

related to mineral deficiencies of land types and the relation between soil, climate and cultivation of the principal crops in Ontario, while the Department of Pathology and Bacteriology has continued its studies of bovine mastitis and the parasites of sheep.

The Carnegie Institution of Washington

THE Yearbook of the Carnegie Institution of Washington, July 1, 1936–June 30, 1937, contains the reports of the Executive Committee and of the president for the year ended October 31, 1937, together with reports on investigations received up to December 10 and a bibliography of publications issued during the year by the Institution or of the Institution's staff through all channels (Washington: Carnegie Institution of Washington). The president's report again refers to the relations between science and social problems and to the importance in society not merely to appreciate the difficulties in interpretation of the influence of science but also to be aware of the interdependence among social elements in the same way that we are aware of the interrelations among elements involved in the unity of Nature. The Geophysical Laboratory has continued researches to determine with all possible precision the underlying causes of geological and geophysical phenomena. A major advance in the terrestrial-magnetic research is reported by Dr. J. A. Fleming, in the proof of the association of a special type of magnetic disturbance and sharp fade-outs of high-frequency radio-wave reflections with bright eruptions in the solar chromosphere. With this advance, the Mount Wilson Observatory was also associated, and the Observatory also expanded greatly the scope of solar investigations with the rapid increase in solar activity. The Division of Plant Biology has continued to study the ecology of the Great Plains and its bearing on the agricultural and human population of that area. The Division of Animal Biology has made several observations fundamental to the cancer problem, and the value of diverse approaches by different groups of workers is well illustrated in this work as in reports from the Divisions of Embryology, the Nutrition Laboratory and the Department of Genetics in the field of endocrinology.

Technical Colleges of South Africa

THE Carnegie Corporation of New York has lately issued a critical study by Dr. F. H. Spencer of the technical colleges of South Africa. Dr. Spencer has had experience of technical education in Great Britain, and this has enabled him to make some interesting comparisons. The technical colleges provide (a) full-time pre-apprenticeship courses for pupils aged 14–17 or 18, (b) part-time courses for apprentices and others already at work. The place accorded in the full-time courses to general cultural work is, by British standards, inadequate, geography being dropped after the first year, while history, even from the economic point of view, does not enter the picture. The part-time courses, which are everywhere the largest part of the technical college work, are dominated by the Apprenticeship Law. This enactment

has conferred on South Africa some of the benefits which in Great Britain should have resulted from the clauses of the Fisher Act providing for daytime continuation education from 14 to 18. In South Africa, despite a certain amount of recalcitrance, the Apprenticeship Law is an undoubted success. Apprentices attend ordinarily about eight hours a week of which half is taken from day-time working hours. The great merit of the system is that the compulsory attendance is almost universally followed up to an advanced stage by a not unsatisfactory proportion of the apprentices. This advanced stage, at least for the constructional trades, is comparable with university work, and those who pass through it to the national certificate stage "will furnish the 'non-commissioned' staff of industry who are as essential to success as the management"

The Belgian Grid

IN *Electrical Industries* of July, W. Fennell gives a review of the salient engineering features of the Belgian Grid, which began by the co-operation in 1919 of isolated supply companies. These companies, mostly in the southern and eastern provinces (Liège, etc.), happened to be in close contact with heavy industries. They realized the existence of by-product power 'going to waste' at the large industrial works and saw that in some cases it would be economical to use this power rather than to build large power stations or extend small ones. A power production combine was formed to further the interests of manufacturers who had blast furnace and coke oven gas and process steam available greatly in excess of their own power requirements. In addition, they had engines used as stand-by plant, much of which would not be necessary if the various works' plants were interconnected. The electricity supply companies also had means of utilizing the waste power. This combine has spread so that it includes practically the whole country under a grouping system. All the undertakings and associated works are linked up into two networks, north and south, which are themselves interconnected. The production of power, while remaining under local control, is directed by a national co-ordinating company. The tariff applied to plant owners is based on the principle that the amounts they pay or receive are equal to the reduction or increase of expenditure entailed in their installations by running in parallel, compared with independent working. The success that Belgium has attained as a competitor in the steel and chemical industries indicates that this co-operative experiment, now twenty years old, has been a substantial contributory cause.

Conservation of Natural Resources

UNDER this title, the American Association for the Advancement of Science has issued a selected list of literature dealing with various aspects of the subject. Almost too late, rather than too soon, the United States is becoming conscious of the significance of the vast subject of conservation. The very word is itself

indicative of a more sober outlook. The falsely alluring concept of limitlessness which in the last century tempted Americans to embark on a policy of exploitation concurrently with expansion has gone; in certain spheres retreat has followed expansion and many rueful surveys are being made of what has been left, with sound suggestions as to how it may best be used for the future. America wants to reverse the processes by which "man has violated basic arrangements in a manner which Nature will not tolerate". The literature covers a wide range of subjects, including land use, which in this continent is especially bound up with the subject of soil erosion; forestry and afforestation, important not merely because "almost every one of the forty-eight states is headed towards forest bankruptcy in timber" but also because deforestation has had a terrible sequel in floods, soil wastage and silted rivers. Lists of books on "Oil and Gas Conservation" and "Saving Our minerals" indicate that the future shortage of these vital products has passed from the realm of prophecy to that of serious and calculable prediction. The inclusion of a section on the conservation of wild life serves to show how important is this question, both in and out of the national parks which are of increasing value to the States.

Research at Port Erin, Isle of Man

THE report of 1937 (No. 50) of the Marine Biological Station at Port Erin, Isle of Man, drawn up by Dr. R. J. Daniel, director, shows the largest number of students using the building in any one year and also the greatest number of visitors to the aquarium. More plaice larvæ have been liberated than during any previous season and there has been the highest percentage survival of lobsterlings in the hatchery. The new Fauna List is now published—a most useful and complete volume—which will be of the greatest assistance to all students. The main work of the Laboratory has been directed towards the breeding of oysters, a research which has now been going on for more than three years. The chief difficulty in obtaining proper spatfalls in the experimental pond is the varying temperature—a very low temperature ruining a promising beginning. To combat such conditions, a number of oysters were kept at a raised temperature-level in the culture house. Some oysters were also kept in dishes in the hatchery and the spawn from these has provided the basis for the limited series of culture-house experiments. These are still going on, and work is maintained in the improvement of methods and feeding of the larvæ in specially adapted vessels.

Announcements

SIR WILLIAM BRAGG has been elected a foreign associate of the Paris Academy of Sciences in succession to the late L. Torres Quevedo.

PROF. MAJOR GREENWOOD, professor of epidemiology and vital statistics in the University of London, has been awarded the Bisset Hawkins Gold Medal of

the Royal College of Physicians, for his researches in statistics.

THE twelfth International Horticultural Congress will be held in Berlin on August 12–20. After a series of meetings in Berlin, the delegates will visit certain horticultural experimental stations and the chief areas of horticultural production. A visit on August 20 to a Horticultural Exhibition at Essen will bring the Congress to an end. The following delegation has been chosen to represent the British Government at the Congress: Mr. H. V. Taylor, Mr. David Akenhead, Prof. E. E. Cheeseman, Mr. F. Birkinshaw, Mr. F. J. Chittenden, Col. F. R. Durham, Dr. R. G. Hatton, Sir Arthur Hill, Mr. H. J. Holman, Sir Frank Stockdale, Dr. M. A. H. Tincker and Dr. C. W. Wardlaw.

A General Discussion on Luminescence has been arranged by the Faraday Society, and will be held in the Biochemical Laboratory, University of Oxford, on September 15–17. Among the topics to be discussed are various aspects of the luminescence of solids, liquids and gases, and chemiluminescence. As usual in these discussions, a number of distinguished foreign guests have been invited to take part.

THE Council of the Harveian Society of London has chosen "The Value of Periodic Medical Examination in the Detection of Disease in Middle Life" as the subject for the Buxton Browne Prize, which consists of a medal and a sum of £100. The prize is open to any member of the medical profession registered in the British Isles or Dominions, and is limited to candidates less than forty-five years of age. Essays must be sent to the Treasurer of the Society, Mr. Cecil Wakeley, 14 Devonshire Street, W.1, before October 1, 1939.

MR. ROBERT L. SACKETT, dean of the School of Engineering at Pennsylvania State College from 1915 until 1937, has been awarded the Lamme Medal of the Society for the Promotion of Engineering Education for achievement in this technical field. Mr. Sackett is the eleventh recipient of the medal provided for in a trust fund created by the late Benjamin Garver Lamme, who was chief engineer of the Westinghouse Electric and Manufacturing Co. for twenty-one years prior to his death in 1924. Since his retirement as dean at Pennsylvania State College, Mr. Sackett has devoted himself largely to the work of the Engineering Council for Professional Development. He has served as president of the Society for the Promotion of Engineering Education and as vice-president of the American Society of Mechanical Engineers.

ERRATUM. In the letter entitled "Irregular Mitosis and Meiosis induced by Acenaphthene" by Prof. Dontcho Kostoff, in NATURE of June 25, p. 1144, the sentence beginning "The viable pollen grains are equal in size . . ." should read "The viable pollen grains are unequal in size. . . ."