

human relations: fitting the job to the man—work on the design of tools and working equipment to suit the man who uses them (which is getting more important as machines become more complicated), time and motion study, and the effect of factory lighting, heating and noise, etc., on performance; selection and training; assessing the job—work measurement, job appraisal, time and motion study as a means of assessing a fair day's work, etc.; human behaviour and human relations—joint consultation, attitudes to work and the structure of informal groups in the factory. For research on matters relating to occupational health, the Medical Research Council will continue to be responsible, advised by its own special committees. However, in order to secure co-operation on technical aspects, the Department of Scientific and Industrial Research will be asked to appoint assessors to these committees where appropriate; for example, the elimination of dust from factories, although primarily a medical problem, may bring in the Department or the research associations to develop means of combating dust.

The scientific study of the human factors in industry is not, of course, a new venture: notable contributions have come in the past from the researches of the Medical Research Council's Industrial Health Research Board on, for example, how hours of work affect output and health, the influence of environmental factors such as lighting and heating, and the effects of incentives; and the Panel on Human Factors of the post-war Committee on Industrial Productivity has also done important work, including an investigation of the foreman in British industry. However, the need for much more of this kind of research is realized, and the aim of the two new committees will be to develop knowledge which can be used to make definite recommendations, the underlying object being to improve industrial production in Great Britain. For this reason, the committees include persons from industry, trades unions and universities.

Committee on Individual Efficiency in Industry. The terms of reference of this committee are: "(1) To keep under review the progress of knowledge bearing on the technical efficiency of the individual in industry. (2) To advise on general policy in research, including applied research and field study. (3) To call attention to gaps, and make recommendations for filling them. (4) To consider and report from time to time on the requirements for the training of research workers and technologists in this field". Its members are as follows: Sir Frederic Bartlett (*chairman*) (formerly professor of experimental psychology, University of Cambridge), W. V. Beard (general secretary, United Patternmakers' Association), J. O. Blair-Cunynghame (chief personnel officer, British Overseas Airways Corporation), Prof. J. V. Connolly (Department of Aircraft Economics and Production, College of Aeronautics, Cranfield, Beds), J. Crawford (general president, National Union of Boot and Shoe Operatives; member of the Advisory Council, Department of Scientific and Industrial Research), Prof. J. Drever (Department of Psychology, University of Edinburgh), Dr. C. B. Frisby (director, National Institute of Industrial Psychology, London), L. V. Green (head of the Personnel Research Department, Dunlop Rubber Co., Ltd.), Prof. Esther M. Killick (Department of Physiology, Royal Free Hospital School of Medicine, London), Prof. W. E. Le Gros Clark (Department of Human Anatomy, University of Oxford), N. G. McCulloch (deputy

chairman, Calico Printers' Association, Ltd.; chairman, Council of the British Cotton Industry Research Association), Prof. R. W. Russell (Department of Psychology, University College, London), Miss Nora Wynne (director, Carr's Biscuits, Ltd.), and an assessor from the Ministry of Labour and National Service. The joint secretaries are Dr. B. S. Lush (for the Medical Research Council) and Winston Rodgers (for the Department of Scientific and Industrial Research).

Committee on Human Relations in Industry. The terms of reference of the committee are: "To examine current activities concerning the study of human relations in industry and to call attention to problems of special timeliness or promise on which research, including applied research and field study, might be undertaken or supported by the Department of Scientific and Industrial Research, the Medical Research Council, or other bodies". Its members are as follows: A. B. Waring (*chairman*) (chairman and managing director, Joseph Lucas Industries, Ltd.), J. Foster Beaver (chairman, Beaver and Company (Bingley), Ltd.), J. O. Blair-Cunynghame (chief personnel officer, British Overseas Airways Corporation), A. D. Bonham-Carter (head of the Personnel Division, Unilever, Ltd.), Prof. T. Ferguson (Department of Public Health, University of Glasgow), E. Fletcher (member of the Advisory Council, Department of Scientific and Industrial Research; head of the Productivity Department, Trades Union Congress), Miss Beryl Foyle (joint managing director, Boxfoldia, Ltd.), Prof. A. J. Lewis (Institute of Psychiatry, University of London; and member of Medical Research Council), Prof. R. W. Russell (Department of Psychology, University College, London), Miss B. N. Scar (Department of Social Science, London School of Economics), Prof. T. S. Simey (Department of Social Science, University of Liverpool), W. R. Verdon Smith (managing director, Bristol Aeroplane Co., Ltd.), T. Williamson (General Council, Trades Union Congress), Dr. A. T. M. Wilson (director, Tavistock Institute of Human Relations), and an assessor from the Ministry of Labour and National Service. The joint secretaries are J. R. Cass (for the Department of Scientific and Industrial Research) and Dr. B. S. Lush (for the Medical Research Council).

TEACHING OF NATURAL SCIENCE IN SECONDARY SCHOOLS

IN view of the pressing needs for a more thorough and efficient teaching of science, a comparison and free flow of ideas between teachers, of all nations, of this subject would be useful. A number of accounts of different aspects of comparative education have been published by the United Nations Educational, Scientific and Cultural Organization, and a recent volume, "The Teaching of Natural Science in Secondary Schools"* is compiled from information supplied to the International Bureau of Education, Geneva, by the ministries of education of all countries, apart from the U.S.S.R. and its satellite States. This is a valuable piece of work, and such efforts are to be encouraged; but it suffers from undue compression, as well as vagueness and scrappiness of

* Unesco: International Bureau of Education. Publication No. 139: XVth International Conference on Public Education, convened by Unesco and the I.B.E., Geneva, 1952. Teaching of Natural Science in Secondary Schools. Pp. 216. (Paris: Unesco. Geneva: I.B.E. London: H.M.S.O., 1952.) 5 Swiss francs or 8s. 6d.

treatment at times. Sometimes it gives a statement of intentions and ideals rather than of achievements; some of the accounts of science-teaching are clearly derived from those of other nations, and at times we do not get a clear idea of what is meant by secondary education. The vagueness of the official statement which does not want to commit itself to well-defined terms seems to be common to many countries. An example of this (which could be multiplied many times throughout the book) taken from the United Kingdom (England and Wales) Section will show the difficulties of the compiler: "Natural Science teaching is sometimes optional. It is left to the discretion of the individual school. The same importance is given to Natural Science in comparison with other subjects in promotion examinations and the Secondary School leaving examination".

The book is a sequel to an "Introduction to Natural Science in Primary Schools", prepared by the International Bureau of Education for the Twelfth International Conference on Public Education, held in 1949. The teaching of physics and chemistry is reserved for a later inquiry, and so the present work is confined to biology and its branches, physiology and anatomy, geology and mineralogy. To take away physics and chemistry from a report on science teaching would seem to be unfortunate. A definition of natural science which purposely excludes the fundamental studies of the physical sciences is unwise, and in any event they are not excluded in the reports which are sent in by some of the ministries. The information was given under a number of headings: the place of natural science in the curriculum, the aims of natural science teaching, syllabuses, teaching methods (including visual aids and text-books), teaching staff and future intentions. It is impossible to summarize further the results of the inquiry as they are set forth in the general survey in the early part of the book; but much of the information sent from forty-eight countries would have been grasped more readily had it been set out in tabulated form. It is evident that the countries concerned are unanimous in wishing to make natural science teaching more experimental and to bring it into closer touch with life, and that there is an increasing emphasis on the biological aspects of the subject. Science teaching in nearly all countries is related to human needs—individual, national and social. Some countries, including Germany, stress the ethical and philosophical aspects of science, its disciplines and opportunities for patience and criticism; the United Kingdom mentions its interest and hobby values; other countries indicate its relation to geography and its value as a means to a better understanding and use of the natural resources of the country.

The account of science teaching in England and Wales is disappointing, and does not do justice to work which is being carried on. To a foreign reader it must seem unimpressive. A clear statement should have been given of the division of secondary education in Britain, since the 1944 Act, into 'grammar', 'technical' and 'modern'. The report is chiefly concerned with modern schools (the old 'central schools'); grammar schools are only mentioned in passing, and secondary technical schools not at all. Although it is important that all citizens should leave school with some knowledge of biology, particularly in regard to the nature and needs of mankind, the fact remains that in Britain it is the grammar and public schools to which we must look for the type of science teaching

which in the end produces scientists and technologists. The national and international value of the science teaching in these schools from 1902 until 1944 cannot be over-estimated. The need of the future for the type of scientific worker who comes from these schools is greater than ever before; indeed, there will be no future for Britain unless its life is sustained by an increasing number of workers thoroughly trained in the skills and disciplines of science. With the best will in the world, the modern schools do not meet these needs, in spite of the fact that they cater for the majority of children. Some of them do not teach science, many of them have no adequate course for the important age-group of 14-15 years, and, in spite of the optimistic Ministry of Education booklets mentioned in the report under review, some of these schools have not yet given adequate thought to their schemes of work. So far as the scientific life of the nation was concerned, the grammar and public schools laid the golden eggs; but they have been inhibited in their work by factors which could have been foreseen in 1945. No science graduate with a good honours degree needs to consider teaching as a career unless he has strong vocational leanings. Recruitment for the science staffs of grammar schools is suffering in both the quantity and quality of applicants to fill the vacancies. This has its repercussions on the attainments of students reaching the universities and on their subsequent value to society. Nor is this improved by feeble official attempts to assure us that the position is not unsatisfactory.

The document makes no attempt at appraisal of the various aims and methods, nor does it stress particularly good or original points where they appear. It will be of more interest to the student of comparative education than to the practical science teacher, who will find that it does not touch the fringe of most of the matters so admirably dealt with in the report on the "Teaching of General Science", prepared by the Science Masters' Association in 1950.

W. L. SUMNER

SOCIAL ANTHROPOLOGICAL STUDIES OF LATIN AMERICA

THROUGHOUT Latin America there is a desire to improve conditions and to overcome difficulties which hinder national development, the greatest being the low estate of the Indian. In order to do this the first necessity is adequate information about things as they are, and the Institute of Social Anthropology of the Smithsonian Institution is helping to provide it by publishing a series of descriptive studies, of which Nos. 10-14 have been published during the past two years or more*. The policy of the Institute is to co-operate wherever possible with the various national organizations, and the present series owes much to students of the Mexican Escuela

* Smithsonian Institution: Institute of Social Anthropology. Publication No. 10: Nomads of the Long Bow; the Siriono of Eastern Bolivia. By Allan R. Holmberg. Pp. iv+104+7 plates. 65 cents. Publication No. 11: Quiroga, a Mexican Municipio. By Donald D. Brand, assisted by José Corona Núñez. Pp. v+242+35 plates. 1.75 dollars. Publication No. 12: Cruz das Almas, a Brazilian Village. By Donald Pierson and others. Pp. x+226+20 plates. Publication No. 13: The Tajin Totonac, Part 1, History, Subsistence, Shelter and Technology. By Isabel Kelly and Angel Palerm. Pp. xiv+369+33 plates. 2.75 dollars. Publication No. 14: The Indian Caste of Peru, 1795-1940: a Population Study based upon Tax Records and Census Reports. By George Kubler. Pp. vi+71+2 plates. 75 cents. (Washington, D.C.: Government Printing Office, 1950-1952.)