

show them all. There is a strong case for greater international emphasis in British trade fairs, whether general or specialized. Britain at present is without an up-to-date exhibition centre offering amenities comparable with those available in many European countries. Consideration is now being given to the possibility of the British Industries Fair at Castle Bromwich becoming the first British general international trade fair. However, Political and Economic Planning argues strongly that the London area is in many ways more suitable, and suggests that the Crystal Palace, Olympia and Earls Court sites should be fully considered. It is important that early decisions should be reached on the part which international trade fairs should play in Britain in the future, and the broadsheet suggests also that there is a case for an executive body, representative of both Government and industry, to finance and deal with the difficult question of British pavilions at trade fairs which are organized on the national pavilion pattern.

International Council of Scientific Unions

FOR all that it represents, the 1957 Year Book of the International Council of Scientific Unions (pp. ii+72. London: International Council of Scientific Unions, 1957) is among the most modest of annual reports. The calendar of meetings for 1957 arranged by the thirteen international scientific unions which make up the International Council alone makes fascinating reading; the truly international nature of the organization is shown by the list of countries belonging to the different scientific unions. Forty-two countries, including the U.S.S.R. and Rumania, belong to the International Council; even more encouraging is the fact that forty-seven countries, including the People's Republic of China and Hungary, belong to the International Union of Geodesy and Geophysics. The Yearbook also contains a list of all members of commissions and important committees of the different organizations, the text of the agreement between the International Council of Scientific Unions and Unesco and reports on activities during 1955-56.

Conference on Ethology and Comparative Psychology

BETWEEN July 9 and August 3, a conference was held at the Center for Advanced Study in the Behavioral Sciences, Stanford, California, the purpose of which was to facilitate the exchange of ideas between representatives of ethology and comparative psychology. No formal programme or agenda was drawn up in advance of the meeting and no 'papers' in the usual sense were presented. Each participant reported results of his more recent investigations. This took approximately two weeks; the second half of the conference was given over to the discussion of general theoretical issues such as the use of formal and physiological genetics in the interpretation of behaviour, the ontogeny of behaviour, the role of physiology in behavioural theory, phylogenetic differences in motivational systems, 'drive' as a hypothetical concept and as an intervening variable, and a number of specialized ethological concepts including those of displacement activities, innate releasing mechanisms and imprinting. Because the conference was planned as an informal, relatively unstructured series of meetings, and because each participant was promised that he would not be

required to produce any publishable paper, the results of the conference will not appear in print. However, intangible results were numerous and important, and each contributor felt that his own thinking and research would benefit greatly as a consequence of the discussions. The expenses of the conference were defrayed by the Center. Those taking part were: Gerard Baerends (University of Groningen), Frank Beach (Yale University), Harry Harlow (University of Wisconsin), Donald Hebb (McGill University), Eckard Hess (University of Chicago), Robert Hinde (University of Cambridge), Jan van Iersel (University of Leyden), Daniel Lehrman (Rutgers University), Jay Rosenblatt (American Museum of Natural History), Niko Tinbergen (University of Oxford) and David Vowles (University of Reading).

Fungal Saccharification of Potato Mash

SEMI-PILOT plant experiments on the saccharification of potato mash by means of fungal preparations are described by K. Beran, M. Burger and S. Zelenka in *Folia Biologica* (3, 89; 1957), the journal of the Academia Scientiarum Bohemoslovenica. The saccharification was effected by using a combination of preparations of *Aspergillus niger* and *A. oryzae* and of *A. niger* alone. No special technological difficulties were met, and it was not necessary to add malt to the mash. The mashes saccharified by the fungal preparations were more fluid than those saccharified with malt. Liquefaction was normal when *A. niger* alone was used. The yield of alcohol from mashes saccharified with the fungal preparations was greater than from mashes saccharified with malt and was increased still further by using a suitable strain of yeast. When using a preparation of *A. niger*, the higher saccharification temperature (65° C.) and the lower pH (4.5-5.0) prevented the development of infection, both during saccharification and also, as regards the pH, during fermentation. The quality of the crude alcohol obtained was the same, whether fungus or malt was used. As a result of the saccharification activity of preparations of *A. oryzae*, galactose was released during fermentation.

Visual Deficiency Symptoms in Rubber

E. W. BOLLE-JONES has made a useful contribution to our knowledge of the visual symptoms in *Hevea brasiliensis* of deficiencies in macro- and micro-nutrients (*J. Rubber Res. Inst. Malaya*, 14, 493; 1956). These symptoms, which are briefly described in the text and are excellently illustrated in colour and by photographs, were obtained in seedlings grown in pot sand culture. Many of the deficiencies described, for example, those of copper, have not been encountered in the field, but others, for example, of magnesium, are of common occurrence. As the author implies, the whole question of deficiency symptoms is one that needs to be approached with some caution; but work of the kind now under consideration has done much to clarify the situation. Thus, whereas the symptoms of magnesium deficiency are so diagnostic as not to need confirmation by chemical analysis, those due to shortage of calcium are ill-defined and call for supporting analytical evidence. The materials used were seedlings of clone *Tjir 1* or clone *PB 86*. Deficiency symptoms now illustrated and described, but not previously published, include those of calcium, boron, copper, zinc and, in part, sulphur.

Molybdenum Nutrition and Free Amino-Acids in Tomato

J. V. POSSINGHAM has obtained some interesting results in an investigation of the effect of molybdenum on the content of free amino-acids and amides in tomato plants (*Austral. J. Biol. Sci.*, 10, 40; 1957). The plants, which had been cultured in the absence of molybdenum, were provided with molybdate, and the consequent changes in the relative amounts of the free amino-acids and amides were followed over an experimental period of four days. Quantitative paper chromatography was used for estimating the individual free amino-acids and amides, the results being expressed on a dry-weight basis. Changes in the concentrations of many of the individual amino-acids occurred within four hours of applying molybdenum. Large increases in the concentration of aspartic acid, glutamic acid, glycine, glutamine and asparagine occurred initially with molybdenum treatment, but were followed by steady declines. A different pattern of change was shown by the two compounds β -alanine and γ -aminobutyric acid, both of which decreased in concentration soon after molybdenum was applied. The results of this investigation are discussed in relation to the pathway by which the products of nitrate reduction are incorporated into proteins.

Mathematical Colloquium at University College, Cork

ABOUT thirty delegates from Irish universities, the Dublin Institute for Advanced Studies and the Irish Civil Service attended a mathematical colloquium at University College, Cork, during July 10-12. Profs. M. H. A. Newman and G. Temple gave short courses of lectures on mathematical logic and the theory of distributions, and splinter groups in algebra, analysis and applied mathematics were also organized. It is hoped to arrange an Irish mathematical colloquium at regular intervals in future. Inquiries should be addressed to the Organizing Secretary, Cork Mathematical Colloquium, Department of Mathematical Physics, University College, Cork.

Forestry and the United Nations

AN interesting and informative article on the forest work of the Food and Agriculture Organization of the United Nations by Sir H. Beresford Pierce appears in *Forestry* (30, No. 1; 1957. Oxford University Press). Forestry is one side only of the work of the Food and Agriculture Organization, which has five divisions—agriculture, economics, nutrition, forestry and fisheries. The forestry work is of a world-wide order, so as to reach backward countries where the aims and objects of scientific forestry are unknown or neglected. The Organization keeps in touch with the needs and wishes of governments all over the world through a number of regional Commissions, including the European Forestry Commission based on Rome, the Near East Commission based on Cairo, the Latin American Commission based on Rio de Janeiro and the Asian Pacific Forestry Commission based on Bangkok. Because of its special problems there is also a sub-Commission for the Mediterranean area. There is no commission as yet for North America, nor for West Africa south of the Sahara, although the latter is a region where there is much to be done in the forestry line.

A World Forest Inventory, which has been one of the objects of the forestry work of the United

Nations, was first completed in 1948; the second, an appreciably better assessment, appeared in 1953; and a third is planned for 1958.

Announcements

DR. RICHARD E. SHOPE, of the Rockefeller Institute, has been awarded the George M. Kober Medal of the Association of American Physicians for his work on the occurrence of animal viruses.

PROF. W. E. MORTON, professor of textile technology in the University of Manchester, has been awarded the Warner Memorial Medal for 1957 of the Textile Institute. The Warner Medal is awarded in recognition of outstanding work in textile science and technology, the results of which have been published, and particularly for work published in the *Journal of the Textile Institute*.

PROF. R. CRUICKSHANK, principal of the Wright-Fleming Institute of Microbiology, St. Mary's Hospital Medical School, London, has been appointed professor of bacteriology in the University of Edinburgh.

A GENERAL meeting of the Association of Applied Biologists will be held in the University of Leeds during September 19-20. Particulars can be obtained from Dr. J. H. Western, Department of Agriculture, The University, Leeds 2.

THE next meeting of the Photoelectric Spectrometry Group will be the ninth annual general meeting and will take the form of a joint meeting with the Photobiology Group to be held in the Old Medical School, University of Liverpool, on September 26. The subject of the meeting will be "The Spectroscopy of the Natural Pigments". The Photobiology Group will also meet on the following day. Details can be obtained from the Honorary Secretary, Photoelectric Spectrometry Group, 56 Arbury Road, Cambridge, or from the Honorary Secretary, Photobiology Group, Chester Beatty Research Institute, Royal Cancer Hospital, Fulham Road, London, S.W.3.

A CONFERENCE on the Rheology of Disperse Systems, organized by the British Society of Rheology, will be held in the Natural Sciences Building of the University College of Swansea, Singleton Park, Swansea, during September 19-21. Accommodation has been arranged at the University hall of residence. Further details can be obtained from the Hon. Secretary of the British Society of Rheology, Mr. N. Wookey, 52 Tavistock Road, Edgware, Middlesex.

A CONFERENCE on "Operational Research" has been organized by the Operational Research Society (United Kingdom), the Operations Research Society of America and the Institute of Management Sciences (New York), and will be held in Oxford during September 2-6. About 250 delegates from twenty countries are expected, and reprints of the papers to be presented have been prepared. The Conference Secretary is Miss B. Kornitzer, 6 Gray's Inn Square, London, W.C.1.

ERRATUM. In the communication entitled "The Free Energy of Hydrolysis of Adenosine Triphosphoric Acid" in *Nature* of June 29, p. 1350, the factor 10^3 was omitted from col. 8 of the table. The equilibrium constants for the hexokinase reaction should read 1.380×10^3 and similarly down that column.