

Cooper Union for the Advancement of Science and Art

THE eighty-third annual report of the Cooper Union for the Advancement of Science and Art, New York, covers the year ending June 30, 1942, and includes the report of the director, Mr. E. S. Burdell, with the departmental reports of the School of Engineering, the Art School, the Library, the Division of Social Philosophy, and the Division of Business Administration. Dealing with the effect of America's entry into the War upon American education, Mr. Burdell hints that the United States Office of Education may assign a specific training task to each college in terms of its capacity, equipment and personnel. He further predicts the year-round operation of many colleges and particularly of engineering schools. The post-war demand for scientifically trained personnel for rehabilitation and reconstruction purposes promises to be as great as the existing demand for trained men for the armed services. Teaching staffs, however, must not be called upon to face a twelve-month academic year with rest periods on a catch-as-catch-can basis. Colleges which anticipate year-round operation should be prepared to adopt the 'quarter-off' system which already works successfully in the State universities now on a four-semester basis, where a member of the teaching staff may expect his non-teaching semester during any one of the four quarters, which usually correspond to the four seasons of the year.

A third great challenge which American colleges must face during or shortly after the War is in the field of co-operative education. Stressing the way in which the co-operative scheme of alternating school work and shop practice strengthens vocational orientation, and the union of theory and practice, Mr. Burdell points out that the present tendency is for longer periods of alternation between college and the industries and that the most important functionary in the operation of the co-operative system is the co-ordinator. The value of the system has been well demonstrated in the experience of the University of Cincinnati, the pioneer in this movement, and for engineers the system teaches the student to do his best naturally and as a matter of course, as well as affording an appreciation of the human factor in practical affairs. In the second part of his report, Mr. Burdell refers to the question of student health and suggests a comprehensive study of the effects of stress, continuous and prolonged, upon the physical and mental stamina of young adults, which the Cooper Union has under consideration.

Evolution of International Trade

IN an address before the Manchester Statistical Society on March 10, on some essential factors in the evolution of international trade, Prof. A. G. B. Fisher stressed the importance, if we wish to maintain or improve our standard of living, of being prepared constantly to adjust our export activities to meet the probable changes in circumstances arising through changes in the character of employment, and of being constantly on the alert to initiate changes on our own account which are likely to be advantageous to us. British export trade flourished during the nineteenth century because we were able to supply people in other countries with things which they were eager to purchase, and he urged a careful study of the figures for total and expanding exports with

reference to other exports. We should consider how best we could prepare to make further adjustments after the War which would be suitable in the different conditions of world demand which will then exist. What is more, we should ensure that those adjustments would be made on a scale sufficiently large to assure us that balance of payments equilibrium at which we must aim. He stated that material progress will be impossible unless there is free admission into the occupations and industries where increased production is necessary to provide consumers with the things without which no increase in their real incomes will be forthcoming. Scientific and technical knowledge have always been the most important factors underlying economic progress, so the basis for the adjustments of the structure of world trade which will in any event be necessary is already available for us to build on. Such considerations are already receiving serious attention in other parts of the world, particularly in Switzerland, where Swiss industry is preparing to meet the new demands which peace will bring to it. Many industrial concerns there are strengthening their technical staff and increasing the number of their scientific collaborators, making resources available for research and constructing laboratories.

Ventilation of Electrical Substations

THE type of construction used for substations is generally governed by requirements, for example, fire and air-raid precautions, which may conflict with the maintenance of the atmospheric conditions necessary for keeping the equipment in good order. These conditions are not necessarily the same as those needed for human comfort, and the application of heat alone has often been found to be ineffective and costly. In a paper read in London before the Institution of Electrical Engineers, F. Favell and E. W. Cannon record their experiences in overcoming substation ventilation problems in particular cases. Adequate and suitably planned ventilation will maintain substation equipment in a satisfactory condition with a far smaller use of heat than has generally been considered necessary. Further collaboration by manufacturers, for example, in designing gear which would be unharmed by the occasional condensation that might occur in an unheated building, might enable heating to be dispensed with entirely. It is not certain that present-day switch-gear will be affected adversely by occasional bad conditions, and further investigation of this matter is required. Substation equipment and the buildings housing it should be designed and constructed as a complete unit. The paper discusses the subject under the headings of typical arrangement of a large indoor substation, conditions required in substations, the effects of unsuitable conditions, arrangements of ventilating plant, transformers inside buildings, and application to smaller substations.

Australian Antarctic Expedition

THE first volume of the "Scientific Reports (Series A) of the Australasian Antarctic Expedition of 1911-14" has now been published (Sydney, Government Printing Office, 1942. £3 17s. 6d.). The long delay was due to many causes, of which the most important was the usual difficulty that scientific expeditions have to face, namely, lack of funds. This large volume contains 350 pages of text, more than a hundred illustrations and nine maps. The text is

mainly the narrative of the expedition by Sir Douglas Mawson, and most of it has been long anticipated by the same author's popular volume entitled "The Home of the Blizzard" and Captain J. K. Davis's "With the Aurora in the Antarctic". Nevertheless, the official record of voyages, sledge journeys and discoveries should be valuable to future explorers. Most important, however, are the maps of various parts of the coast-line of Antarctica showing in full the details of the expedition's work. They include a large-scale plan of the surroundings of the expedition's main base at Cape Denison in King George Land, and maps of Queen Mary Land, King George Land, and the Charnockite coast east of Commonwealth Bay, and also track charts of the several voyages of the *Aurora*. Another useful feature is the inclusion of gazetteers of all names, giving not only the character of the feature, but also the origin of the name. The latter will be most useful for the future historian of the Antarctic. Only too often the origin of names given to features in polar regions is lost for want of such records by the explorers themselves.

Scientific and Industrial Photographers

THE Birmingham General Branch of the Association of Scientific Workers arranged for a lecture by Mr. Herbert E. Zerkowsky, of the British Cast Iron Research Association, on April 13, at the Chamber of Commerce, Birmingham, in connexion with the exhibition "Photography in Science and Industry". Mr. Zerkowsky started by giving a review of the development of photographic technique and paid tribute to the research work done by the manufacturers of photographic materials in Great Britain and to the contributions made by those who employ photography daily as a tool, and also by the amateurs. Special reference was made to the question of the salaries of photographers in the Civil Service and in industry, which are generally far below the average pay of those employed in the darkroom and in portrait photography. Mr. Zerkowsky pointed out that those who use photography for technical and scientific purposes are required to have first-class technical and scientific knowledge besides their photographic skill and experience. These workers, which he suggested should be called 'research photographers', have no organization to look after their interests and to ensure facilities for further studies and training young people, apart from the Association of Scientific Workers. He suggested the formation of a Group of Scientific and Industrial Photographers within the Association.

Potato Virus Diseases in Victoria

PAMPHLET No. 110 of the Commonwealth of Australia Council for Scientific and Industrial Research (314 Albert Street, East Melbourne, Victoria, 1941), by J. G. Bald and A. T. Pugsley, considers the effects of the potato virus diseases named X, A, Y, and leaf-roll, upon the most important varieties of that crop grown in Victoria. The variety Carman is almost entirely infected with virus X, is very susceptible to A and Y, and less so to leaf-roll. Up-to-date, like its namesake in Great Britain, is susceptible to most of the serious viruses, but in Victoria it possesses practical field immunity from virus A. The Snowflake variety is not very subject to aphid-borne virus diseases, though the stock is almost entirely affected

with virus X. A survey of suitable districts for the propagation of disease-free potato stocks is being made, and further studies of the effects of multiple infection by the viruses mentioned above, and those denoted by F and G, are in progress.

Palaeontographical Society

TRIBUTES were paid to Sir Arthur Smith Woodward on his retirement from the presidential chair at the annual general meeting of the Palaeontographical Society held in the Geological Society's rooms at Burlington House on April 21. Sir Arthur had been president for nine years, following thirty years as secretary of this Society. During his period of secretaryship, in addition to the ordinary duties of that office, he contributed two important monographs on Cretaceous fishes to the Society's series of volumes which describe and illustrate British fossils. In recognition of Sir Arthur's outstanding services to the Society, he has been elected an honorary member. He is succeeded as president by Prof. H. L. Hawkins, professor of geology in the University of Reading.

Sir Sidney Burrard

PROF. J. L. SIMONSEN writes: "In his brief obituary notice in NATURE of April 10, p. 414, of the late Sir Sidney Burrard, Sir Gerald Lenox-Conyngham omitted to mention one very important contribution to the advancement of science in India which we owe to Sir Sidney. When the formation of the Indian Science Congress, now the Indian Science Congress Association, was under consideration in the years 1911-12, it is very doubtful if any progress would have been made had it not been for the enthusiastic support which the proposal received from Sir Sidney Burrard and Sir Henry Hayden. It was due mainly to their representations that this body was from the outset recognized by the Government of India and by the local governments. Sir Sidney was president of the Congress at Lucknow in 1916 and during the remaining period of his service in India he always followed its meetings with the greatest interest".

The Night Sky in May

New moon occurs on May 4d. 09h. 43m. U.T., and full moon on May 19d. 21h. 13m. The following conjunctions with the moon will take place: May 5d. 22h., Mercury 8° N.; May 6d. 15h., Saturn 3° N.; May 7d. 18h., Venus 6° N.; May 9d. 21h., Jupiter 3° N.; May 28d. 10h., Mars 2° N. Occultations of stars brighter than magnitude 6 are as follows: May 6d. 9h. 01.0m., α Tau. (*D*); May 6d. 10h. 07.0m., α Tau. (*R*); May 12d. 21h. 27.6m., ν Leo (*D*). The times are given for Greenwich and *D* and *R* refer to disappearance and reappearance respectively. Mercury is stationary on May 12 and in inferior conjunction on May 23. Venus sets at 23h. 30m. about the middle of the month and is a conspicuous object in the western sky. Mars souths at 8h. in the middle of the month, rising at 2h. 30m. The planet is in Aquarius and is rather low for good observation. Jupiter, in Gemini, sets about midnight in the middle of the month. Saturn cannot be seen as it is too close to the sun. The times refer approximately to the latitude of Greenwich. The Aquarid shower of meteors is active in the first week in May, but it is generally very feeble and supplies few meteors.