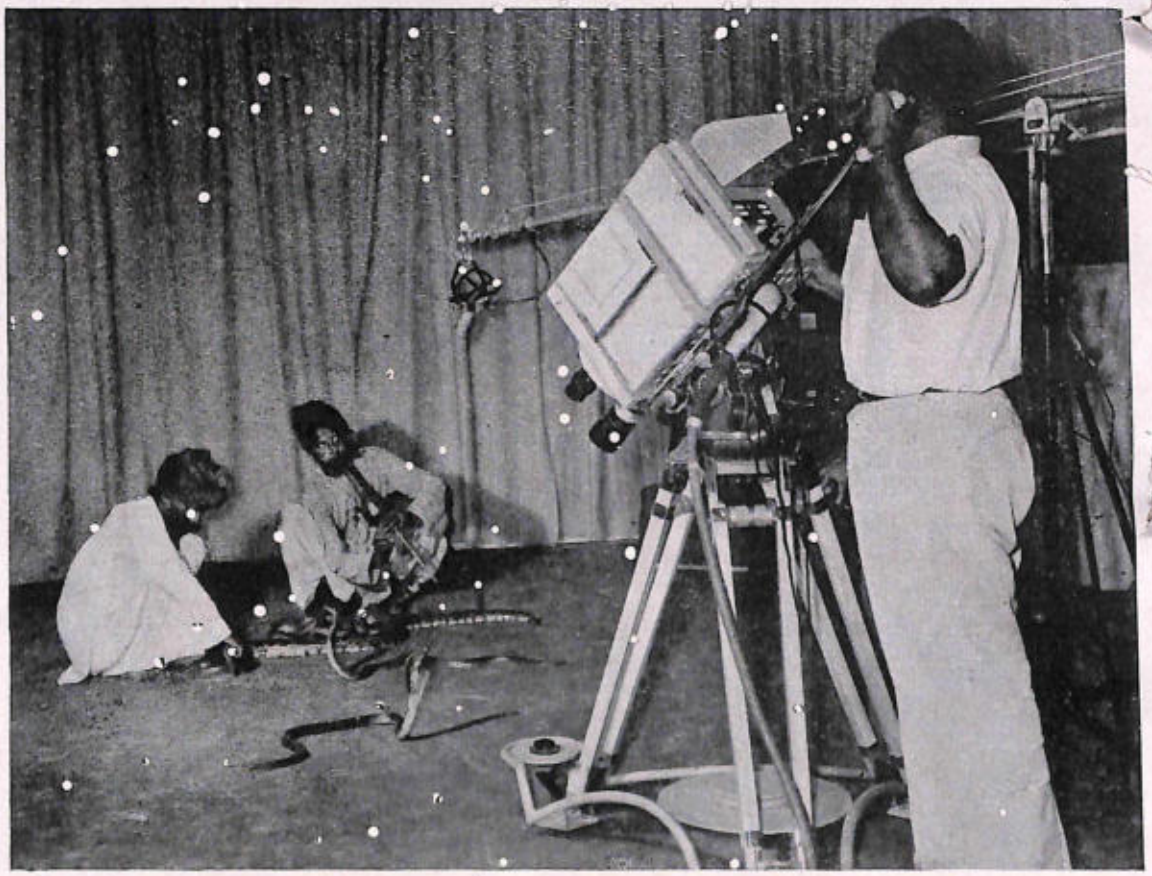
About forty years ago, television was only a theory yet to be proved. It was first made available to the public in 1936 by the British Broadcasting Corporation and soon thereafter found its way into most of the economically developed countries of the world. In recent times television has been introduced even in countries which have limited economic resources such as India, Iraq, Thailand.

Television in India

During the Silver Jubilee celebrations of Philips India Limited in 1955, closed-circuit television was demonstrated for the first time by this firm in Calcutta, Bombay, Madras, and Delhi. Prompted by the unique success achieved by these demonstrations the Company towards the end of the same year broadcast television through the air from its pavilion at the Indian Industries Fair. A 100-foot transmitting tower was built for transmitting sound and pictures within a radius of seven miles. Thirty-five receiving sets were placed throughout Delhi and in the exhibition grounds. The places where the sets were installed included Rashtrapati Bhavan, the residences of the Vice-President, the Prime Minister, and other Ministers, and some educational institutions, hotels, and clubs.

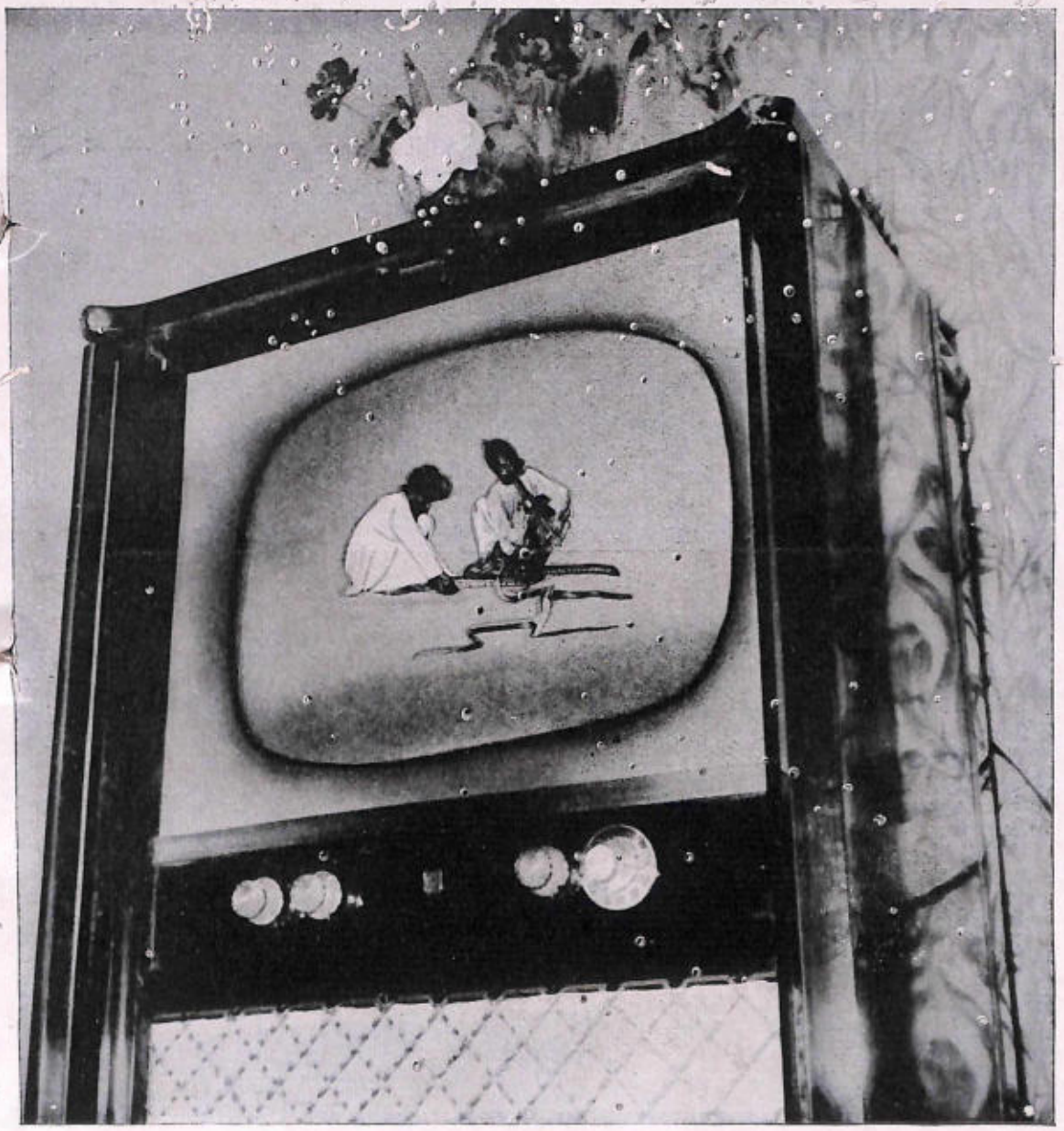
Television on a regular basis came to India on the 15th September, 1959 when the President of India formally inaugurated the first experimental television station to be set up by the All India Radio in New Delhi. Dr B. V. Keskar, then Union Minister for Information and Broadcasting, observed "This is indeed a landmark in the development of mass communication in our country. It is a fitting climax to the all round and continuous development that has taken place in Indian broadcasting . . . Due to difficulties of foreign exchange we had originally no intention of pursuing this experimental unit, but in the last Industrial Exhibition (meaning the Indian Industries

Fair, 1955) we were able to get a television camera from the firm of Philips at a cheap price. Later, UNESCO gave us a grant and the Government of the United States offered to help us with loan of equipment. This enabled us to start this experimental unit today."



Inside the studio

Soon after the formal opening of television sixty-six television sets were installed all over Delhi in connexion with a new experiment in community education. Arrangements were made for a 30-minute broadcast at 7-30 in the evening every Friday. The subjects in the series included amongst others traffic problems, dangers to community health (adulteration of foodstuffs and drugs), town planning, and good neighbourliness. The new experiment in community education gave equal importance to the promotion

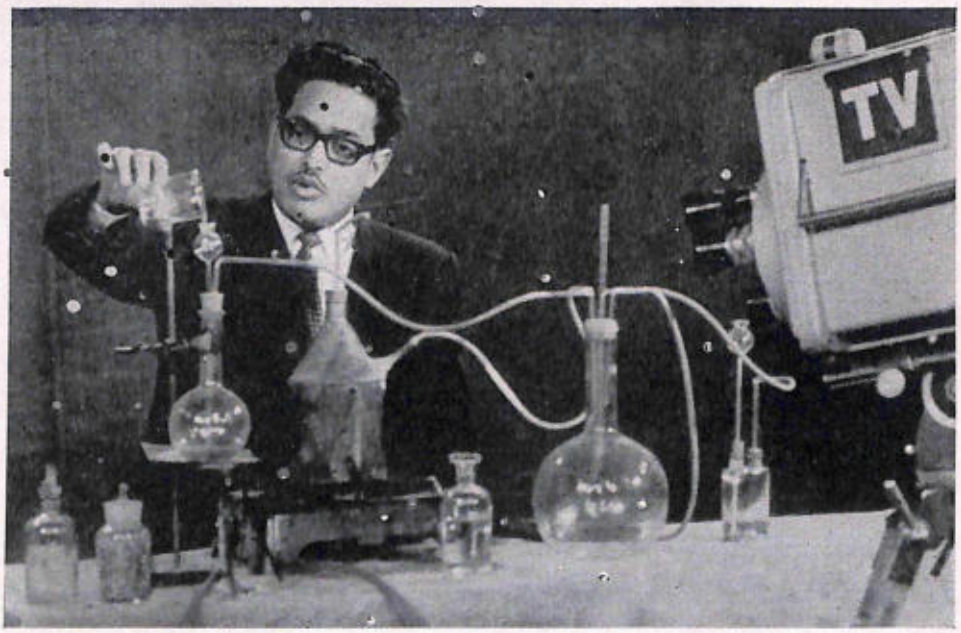


Miles away•

of group discussions amongst the viewers through the 66 Tele-Clubs which were organized. These clubs forwarded reports on their discussions to the broadcasting department to enable an evaluation of the experiment. Besides this direct method of assessing the results, the National Fundamental Education

Centre and the Indian Adult Education Association were entrusted with making an assessment of the effect of the programmes.

School television in India was started by the All India Radio in October, 1961 in co-operation with the Ford Foundation and the Directorate of Education, Delhi. To ensure proper co-ordination between the classroom teaching and TV lessons, the A.I.R. had arranged earlier a series of workshops for teachers and heads of schools. The planning for the syllabus in the subjects to be taken up was made in these workshops. Television sets were installed in 145 schools and lessons were given to students of Class IX thrice a week on physics and chemistry and once a week on Hindi and English. Each lesson lasted about 20 minutes. The programmes in Hindi



A science lesson being recorded in the All India Radio TV Studio (Courtesy : the Television Unit of the All India Radio)

and English languages did not cover a prescribed syllabus but dealt chiefly with speech training.

Early in 1962 the project was extended to Class X with one lesson each on physics, chemistry, English, and Hindi per week while the frequency of

physics and chemistry lessons for Class IX was reduced to two per week. Later, during the year, in view of the state of emergency in the country, the lessons on English and Hindi were dropped to give place to a special programme on Current Affairs mainly related to the defence of the country.

In 1963-64 two lessons per week on English were introduced in co-operation with the British Council for Class VI as it was felt that TV lessons on English would be more helpful for junior than for senior children. The lessons on physics and chemistry were continued as in the previous year while those on Current Affairs were re-oriented to include topics on 'Bharat Darshan'.

In 1964-65 the English lessons were extended to Class VII and those on physics and chemistry, to Class XI. The programme on Current Affairs was replaced by a series on International Understanding.

In 1965-66 the project took another stride forward. English lessons were extended to Class VIII. A new series—Lessons on General Science—was introduced for Classes VII and VIII as it was felt that science lessons in the Higher Secondary classes would be more effective and meaningful if a foundation could be laid in the middle classes. The Current Affairs series was replaced by lessons on Social Studies closely integrated with the syllabus of Social Studies for Class VIII. Later in the year, however, these were discontinued on account of the state of emergency in the country.

The academic year 1966-67 was a year of consolidation rather than of expansion. All the programmes of the previous year were continued with slight expansion only for General Science which included Class VI children as well.

According to the latest information 287 schools in Delhi possess television sets.

An exhaustive evaluation of the School Television Project of Delhi was

carried out during 1964-65 by Dr Paul Neuram of the City University of New York. The following extracts[1] from his conclusions may be of interest :

(i) "The Delhi Project is indeed an operation of impressive magnitude that has been expanded over the last four years and is still expanding steadily, both in the number of schools and in the number of students participating".

(ii) "The whole teaching process, though not necessarily the teaching performance of every single teacher, is slightly undergoing a change for the better".

(iii) "Many of the principals are taking a new interest in the teaching of science in their schools".

(iv) "A change of attitudes and awareness is percolating through the whole school system in both directions, upwards from the teachers and backwards from the Directorate".

A few months ago under the sponsorship of UNESCO a report was published by the Australian Broadcasting Commission on "Educational TV in Developing Countries". Commenting on the Indian experiment, the report states :

"The outstanding elements in the Delhi Schemes are sound planning, carefully organized co-operation at all levels, and thorough integration with the syllabus of work in the schools. The teachers have been fully involved at all levels from planning to evaluation. A comprehensive supplementary material has been supplied to classroom teachers".[2]

Television and Other Aids to Learning

Television and Books

Books cannot be read by all. Television is capable of conveying its message to anyone whether he is able to read or not. But books have certain advantages which television does not have. Books are available almost any-

[1] Courtesy of the All India Radio.
[2] Courtesy of the All India Radio.

where in the world, but television though rapidly spreading is not found everywhere. Even if television existed everywhere, viewers of television would not have the same wide choice as that of readers of books. Readers have choice amongst numerous books in the field of their study. Again, "the permanent record of the book may be consulted for reference, it can be read over again to improve understanding or to recall what was stored imperfectly in the learner's memory. The printed word, whether as article or book, remains the mainstay of knowledge, of scholarship, and learning. Television can do no more than add a further dimension to our acquaintance with facts and ideas".[3]

Television and Radio

Some classroom teachers in Canada, reports Cassirer[4], who had used a series of both radio and television programmes on speech training were once asked to compare the effectiveness of the two media. Seventy-two per cent of the teachers voted in favour of television, twenty per cent said that both were equally effective, and eight per cent preferred radio to television.

Teachers who considered the television series more effective had three main arguments : children could see the actual lip movements of the television teacher and so imitate them more correctly ; the television series was more interesting, and the teacher's personality had a stronger effect as she could be seen. The small group of teachers who considered the radio series more helpful said that there was greater concentration on speech and sounds in the absence of visuals.

The arguments of the teachers who voted in favour of television are no doubt correct, but it is also correct that radio has a place, and an important place, in education. It is true when glamorous television first made its appearance, few institutions in America or Britain wanted to utilize radio broadcasts. This tendency, however, quickly disappeared and today teachers in these countries are convinced that both radio and television will exist and

[3] Henry R. Cassirer—Television Teaching Today.
[4] Henry R. Cassirer—Television Teaching Today.

develop side by side for years to come. No other medium can equal radio in its capacity to reach millions of people first with reports on current events. And no other medium can compete with it in cheapness of production and reception. Music, plays, and talks are all perfectly suited to the medium of radio and can be presented in a much easier way than on television.

Television and the Film

Many educationists believe that what television can do can be done as well or even better by the film. They point out certain distinct advantages of the film over television. Films are available on almost every subject and for use at all levels of education. They can be previewed, fitted into lessons when needed, and screened as many times as necessary. Films are also generally more detailed and comprehensive than television programmes and their picture quality is also generally superior.

Those who support television put forward stronger arguments. First of all, a television set is much more convenient to use. There is no screen to be set up, no film to be checked and threaded, no testing of the sound, and no darkening of the room. Secondly, television is more economical to produce. Once the necessary equipment has been installed television productions do not cost much. And television is not to incur that heavy expense of film distribution. Thirdly, because films take considerable time to be produced, some productions may get outdated by the time they come to libraries for circulation. Television programmes because they take just a few days to be ready give up-to-date information immediately to thousands of receiving institutions. Television has another special advantage over the film. In television, production and utilization go almost hand in hand, but in the film these are entirely separate stages. If a mistake is made in the film it remains in it as long as the film lasts, but in television, programmes are checked and improved upon from day to day on the basis of evaluation reports from the receiving institutions.

Should we conclude from the arguments above that television is a more

valuable learning aid? Should we believe that the spread of television will gradually lead to a decreased use of the film? The answer is definitely in the negative because the value of the film in education has not in the least been diminished on account of the use of television. On the contrary, the spread of television has led to an increased use of the film. We may conclude, therefore, that though television and the film have both certain limitations, they will ever have a very important place in education. The two media should be regarded as complementary and not as rivals.

Television as a Learning Aid

The greatest advantage of television is that it is 'live', that is, it brings to the screen something exactly when it is happening with remarkably little distortion. Children react to this with great interest and attention because they know that what they are seeing is happening now.

Because television is mostly 'live', it is tremendously real. Children believe instinctively in the reality of its image. This belief in the reality of the image has a great effect on learning. About the instinctive belief of children in the reality of the television image Cassirer has given an interesting example in his book 'Television Teaching Today'. In a high school in France when children were having a lesson on chemistry, they began to cough when fumes with a hissing sound followed an experiment by the television teacher. These children, of course, smiled afterwards realizing that they had been deceived into believing the smoke on the screen as real smoke in the classroom.

Television brings the ablest teachers to educational institutions throughout the country and thus improves the quality of education. Films and radio may also bring experts to classrooms, but the televised image commands the students' interest and attention to a far greater extent than does any other aid.

Another unique advantage of television is that it can use in the lessons it broadcasts an enormous variety of audio-visual aids and materials—maps,

globes, models, photographs, films, filmstrips, chalkboards, flannel boards. It is impossible for the classroom teacher to secure and use such a rich variety of materials and aids.

But television has one great limitation. There is no personal contact between the television teacher and the classroom where his teaching is received. Television is a one-way type of communication. Children cannot ask the teacher any question. The teacher also cannot make certain if he is really helping the class. The 'student questions and teacher answers' sequence now found in some programmes does not help much because the anticipated questions in the programme can never cover all the questions which the children would ask. There is another device which is better, but this can work only in closed-circuit installations. In the closed-circuit system there are gadgets with the help of which the television teacher in the originating studio can be contacted from any classroom to answer students' questions. The questions and answers are audible in all classrooms on the television circuit. The device seems all right, but in practice it does not work because the studio is not connected with just one classroom. What then is the solution? The solution is the classroom teacher who can encourage children as soon as the programme is over to ask questions about points they have not understood. Indeed, the success of any television programme depends on the use the classroom teacher makes of it. As the Superintendent of Hagerstown[5] very aptly said: "It is impossible to say who is more important, the television teacher or the classroom teacher".

Utilization of Programmes

The use of television in the classroom needs more careful and intelligent planning than any other audio-visual aids. The steps in the utilization, however, are not different from those we follow in the utilization of films, radio broadcasts, or other audio-visual aids: selection, preparation, presentation, and follow-up.

[5] a city in the U.S.A. famous for closed-circuit installation

Selection: Though television programmes for classroom use are prepared by experts with the utmost care for specific groups on specific subjects, it is the duty of teachers to make certain that they can be correlated with the topics the children are to learn in classrooms. This does not mean, however, that a programme of general educational value, say, a programme on the arrival of a great person in the country, will not be utilized. If such programmes do not come within working hours, special arrangements must

The arrival of Queen Elizabeth in New Delhi televized Educational institutions must make special arrangements for the viewing of programmes of general educational value.

be made for their viewing. In the U.K., the U.S.A., and other western countries the problem of utilizing programmes at inconvenient hours has been solved through the kinescope (a sight-and-sound recording on a film made simultaneously with a programme at the television studio with the help of a kinescope recorder for rebroadcast) and the videotape recorder[6] (a device that can record simultaneously picture and sound on a magnetized tape). It may be noted, however, that the kinescope recorder is a very expensive equipment and so many television stations have not acquired it. The videotape recorder

[6] The All India Radio has acquired two videotape recorders.

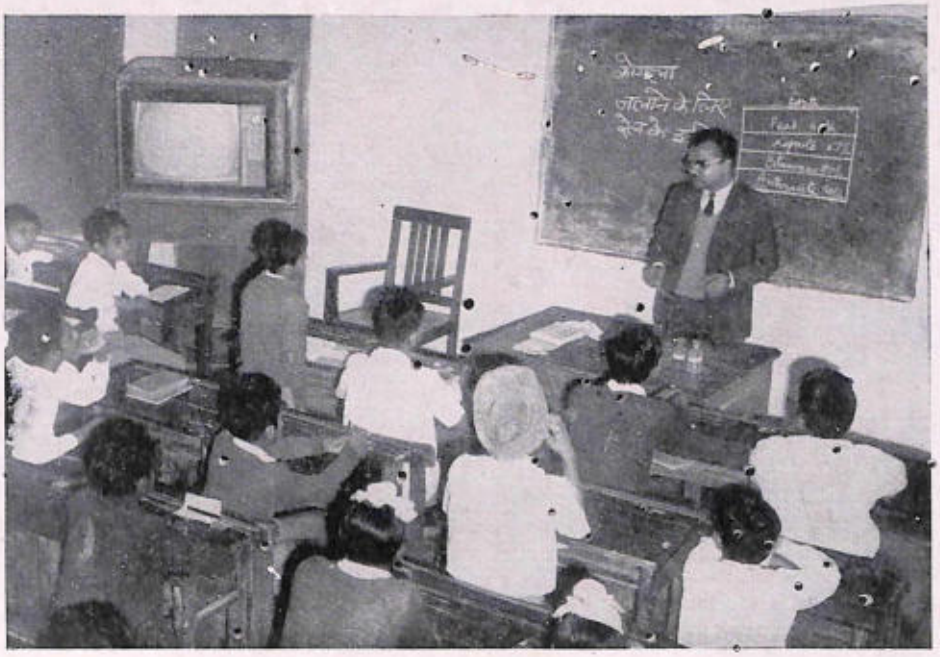
is also a very expensive thing. The question of acquiring videotape recorders for educational institutions in Delhi does not arise as few institutions have been able to acquire even a tape recorder to make recordings of important radio broadcasts and utilize these at convenient times.

Preparation : For effective utilization of television in classrooms, teachers should study carefully the printed or mimeographed manuals which are generally issued by the broadcasting department. These manuals not only give synopses of lessons, but also suggest follow-up activities and books to be read. In the use of television as indeed in the use of any audio-visual aid, preparation on the part of students is of no less importance than preparation on the part of teachers. When the teacher has had a good idea of the programme from the manual, he can easily excite the class about what is to come on the screen. Care should be taken, however, to prepare children in such a manner that the preparation does not dampen their curiosity or interfere with their spontaneous reaction to unexpected situations.

Presentation: The first thing in presentation is good reception conditions. The receiver should be placed at a height of about 6 feet from the floor so that children have no difficulties in seeing the picture over the heads of others in the class. Attention should be paid to the sound system as good acoustic conditions contribute so much to the utilization of the broadcast. A 21-inch receiver is all right for a small class. If the number of children is more than 30, the use of two receivers is recommended. Children should not sit closer than 5 to 6 feet from the television set. They should not be seated also farther than about 20 feet from the set. Particular care should be taken to avoid the outside rays of light falling on the screen. There is no need for darkening the room as some natural light does not affect the picture brightness. The light in the room enables students to take notes. The programme should be tuned in promptly depending on a reliable watch. It is good for children to make notes or sketches, but these activities must be quick so that no

important point in the broadcast is missed. Some teachers do not intervene during the broadcast, but there are some who try to stimulate the attention of the class by brief and timely comment on each interesting feature.

Follow-up : The follow-up work varies according to the nature of the subject. There is only one general rule. The teacher must make certain that



A classroom teacher doing the follow-up of a school TV lesson (Courtesy : the Television Unit of the All India Radio)

the programme has been understood by the children. This can be done through a discussion of the programme. The teacher will guide the discussion and summarize each key idea of the programme. The student understanding can be checked also through simple objective tests. If the broadcast is on some crafts or technical subject, the follow-up should include actual practice of techniques shown.

CHAPTER 24

Radio Broadcasts

Radio communication was born of many minds though Marconi is officially recognized as its inventor. In 1895 Marconi transmitted radio signals for a short distance and later was able to conduct successful trans-Atlantic tests. Americans claim that their scientists had earlier transmitted and received the human voice. William L. Rivers in his book 'The Mass Media' mentions in this connexion the name of Stubblefield who was able to send 'Hello Rainey' in a demonstration near Murray, Kentucky in 1892.

In spite of certain limitations, radio is a powerful aid to learning. Far from being ousted by television, its use is ever on the increase. Almost all educational institutions of the west make regular use of radio in all levels of education, but in India the number of institutions using radio broadcasts is disappointingly small. Almost all the stations of Akashvani (All India Radio), however, have regular programmes for schools. Under the Third Five-Year Plan schemes for the development of Audio-Visual Education in

India, there was a proposal to instal radio sets in all High/Higher Secondary schools in this country.

Types of Radio Lessons

Radio lessons are generally of two types :

(i) Enrichment

(ii) Direct teaching

Under the first can be included those broadcasts which do not bear directly on specific topics of the curriculum, but provide ample background information to these topics. For instance, a talk on a trip to Kashmir cannot be considered as a geography lesson on Kashmir, but it can prove to be a useful introduction to the lesson.

Almost every broadcasting station in the world has programmes directly related to the school curriculum. These programmes are extremely helpful because they are prepared by specialists devoting considerable time on study and preparation. Classroom teachers cannot have this time for study and preparation.

Contributions of Radio to Education

Radio helps the cause of education in a number of ways :

(i) It provides for educational institutions excellent performances in music and drama, performances which the schools would otherwise have never listened to.

(ii) By means of dramatization it stimulates the interest and rouses the imagination of children so that topics in history, geography, nature-study, science, literature, and other subjects are brought home to them in a manner almost impossible by any other aid. Many educationists prefer radio to television in certain learning situations because radio by supplying only the voice and the sound puts the burden upon children to create mental pictures of things and thus sharpens their imagination.

(iii) The up-to-date information and news which radio brings to the classroom cannot be secured by any other means.

(iv) Radio like television brings experts in various subjects to the the classroom to assist teachers who are not supposed to have specialized knowledge in everything.

(v) The language programmes help both teachers and students to check up their pronunciation as well as to learn new words and modern phrases of the languages.

(vi) Radio brings interesting variety in the classroom. Children love to listen to the radio. They enjoy the novelty of another personality speaking to them and a new approach to the subject-matter.

Proper Utilization of Radio Broadcasts

If school broadcasts are to have their full effect, the teacher must make a proper planning for their use. The procedure follows the basic principles that apply to all audio-visual aids : selection, preparation, presentation, and follow-up.

Selection

In selecting a radio programme the teacher should make sure that it can be correlated with the classroom work. This does not mean, however, that broadcasts in connexion with outstanding events or programmes of general educational value will not be utilized. It is true a radio programme cannot be pre-listened as a film can be previewed, but the illustrated school broadcasts pamphlets which are issued by broadcasting stations well in advance can give a good idea of the content of a broadcast.

Preparation

There should be preparation for each broadcast. Although the class teacher is not to present the lesson, he must have a clear idea of the content of the lesson so that he can utilize the lesson fully. The pamphlets on school broadcasts should be carefully studied by the teacher so that he can excite the class about what is to come from the receiving set. Unless children are made to wait expectantly there may not be much real listening.

Presentation

One reason for failure to obtain the maximum benefit from a broadcast is poor reception. Schools should make certain that the receiving set is of the right type and is in right order. It should be sufficiently powerful for each child in the class to hear the broadcast well. The set should be checked not just before the broadcast but at least a day earlier to find time for the correction of any fault. Regular servicing will help to improve the standard of reception to a great extent. The programme should be tuned in promptly depending on a reliable watch. The volume should be adjusted before the broadcast begins. The receiving set should be placed in front of the class so that all in the class can see the source of sound. It should not be placed lower than head height. The part of the teacher during the broadcast is of great importance. He himself must be alert and interested for his attitude is an important visual aid to the broadcast. Note-taking during the broadcast

These children of Lee Memorial Girls' School, Calcutta listen to a radio broadcast with undivided attention. Their teacher is equally interested.

should be discouraged as children are likely to miss important points if they remain busy with writing. The follow-up work also suffers if it does not rely on things held in the memory. The teacher of course may be able to listen and take notes, but he should never write anything on the chalkboard while children are listening. He should also not ask children to use their atlases or text-books during the broadcast. There are places of course when the teacher by a quick word can help things along.

Follow-up

The follow-up work is an important part of the school broadcast and it may vary according to the nature of the subject. Generally important points are emphasized and there is a discussion on the broadcast. Sometimes students are referred to books or pictures on the subject. They are asked to look up dictionaries for new words used and if there are geographical references, these are pointed out on the map. If the aim of the broadcast is to convey information, some testing of factual knowledge may be required. In certain subjects particularly in junior classes children may be asked to express with paint or crayon what they have listened.

Limitations of Radio

Radio has some limitations :

(i) Radio lesson times do not always fit into school periods. This problem has been solved in western countries with the help of the tape recorder. If tape recordings of broadcasts were available to schools in our country and if they were subsidized to secure the apparatus to play back these recordings, much greater use would be made of the excellent school broadcasts of the All India Radio.

(ii) The class teacher has no control over the pace of the development of the radio lesson.

(iii) In a lesson it is often necessary to elaborate on certain points as they arise. This is not possible in the radio lesson until the broadcast is over.

(iv) Radio like television is a one-way communication. There is no direct touch between the radio teacher and the classroom where the teaching is received.

Tape Recordings

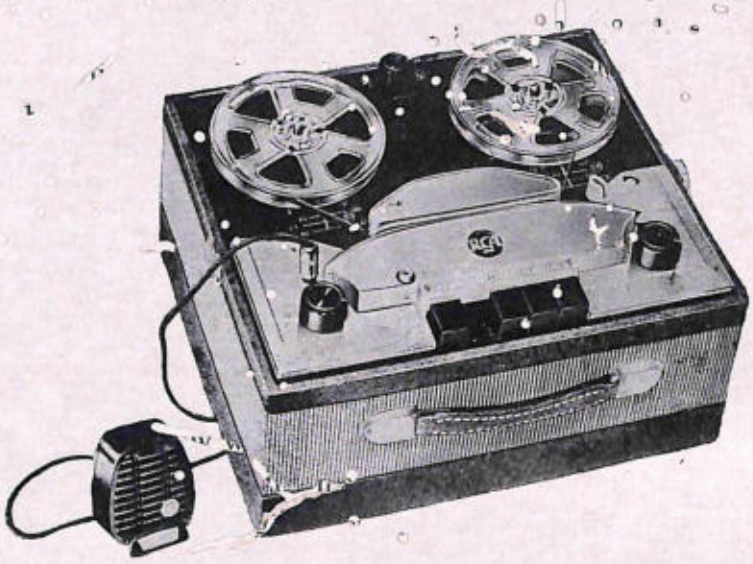
CHAPTER 25

One of the most valuable of school apparatus is a tape recorder. In 1900 Paulsen of Denmark invented a wire recorder, while a portable and easy-to-use tape recorder first appeared during the second World War in Germany. Since then, the recorder has grown rapidly in popularity. Today improved models of tape recorders are in use throughout the world in educational institutions, social centres, and in radio and television studios.

There are expensive as well as inexpensive tape recorders. The inexpensive sets which cost about a thousand rupees have fairly good reproductive qualities. Tapes are not very expensive. A 220-foot reel costs around rupees twenty.

With the help of a standard portable tape recorder, a recording can be made continuously for two hours. The recording can be erased and the tape used again. A recorded tape can be played any number of times, as

many as three thousand times or more with careful handling. The tape can be edited also by cutting and splicing. Special splicing tape can be obtained from any firm dealing in tape recorders.



The R.C.A. Push-Button Tape Recorder. (Courtesy : General Radio and Appliances Private Limited, Calcutta)

Tape recorders have generally the device for both single and double track recording. It is a great economy to have two recordings on a single tape, but double recordings cannot be edited. Double recordings are made only for classroom practices. Most of the models of tape recorder operate at two speeds, $3\frac{3}{4}$ and $7\frac{1}{2}$ inches per second. The $3\frac{3}{4}$-inch speed gives double recording time, but the recording is not as satisfactory as at $7\frac{1}{2}$ inches. The $7\frac{1}{2}$-inch speed should, therefore, be used for all important recordings.

There are two types of tape, plastic and paper. Plastic tapes though a little more expensive are more durable. Erasing also is easier on plastic tapes.

Important Points in Making a Recording

It is easy to make a recording with the help of a tape recorder, but the equipment should be properly used. Even the most expensive equipment will not give satisfactory results if it is not used according to the instructions given

by the manufacturer. The following points are particularly important in making a recording.

(i) Thread the tape correctly.

(ii) If the tape recorder has two speeds, make sure that the speed selector is at the recording position desired.

(iii) Make sure that the speaker is placed at the correct distance and position in relation to the microphone. This can be found out by experimentation.

(iv) Speak in a clear and natural conversational manner. There is no need to speak at the top of your voice.

(v) Make sure there is no undesired noise.

(vi) There should be no interruption during recording. Some teachers fix a warning notice on the door when they record.

(vii) As soon as the recording is over, bring the volume control to zero and then turn or press the stop key.

Playing a Tape

It is extremely easy to play a recording. The following points, however, may be noted :

(i) Thread the tape correctly.

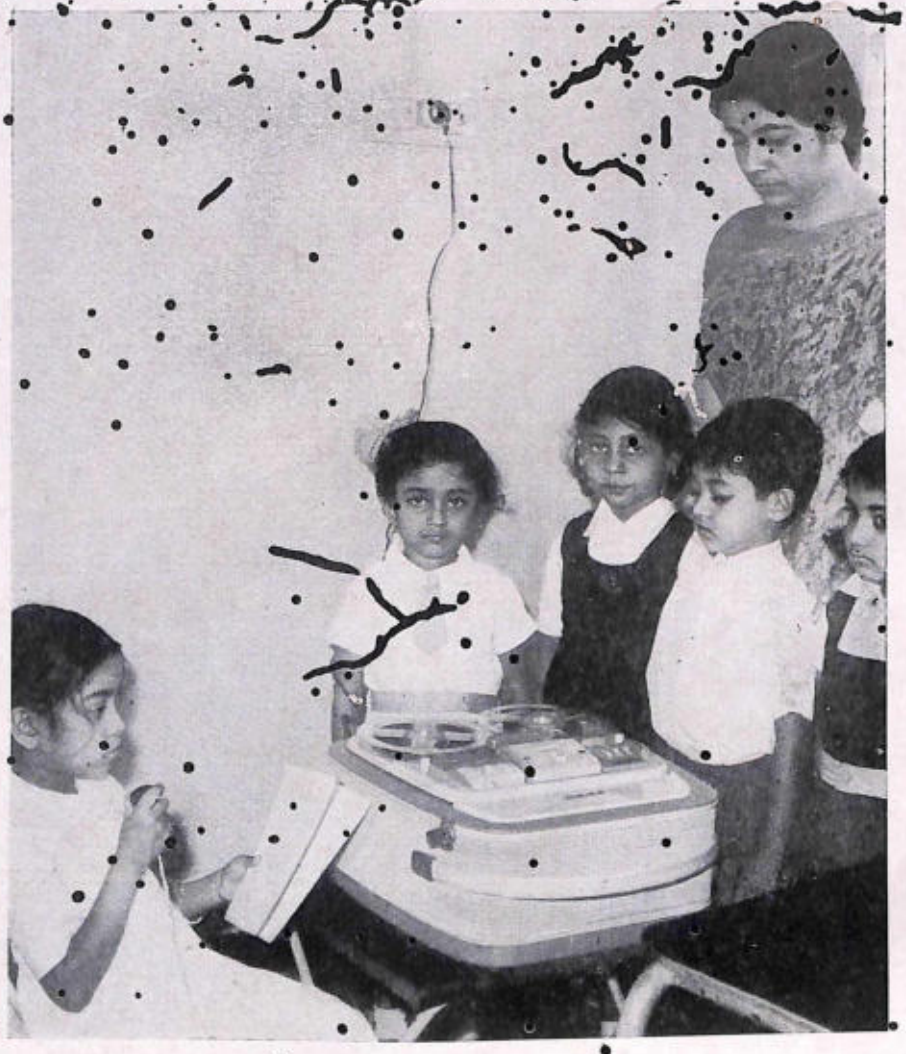
(ii) Set the speed selector at the speed at which the tape was recorded.

(iii) Turn on the machine and allow it to warm up for a few moments.

(iv) Press the play key and adjust the volume to the desired level.

The Use of Tape Recorders in Educational Institutions

One of the most valuable uses of the tape recorder is to effect an improvement in the speech of children. Complaints about defective speech amongst school students in India both in rural and in urban areas are very common. The deficiencies in our voice apparent to others are not heard by us. The tape recorder by enabling students to hear the records of their voice makes them more critical of their own speech. At the Central



A child recording her voice with the help of a small tape recorder in the South Point School, Calcutta

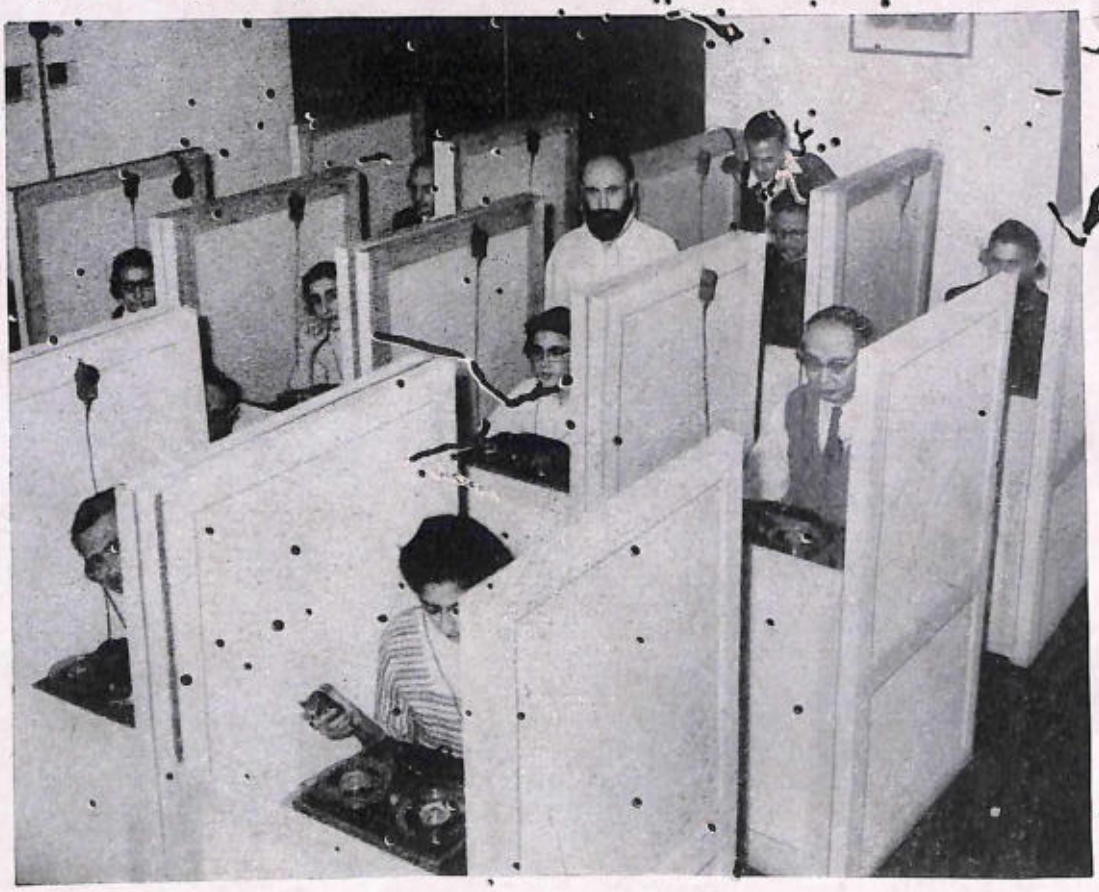
Institute of English, Hyderabad, tape recorders are used for recording specimens of students' speech at the beginning and end of training courses for comparative purposes, the idea being to discover and demonstrate to the students any improvements in their speech which have been made as a result of their study in the Institute.

The use of recordings is of great help in the learning of foreign languages. In the modern language department of the University of Edinburgh students

It is obvious from this picture that a tape recorder can make children "speech conscious". (Courtesy : South Point School, Calcutta)

Tape recording during a tutorial at the Central Institute of English, Hyderabad

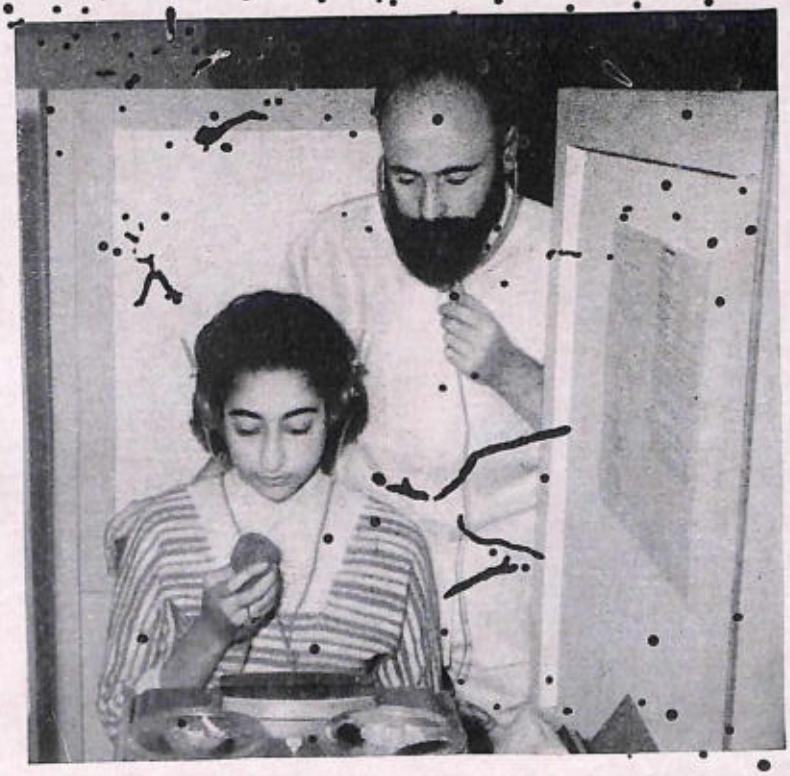
are provided with records of their own reading of a passage in a foreign language and of an educated native's reading of the same passage to enable them to realize the differences between the readings. The Alliance Francaise in Calcutta arranges attractive classes for the rapid learning of elementary



Students of the Alliance Francaise, Calcutta at work in the Audio-Visual laboratory in their individual cabin with individual tape recorder (Courtesy : French Cultural Centre, Calcutta)

French with the help of tape recorders. These classes have limited number of students and when the learners make some progress they go to the "laboratory" where each one is seated in an isolated cabin and has at his disposal a tape recorder with which he listens to the sentences he has learnt as spoken by his professor. He then repeats these sentences recording them on the remaining portion of the tape. He can erase his attempts until he is

able to pronounce the sentences exactly as the model ones. He does this by listening repeatedly to the model sentences and to his own voice.



A student of the Alliance Francaise attempting to record a sentence as spoken by her professor (Courtesy : French Cultural Centre, Calcutta)

• The tape recorder can be used to good advantage in the learning of music also. Learners can record their performances and then discuss their deficiencies with the teacher. They can have records of their own singing of a song and of an expert's singing of the same song and these can be played over and over again until their defects are completely removed. With the help of the tape recorder it is easy to build a library of selections from radio broadcasts.

As a great deal of success in village work depends on the speaking power of social workers, they should have some practice in public speaking with

the help of tape recorders. This practice will stand them in good stead when they give talks on slides or filmstrips or on any matter pertaining to village

The tape recorder can make social workers "speech conscious". (Courtesy : the S.E.O.T.C., Belur Math)

welfare. In the U.S.A., unions of workers take the help of tape recorders for speech training of their future leaders.

A tape recorder can be used to advantage also in recording main speeches or discussions in seminars or conferences to make them available to those who cannot attend original sessions.

The tape recorder, as discussed earlier, solves time-table difficulties with regard to radio lessons. There is no problem to adapt the school time-table to that of the broadcasting station. The recorded radio broadcast can be played whenever desired.

CHAPTER 26

Audio-Visual Aids in International Understanding

No book on audio-visual education can be complete without a mention of the important role that audio-visual aids can play in promoting mutual understanding and appreciation of cultural values and ways of life amongst the different peoples of the world. Scholars from the East and the West have long been studying each other's culture, but there can be no real progress towards the understanding on which the peace of the world depends unless children in ordinary schools are given some idea of cultural differences in the most formative period of their lives. Audio-visual aids not only help to convey this knowledge in a meaningful manner, but, what is more important, they help to develop enlightened and sympathetic attitudes.

UNESCO which is charged with the task of promoting international understanding has fully recognized the importance of audio-visual aids in its ten-year (commencing on January 1, 1957) Major Project on Mutual Appreciation of Eastern and Western Cultural Values. It has made a careful

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UNESCO which is charged with the task of promoting international understanding has fully recognized the importance of audio-visual aids in its ten-year (commencing on January 1, 1957) Major Project on Mutual Appreciation of Eastern and Western Cultural Values. It has made a careful

study of the kind of aids that should be produced and how and where these should be used.

Three international seminars including one in Delhi and a number of meetings and conferences were organized by UNESCO during the past few years to examine these problems. The Tokyo meeting held in July, 1960 recommended that all countries should undertake as early as possible the production of materials designed to promote international understanding. Emphasis, however, was placed on the following :

(a) the production of "study kits" illustrating the life and culture of the various countries
(b) the production and exchange of educational radio programmes
(c) the direct exchange of tapes amongst various educational authorities and other groups

The following recommendations were made as a guide to practical measures to assist production and international exchange :

(a) all interested countries to enter the "free flow" agreement of the International Council for Educational Films
(b) a study be made of the different methods of dubbing and adapting foreign films for local use
(c) any major film exchange plan to include at least one copy of the film in 16 mm.
(d) the use of film libraries established by various governments to serve international needs be encouraged

The National Commissions for Co-operation with UNESCO are actively implementing these recommendations. The Indian National Commission, for example, has undertaken the preparation of a "study kit" illustrating the national culture and present-day life of India. It is expected that this kit would also be useful for schools in India for giving the children a deeper awareness of the heritage, the problems, and the achievements of the country.

The Major Project on Mutual Appreciation of Eastern and Western Cultural Values launched by UNESCO has received support of almost all countries of the world. The task undertaken is gigantic and though no perceptible results have yet been achieved, the universal response which the Project has aroused shows that a solid foundation for international peace and understanding has already been laid.

In furtherance of the Major Project on Mutual Appreciation of Eastern and Western Cultural Values, UNESCO has produced the following sets of coloured slides on works of art :

1.	Egypt	..	Paintings from tombs and temples
2.	Yugoslavia	..	Mediaeval frescoes
3.	India	..	Paintings from Ajanta caves
4.	Iran	..	Persian miniatures
5.	Spain	..	Romanesque paintings
6.	Norway	..	Paintings from the Stave churches
7.	Masaccio	..	Frescoes in Florence
8.	Australia	..	Aboriginal paintings
9.	Ceylon	..	Paintings from temple, shrine, and rock

The following two sets of slides have been produced by the French National Commission :

1. Orient—Occident
2. The Art of Gandhara and Central Asia

The Spanish National Commission has published a series of 40 colour transparencies on the work of the great master Velasquez. The pictures are accompanied with an explanatory text in English, French, and Spanish.

In addition to slides on works of art, UNESCO has prepared a series of filmstrips entitled "UNESCO Fables" to give young children an idea of the culture of various Eastern countries.

UNESCO Fables No. 2 deals with India.

APPENDIX A

SOME AUDIO-VISUAL MATERIALS FOR USE IN DIFFERENT LEVELS AND FIELDS OF EDUCATION

I. FOR USE IN INFANT AND PRIMARY SCHOOLS

A. FILMSTRIPS

Fairy Tales and Fables

1.	Cinderella	The National Education and Information Films Ltd, National House, Apollo Bunder, Bombay
2.	The Ugly Duckling	"
3.	The Emperor's New Clothes	"
4.	Thumbelina	"
5.	The Tinder Box	"
6.	The Magic Horse	"
7.	The Sleeping Beauty	"
8.	Snow White and Red Rose	"
9.	Star of Bethlehem	"
10.	A Kentucky Story	"
11.	Masha and the Bear	"
12.	UNESCO Fables No. 1, No. 2, and No. 3. These Fables give young children an idea of the UNESCO and of the culture of various Eastern countries	"

Nature-study

1.	Pets and their care	The Central Film Library, Department of Audio-Visual Education, NCERT, Ring Road, New Delhi
2.	Red Squirrel	"
3.	Fox	"
4.	Dormouse	"
5.	Wild Rabbit	"
6.	Butterflies	"
7.	Water Birds	"
8.	Some Nesting Birds	"
9.	Some Desert Animals and how they live	"
10.	Sea Birds	"
11.	Flower Family	"
12.	Frogs	"
13.	The Cat	"
14.	The Cow	"
15.	The Dog	"
16.	The Elephant	"
17.	The Horse	"
18.	Fresh Water Fish	"
19.	Hedgehog	"
20.	Animals and Birds of the World, Parts I & II	The National Education and Information Films, Bombay
21.	Arctic Wild Flowers	"
22.	The Black Bear	"
23.	The Beaver	"
24.	Snakes of Canada	"
25.	The Grasshopper	"
26.	How animals prepare for winter	"

English	
1. The Alphabet	The British Council
2. The Noun	"
3. The Verb	"
4. The English Vowels	"
5. Vocabulary	"
Health and Hygiene	
1. Eyes and their care	"
2. Food and nutrition	"
3. The little people and their teeth	"
4. The milk we drink	"
5. Keeping Clean	"
6. Strong Teeth	Universal Educational Films, Asaf Ali Road, New Delhi
7. Rest and Sleep	"
8. Straight and Tall	"
9. Foods for Health	"
10 Keeping Well	"
	"
Geography	
1. Ganges Basin	The British Council
2. Mount Everest	"
3. Captain Scott's Last Antarctic Expedition	"
4. Icebergs	"
5 London	"
6. Longitude and Time	"
7. Peninsular India	"
Creative Activities	
1. Lino Cutting	"
2. Paper Tearing	"
3. Let's make a train	"
4. Drawing	Universal Educational Films, New Delhi
5. Cutting and Pasting	"
6. Painting	"
7. Finger Painting	"
8 Water Coloring	"
9. Clay Modelling	"
General	
1. The B.B.C.	The British Council
2. A collection of Dolls	"
3 An English Child	"
4. Nature Calendar	"
5. How to Behave	"
6 Three Brigands—Road Safety	"
7. I am a Letter	The National Education and Information Films, Bombay
8. Stamps and how they are made	"
9. Jack and Jill learn Road Safety	"
10. Telling the Time	"
11. Using a Ruler	"
	"
School Behaviour	
1. Being Prompt	Universal Educational Films, New Delhi
2. Caring for School Materials	"
3. Consideration of others	"

B FILMS (16 mm.)

Arithmetic

1.	The meaning of plus and minus	Eng. 11 mins	The Central Film Library, New Delhi
2.	Addition is easy	Eng. 11 mins	"
3.	Subtraction is easy	Eng. 10 mins	"
4	Multiplication is easy	Eng. 10 mins	"
5.	Division is easy	Eng. 11 mins	"
6.	What are Decimals?	Eng. 10 mins	"
7	Parts of Nine	Eng. 11 mins	Universal Educational Films, New Delhi
8.	Parts of Things	Eng. 11 mins	"
9.	The Teen Numbers	Eng. 10 mins	"
10	What is Four?	Eng. 15 mins	"

Nature-study

1.	The growth of flowers	Eng. 11 mins	The Central Film Library, New Delhi
2.	Our animal neighbours	Eng. 10 mins	"
3.	Common animals of the woods	Eng. 11 mins	"
4.	Poetry of nature	Eng. 6 mins	"
5.	Grey Squirrel	Eng. 11 mins	"
6.	Animal Homes	Eng. 11 mins	"
7.	Story of Butterfly	Silent 11 mins	"
8.	Birds are Interesting	Eng. 11 mins	"
9.	How Birds feed their young	Silent 15 mins	"
10	Ostriches in Africa	Silent 7 mins	"
11.	Kangaroos	Eng. 11 mins	"
12.	Animals of the cat tribe	Silent 5 mins	"
13.	Three little bruins in the wood	Eng. 10 mins	"
14.	Seasonal changes in trees	Eng. 11 mins	"
15.	Animals growing up	Eng. 11 mins	"
16.	Adventures of Bunny Rabbit	Eng. 11 mins	"
17.	Black Bear Twins	Eng. 11 mins	"
18.	Feeding time at the zoo	Eng. 11 mins	"
19.	Live Teddy Bears	Eng. 11 mins	"
20.	Round the London Zoo	Eng. 13 mins	"
21.	Zoo's Who	Eng. 9 mins	"
22.	Penguin Island	Eng. 6 mins	"
23.	The Sparrow Hawk	Eng. 11 mins	"
24.	Titmouse the Weaver	Silent 6 mins	"
25	Winged Messengers	Silent 8 mins	"

Creative Activities

1.	Care of Art Materials	Eng. 11 mins	Universal Educational Films, New Delhi
2	Let's Play with Clay: Animals	Eng. 11 mins	"
3.	Let's Play with Clay: Bowls	Eng. 11 mins	"

Social Studies

1.	Dwellers in Mountain Countries	Eng. 9 mins	The Central Film Library, New Delhi
2.	Children of Holland	Eng. 11 mins	"
3	Children of Switzerland	Eng. 11 mins	"
4.	Greek Children	Eng. 16 mins	"
5.	Arabian Children	Eng. 17 mins	"
6.	Boats	Eng. 11 mins	"

Entertainment Films

1.	Snow White and Rose Red	Eng. 11 mins	"
2.	Cinderella	Eng. 11 mins	"
3.	Beauty and the Beast	Eng. 11 mins	"
4	Alladin and the Wonderful Lamp	Eng. 11 mins	"
5.	The blue light	Eng. 11 mins	"
6.	The hare and the tortoise	Eng. 11 mins	"
7.	Fox and the rooster	Eng. 11 mins	"
8.	Stray Lamb	Eng. 9 mins	"

9.	Princess and the dragon	Eng. 22 mins	The Central Film Library, New Delhi
10.	Marsha and the wicked geese	Eng. 11 mins	"
11.	Stag and the wolf	Eng. 12 mins	"
12	Chardost	Hindi 70 mins	"
13.	Natkhat Chandu	Hindi 11 mins	"
14.	Alladin and the Magic Lamp	Eng. 11 mins	"
15.	Boil, Boil, Little Pot	Eng. 18 mins	"
16.	The Caliph Stork	Eng. 50 mins	"
17.	Cinderella	Russian with English Sub-titles-50 mins	"
18.	The Enchanted River	Eng. 10 mins	"
19.	The Frog Prince	Eng. 10 mins	"
20	The Gallant Little Tailor	Eng. 10 mins	"
21.	The Golden Antelope	Eng. 30 mins	"
22.	The Legend of the Pied Piper	Eng. 11 mins	"
23.	The Three Wishes	Eng. 11 mins	"
24.	The Treasure of Birds' Island	Hindi 90 mins	"
25.	Ugly Duckling	Eng. 11 mins	"
26.	Brave Heart	Eng. 18 mins	"
27.	The Honest Woodman	Eng. 11 mins	"
28	The Magic Treasure	Eng. 22 mins Colour	"
29.	Sarmiko	Eng. 22 mins Colour	"
30.	The apple tree with the golden fruit	Eng. 30 mins	
31.	The Little Angel	Eng. 14 mins	"
32.	Bim	Eng. 85 mins	"
33.	Chuk and Gek	Russian with English Sub-titles-100 mins	"
34.	Nine Little Chickens	Eng. 15 mins Colour	"
35.	The Painted Fox	Eng. 12 mins Colour	"
36	The Story of a Dragon	Eng. 40 mins Colour	The Central Film Library, New Delhi
37.	Lenora	Eng. 12 mins	"
38.	The Princess with Golden Hair	Eng. 48 mins	"
39.	Rumpelstiltskin	Eng. 11 mins	"
40.	Sleeping Beauty	Eng. 10 mins	"
41.	Lighthouse—Jaldeep	Hindi 90 mins	The Children's Film Society, Worli, Bombay
42.	Bal Ramayan	Hindi 90 mins	"
43.	Ramshastri Ka Nayaya	Hindi 80 mins	"
44.	Crow and Fox (a foreign film dubbed in Hindi by the Children's Film Society)	Hindi 11 mins	"
45.	Lu Brothers (a foreign film dubbed in Hindi by the Children's Film Society)	Hindi 30 mins	"
46.	Scout Camp	Hindi 30 mins	"
47.	Guru Bhakti	Hindi 60 mins	"
48	Saral Biswas	Hindi 20 mins	"
49.	Panchatantra ki ek kahani	Hindi 22 mins	"
50.	Chetak	Hindi 25 mins	"
51.	Meera ka Chitra	Hindi 42 mins	"
52	Idd Mubarak	Hindi 22 mins	"
53.	Chhatrapati Shivaji	Hindi 60 mins	"
54.	The Story of two Stamps	Hindi 34 mins	"
55	Savitri	Hindi 45 mins	"
56.	Raju aur Gangaram	Hindi 45 mins	"
57.	Jaise ke Taisa	Hindi	"
58.	Dak Ghur	Hindi	"
59.	Prince Bayaya	Music 85 mins	The Central Film Library, New Delhi
60.	The Proud Princess	Czech 58 mins	"
		Eng. sub-titles	"
61.	The Secret Caves	Eng 62 mins	"

Biography

1.	Our Prime Minister (on the late Prime Minister Nehru)	Hindi 22 mins	The Central Film Library, New Delhi
2	Mahatma Gandhi	Eng. 12 mins	"
3	Rabindranath Tagore	Hindi 20 mins	"
4	Children's Magazine No. 2 (on the late Prime Minister Nehru)	Hindi 11 mins	"
5.	Children's Day (on the late Prime Minister Nehru)	Hindi 12 mins	"

II. FOR USE IN HIGH/HIGHER SECONDARY SCHOOLS

A FILMSTRIPS

Civics and Current Affairs

1	The United Nations at work	The Central Film Library, New Delhi
2.	Citizenship	"
3.	F.O.A. in Asia	"
4	World population	Picture Post Filmstrips (National Education and Information Films, Bombay)

Geography

1.	Switzerland	The Central Film Library, New Delhi
2.	Turkey	"
3.	Australia	"
4.	Belgium	"
5.	Britain today	"
6	Burma	"
7.	Ceylon	"
8.	China	"
9.	Finland	"
10.	France	"
11.	Germany, North Section	"
12.	Germany, South Section	"
13	Denmark	"
14.	East Africa	"
15.	Ganges Basin	"
16.	Holland	"
17.	Modern Greece	"
18.	Japan—Life and Industries	"
19.	Latitude and longitude	"
20.	Malaya	"
21.	North America	"
22.	New Zealand	"
23.	South China	"
24.	South Africa	"
25.	Sweden	"
26	Spain	"
27.	West Africa	"
28.	Egypt	"
29	U.S.A. East States	"
30.	The Gold Coast	"
31.	The work of rivers	Picture Post Filmstrips (National Education and Information Films, Bombay)
32.	Hong Kong	"
33.	Turkey	"
34.	The work of weather	"
35.	Philippine Islands	"
36.	U.S.A. West States	The Central Film Library, New Delhi
37.	U.S.A. Middle States	"
38.	The face of Canada	British Information Services
39.	Nations of the Commonwealth—Introducing Australia	"
40.	Nations of the Commonwealth—Introducing South Africa	"
41.	Nations of the Commonwealth—Introducing New Zealand	"
42.	Sudan	"

Chemistry

1.	Carbon and its oxides	The Central Film Library, New Delhi
2.	Chlorine and its compounds	"
3.	Calcium and its compounds	"
4.	Sulphur and its compounds	"
5.	Copper and its compounds	"
6.	Iron and Steel	"
7.	Lead	"
8.	Sodium Chloride	"
9.	Zinc	"

Physiology and Hygiene

1	Nutrition	"
2.	Malaria	"
3.	Food and health	"
4.	Care of teeth	"

Crafts

1.	The Craftsman and wood	Picture Post Filmstrips (National Education and Information Films, Bombay)
2.	The Craftsman and metal	"
3	The Craftsman and leather	"

Literature

1	Hamlet	The Central Film Library, New Delhi
2	Henry V	"
3.	Macbeth	"
4.	Romeo and Juliet	"
5.	A Midsummer Night's Dream	"
6.	Introduction to Shakespeare	"

History

1.	Clive	"
2.	Making of modern Germany	"
3	Napoleonic wars to the 2nd World War	"
4.	Roman Conquest of Britain	"
5.	Nelson	"
6.	Changes at the end of the 18th century	"
7.	Vedic Age	"
8.	The French Revolution	Picture Post Filmstrips (National Education and Information Films, Bombay)
9.	The Hundred Years War	"
10.	The Renaissance	"

Physics

1.	Atomic energy	"
2.	Electricity and Magnetism—Introduction	"
3.	Energy	"
4	Condensers	"
5.	Heat	"

B. FILMS (16 mm.)

Mathematics

1.	What are fractions?	Eng. 10 mins	The Central Film Library, New Delhi
2.	We discover fractions	Eng. 10 mins	"
3.	Geometry and you	Eng. 10 mins	"
4.	The language of the graphs	Eng. 13 mins	"
5.	Descriptive Geometry	Eng. 22 mins	"

Geography

1.	Four seasons	Eng. 33 mins	"
2.	Day and Night	Eng. 9 mins	"
3.	Earth—rotation and revolution	Eng. 9 mins	"

4.	Earth—surface and climate	Silent 10 mins	The Central Film Library New Delhi
5.	Volcanoes	Silent 15 mins	"
6.	Weather	Silent 14 mins	"
7.	Earth—latitude and longitude	Eng. 9 mins	"
8.	Majestic Norway	Eng. 20 mins	"
9.	Picturesque Sweden	Eng. 22 mins	"
10.	Picturesque Denmark	Eng. 20 mins	"
11.	Belgium	Eng. 22 mins	"
12.	Ganga	Hindi-Eng. 11 mins	"
13.	Industrial Mysore	Hindi-Eng. 23 mins	"
14.	Suez Canal	Eng. 9 mins	"
15.	Introducing East Africa	Eng. 20 mins	British Information Services
16.	Meet New Zealand	Eng. 40 mins	"
17.	Beautiful New Zealand	Eng. 20 mins	"
18.	This is Malaya	Eng. 13 mins	"
19.	Australia	Eng. 10 mins	The Central Film Library, New Delhi
20.	British Isles	Eng. 6 mins	"
21.	Major Industries of India—Agriculture, Textiles, Iron, and Steel	English & major Indian languages 1 hr. 57 mins	Burmah Shell
22.	Along the Tista	Hindi Colour 10 mins	The Central Film Library, New Delhi
23.	Kerala	Hindi 17½ mins	"
24.	Ujjaini	Hindi 11 mins	"
25.	Round of the seasons	Eng. 10 mins	"
26.	This is Finland	Eng. 27 mins	"
27.	Madhya Pradesh	Hindi 18½ mins	"
28.	A Family in Bangalore	Eng. 33 mins	Burmah Shell
29.	Paris and Versailles	Eng. 15 mins Colour	The Central Film Library, New Delhi

Physics

1.	Sound	Eng. 10 mins	"
2.	Sound (McGraw Hill)		"
3.	Conduction	Eng. 7 mins	"
4.	Radiation	Eng. 6 mins	"
5.	Electricity and heat	Eng. 8 mins	"
6.	Atomic energy	Eng. 11 mins	"
7.	Laws of Motion	Eng. 12 mins	"
8.	Gravity and centre of Gravity	Eng. 12 mins	"
9.	Heat conduction	Eng. 12 mins	"

Chemistry

1.	Colloids	Eng. 11 mins	"
2.	Molecular theory of matter	Eng. 11 mins	"
3.	Oxygen	Eng. 10 mins	"
4.	Colour	Eng. 16 mins	"
5.	Catalysis	Eng. 11 mins	"
6.	Crystal	Eng. 7 mins	"
7.	Water	Eng. 11 mins	I.C.I.
8.	Ammonia	Eng. 14 mins	"
9.	Chlorine	Eng. 15 mins	"

Botany

1.	From flower to fruit	Silent 15 mins	The Central Film Library, New Delhi
2.	How plants feed	Eng. 10 mins	"
3.	Leaves	Eng. 11 mins	"
4.	Roots	Eng. 10 mins	"
5.	Pollination	Eng. 8 mins	"
6.	The life cycle of maize	Eng. 10 mins	British Information Services

General Science

1. Action and Reaction	Eng. 12 mins	The Central Film Library, New Delhi
2. Air Pressure	"	"
3. Battery Electricity	"	"
4. Centrifugal Force	"	"
5. Density	"	"
6. Electric Circuits	"	"
7. Falling Bodies	"	"
8. Fire	"	"
9. Force	"	"
10. Friction	"	"
11. Ice	"	"
12. Optical Illusions	"	"
13. Pascal's Law	"	"
14. The Pendulum	"	"
15. Properties of Gases	"	"
16. Properties of Liquids	"	"
17. Reflection	"	"
18. Refraction	"	"
19. Refrigeration	"	"

Physiology and Hygiene

1. Action of the human heart	Silent 6 mins	"
2. The human body	Eng., Hindi 9 mins	The United States Information Service
3. How the respiratory system functions	Silent 14 mins	The Central Film Library, New Delhi
4. Nose, throat, and ears	Eng. 10 mins	"
5. Digestion of foods	Eng. 11 mins	"
6. Work of the kidneys	Eng. 11 mins	"
7. How we hear	Silent 6 mins	"
8. How we see	Silent 8 mins	"
9. The nervous system	Eng. 11 mins	"
10. Sleep for health	Eng., Hindi 12 mins	"
11. How disease travels	English and major Indian languages 10 mins	The United States Information Service
12. Insects as carriers of disease	English and major Indian languages 10 mins	"
13. Understanding Vitamins	Eng. 15 mins	The Central Film Library, New Delhi
14. Fight Against Disease	Eng. 8 mins	I.C.I.

Biology

1. Introduction to biology	Eng. 13 mins	The Central Film Library, New Delhi
2. Romance of life	Silent 14 mins	"
3. The earlier and simpler forms of life on earth	Silent 10 mins	"
4. The toad	Eng. 7 mins	British Information Services

History

1. Medieval England	Eng. 10 mins	The Central Film Library, New Delhi
2. Stuart Britain	Eng. 10 mins	"
3. Six years of freedom (India)	Eng., Hindi 13 mins	"

General Knowledge

1.	Do you know?	Hindi 10 mins	The Central Film Library, New Delhi
2.	Wings of Yesterday	Eng. 19 mins	ESSO
3.	Story of Storage Battery	Eng. 30 mins	"
4.	Where Mileage Begins	Eng. 19 mins	"
5.	Konarka	Eng.	Dunlop
6.	The Road to Ambattur	Eng.	"
7	The Story of Penicillin	Eng. 9 mins	I.C.I.
8.	Radio Story	Eng. 10 mins	Phillips
9.	Magic Window (Television)	Eng. 20 mins	"
10.	Pen-Tele-Tron	Eng. 10 mins	"
11.	The Miracle of Light	Eng. 16 mins	"

III. FOR USE IN TEACHER TRAINING INSTITUTIONS

A. FILMSTRIPS

1.	Drawing is Fun	United States Agency for International Development, New Delhi
2.	Enriching the Curriculum with Filmstrips	"
3.	Filmstrip Preparation	"
4.	Handmade Lantern Slides	"
5.	How to keep your Bulletin Board alive	"
6.	How to make a Puppet	"
7.	How to make and use the Felt Board	"
8.	How to organize Field Trips	"
9.	Introducing Filmstrips	"
10.	Making your chalk teach	"
11.	Mounting Pictures	"
12.	Opaque Projector	"
13.	Parade of Bulletin Boards	"
14.	Puppet Heads and Hands	"
15.	Teach with Still Pictures	"
16.	Teach with the Filmstrip	"

B. FILMS

1.	Approach to Art Teaching	Eng. 19 mins	Australian High Commission, Chanakyapuri, New Delhi
2.	Teaching Young Children	Eng. 19 mins	British Information Services, New Delhi
3.	The Bulletin in Teaching	Eng. 9 mins	The Central Film Library, New Delhi
4.	Field Trip	Eng. 10 mins	"
5.	Audio-Visual Materials in Teaching	Eng. 12 mins	"
6.	Chalkboard Utilization	Eng. 15 mins	"
7.	The Bulletin Board: An Effective Teaching Device	Eng. 11 mins	"
8.	Flannelgraph	Eng. 27 mins	"
9.	Poster Making	Eng. 10 mins	"
10.	Finger Painting Methods	Eng. 9 mins	"
11.	Operation and Care of the R.C.A. 400 16 mm. Sound Projector	Eng. 18 mins	"
12.	Projecting Motion Pictures	Eng. 10 mins	"
13.	Overhead Projector	Eng. 16 mins	"
14.	The ABC of Puppet Making	Eng. 20 mins	"
15.	Let's make Puppets	Eng. 10 mins	"
16.	Making and Using Puppets	Eng. 11 mins	"
17.	Wet Mounting Pictorial Materials	Eng. 12 mins	"
18.	Puppetry—String Marionettes	Eng. 10 mins	"

19.	beginning Picture Making	Eng. 11 mins	United States Agency for International Development, New Delhi
20.	Better Bulletin Boards	Eng. 11 mins	"
21.	Care of Art materials	Eng. 11 mins	"
22.	Finger Painting	Eng. 11 mins	"
23.	Handmade Materials for Projection	Eng. 22 mins	"
24.	How to teach with films	Eng. 22 mins	"
25.	Let's draw with crayons	Eng. 11 mins	"
26.	Paper Sculpture	Eng. 11 mins	"
27.	Poster Making : Design and Technique	Eng. 11 mins	"
28.	Operation and Care of the Victor 16 mm. Sound Projector	Eng. 11 mins	"
29.	Verbs : Recognizing and using them	Eng. 11 mins	The Central Film Library, New Delhi
30.	Verbs : Principal Parts	Eng. 11 mins	"

IV. FOR USE IN SOCIAL EDUCATION CENTRES

A. FILMSTRIPS

Health and Hygiene

1.	Food and health	The Central Film Library, New Delhi
2.	First Aid	"
3.	Malaria	"
4.	Cholera	"
5.	Leprosy	"
6.	Tuberculosis	"

Agriculture

1.	Compost making	"
2.	Land	"
3.	Rice	"
4.	Wheat	"
5.	Irrigation	"
6.	Jute fields	"

B. FILMS (16 mm.)

Health and Hygiene

1.	Before the baby comes	English & major Indian languages 30 mins	United States Information Service
2.	Cleanliness brings health	English & major Indian languages 10 mins	"
3.	Clean water makes good health	English & major Indian languages 11 mins	"
4.	Care of the eyes	English & major Indian languages 21 mins	"
5.	How to have healthy home	English & major Indian languages 17 mins	"
6.	Malaria control	English & major Indian languages 27 mins	"
7.	They need not die	English & major Indian languages 16 mins	"
8.	Your baby can be healthy	English & major Indian languages 16 mins	"
9.	Your health centre	English & major Indian languages 16 mins	"

10.	Arrest [illegible] prosy	Eng..	[illegible] Central Film Library, New Delhi
11.	Hookworm	Eng., Hindi	[illegible] Nurse[illegible] "
12.	The marked man	Eng., Hindi	[illegible] Diploma[illegible] "
13.	[illegible] menace	Eng., Hindi	" "
14.	[illegible] disease?	Eng., Hindi	" "

Agriculture

1.	How to control pests	English & major Indian languages 22 mins	United States Information Service
2.	How to grow more paddy	Eng. & major Indian languages 22 mins	"
3.	Improved seed	Eng. & major Indian languages [illegible]	"
4.	Life for the land	Eng. & major Indian languages 25 mins	" "
5.	Magic of the egg	Eng. & major Indian languages 15 mins	"
6.	Factors of Soil Fertility	Eng. & major Indian languages 22 mins	"
7.	Lime makes the difference	Eng. & major Indian languages 12 mins	"
8.	More profit from goats	Eng. & major Indian languages 12 mins	"
9.	Planning for plenty	Eng. & major Indian languages 13 mins	"
10.	Time is money	Eng. & major Indian languages 10 mins	"
11.	White Manure	Eng., Hindi 11 mins	The Central Film Library, New Delhi
12.	Corn's Hidden Enemies	Eng. 10 mins	Burmah Shell
13.	Spray for Better Crops	Eng. 28 mins	"
14.	Revolution in Agriculture	Eng. 23 mins	I.C.I.

Co-operation

1.	Shoulder to shoulder	Hindi 11 mins	[illegible]ns Division, Ministry of Information and Broadcasting, Government of India
2.	Co-operative farming	Hindi, Eng. 11 mins	"
3.	The Etawah story	Hindi, Eng. 11 mins	"
4.	Visual Ed[illegible]	[illegible]	[illegible]

Crafts

1.	Spirit of the loom	Hindi 11 mins	The Central Film Library, New Delhi
2.	Busy hands	Hindi 10 mins	"
3.	Suds	Hindi, Eng. 9 mins	"
4.	Potteries	Hindi, Eng. 11 mins	"
5.	Tree of wealth	Hindi, Eng. 10 mins	"
6.	Himalayan Tapestry	Eng. 29 mins	Burmah Shell
7.	Rajasthan Tapestry	Eng. 44 mins	"
8.	The sportsman and the carpenter	Eng. 29 mins	"

APPENDIX B

SOURCES OF MATERIALS AND EQUIPMENT

[illegible] Boards

Filmstrip Projectors, Slide Projectors, and Episcopes

1. Cinefones (I) Ltd, 3, New Queen's Road, Bombay-1
2. Cinerama (P) Ltd, Chandni Chowk, behind State Bank of India, Delhi-6
3. Cinecita Private Ltd, 9/3, Madan Street, Calcutta-13
4. General Radio & Appliances Private Ltd, 3, Madan Street, Calcutta-13.
5. Photo-Cine Sound Supplies, 4, Mission Row, Calcutta-1
6. The Oriental Science Apparatus Workshops, Ambala Cantonment
7. Educational & Scientific Equipment Private Ltd, National House, Apollo Bunder, Bombay
8. Electronic Emporium, 296, Lamington Road, Bombay-7
9. Patel-India (Private) Ltd, 199, Hornby Road, Bombay 1
10. AMA (P) Ltd, Connaught Place, New Delhi, also Hornby Road, Bombay 1
11. Sawyers' Asia Private Ltd, 68, Tardeo Road, Bombay-7
12. National Visual [illegible]ation, 29, Veer Nariman Road, Bombay-1

Stereo Projectors

Sawyer's Asia Private Ltd, 68, Tardeo Road, Bombay-7

16 mm. Sound Projectors

1. J. Mahabeer & Co. (Private) Ltd, Faiz Bazar, Delhi-7
2. Educational & Scientific Equipment Private Ltd, National House, Apollo Bunder, Bombay-1
3. Patel India (Private) Ltd, 199, Hornby Road, Bombay
4. Gaumont-Kales (P) Ltd, Forbes Building, Fort, Bombay
5. General Radio & Appliances Private Ltd, 3, Madan Street, Calcutta-13
6. Photo Cine Sound Supplies, 4, Mission Row, Calcutta-1
7. Meopta Cine Distribution & Service, Central Studio, Bashirbagh, Hyderabad
8. Cinefones, 3, New Queen's Road, Bombay-1
9. AMA (P) Ltd,
   (i) Connaught Place, New Delhi
   (ii) Hornby Road, Bombay-1

Tape Recorders

1. Toshniwal Bros (P) Ltd, 192 Jamshedji Tata Road, Fort, Bombay
2. Radio Services, 19, Mount Road, Madras
3. General Radio & Appliances Private Ltd, 3, Madan Street, Calcutta-13
4. K. J. Mehta, opposite Railway Station, Ajmer (Rajasthan)
5. Mohamed Ebrahim & Co. (P) Ltd, Madras, Bangalore, and Hyderabad

Films and/or filmstrips

1. The Central Film Library—Department of Audio-Visual Education, National Council of Educational Research and Training, Ring Road, New Delhi-1.
2. Film Libraries of State Governments
3. The Canadian High Commission, New Delhi
4. The United States Information Service, Calcutta, Bombay, New Delhi, and Madras
5. The British Information Services, Calcutta, Bombay, New Delhi, and Madras
6. The Burma-Shell Oil Storage and Distributing Co. Ltd, Hong Kong House, Calcutta-1
7. The Imperial Chemical Industries Ltd, I.C.I. House, Chowringhee, Calcutta-16
8. ESSO Ltd, P.O. Box 355, Bombay
9. The Dunlop Rubber Co. Ltd, Free School Street, Calcutta
10. Philips India Ltd, Justice Chandra Madhab Road, Calcutta
11. The British Council—Rafi Marg, New Delhi; also Calcutta, Bombay, and Madras
12. The Children's Film Society—Worli, Bombay-18
13. The National Education and Information Films Ltd, National House, Apollo Bunder, Bombay
14. The Educational Films of India, 180, Hornby Road, Bombay
15. The Universal Educational Films, 8A, Asaf Ali Road, New Delhi
16. Films Division, Government of India, 68, Tardeo Road, Bombay
17. The Embassy of the Polish People's Republic in India, New Delhi
18. Ministry of Education, UNESCO Unit, E Block, New Delhi (for UNESCO slides and filmstrips)
19. The Australian High Commission, 9/48, Sardar Patel Road, Chanakyapuri, New Delhi-11
20. The French Embassy, 2, Aurangzeb Road, New Delhi
21. The Netherlands Embassy, New Delhi
22. The United Nations Organization, 21, Curzon Road, New Delhi
23. U.S.A.I.D., 1, Pandura Flats, New Delhi
24. The Ceylon High Commission, 224, Jorbagh, Nursery, New Delhi

APPENDIX C

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17. **Motion Pictures in the Classroom**—Wood and Freeman (Houghton Miffin Co., Boston)
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