

oil is derived. The year 1951 appears to be the crucial factor; by then it is anticipated that the annual world demand will be about 140 thousand million Imperial gallons. This will require new capital investment in the industry of £2,500 million before that year. Consumption is estimated by 1951 in the ratio of 6.3 million barrels per day for the United States as against 4.4 million for the rest of the world; in other words, there should be more petrol available for the so-called Marshall Plan countries which, unhappily, at present constitute the largest petroleum-deficient area in the world. By the same tokens, it is anticipated that the United States will practically cease to export oil and oil products to Europe by 1951, the Caribbean and Middle East regions then being the main sources of supply for Europe. The author stresses the recognition of the four great oil regions of the world, East Mediterranean basin, the Caribbean basin, the Far East basin and the North Polar basin; nowhere else are future oil supplies of magnitude likely to be found. Taking the long view, the bulk of Middle East supplies are destined for Europe; the Caribbean will furnish the major part of oil supplies to the western hemisphere; Asia, Australia and New Zealand will draw mainly on the Far East basin (when rehabilitated); and the North Polar basin, not yet in production, is destined to supply both North America and Russia. This is a far-sighted review of the world's oil situation, and it is presented in a form which, aided by extremely informative diagrams, is readily understandable to the layman. Copies of the paper may be obtained on application to the Anglo-American Oil Company, London.

Science Co-operation Office, Middle East

THE Science Co-operation Office, Middle East, of Unesco, in Cairo publishes a list of the scientific papers received at the office; List No. 2 includes the titles of papers received during March 1–July 31, 1948, in addition to those received from January 1, 1947, and given in the previous list. The titles are again arranged under fourteen headings, the bulk of the entries falling under mathematics (2 pages), chemistry (2), geology and geophysics (2), zoology (2), medical sciences (27), engineering sciences (3), and agricultural science (5). Those under medical sciences are further subdivided and fall chiefly under physiology, biochemistry and pharmacology (3–4 pages), medical microbiology and hygiene, parasitology (4), internal medicine and surgery (5) and dermatology and venereology (2). A list of periodicals and serials normally received, arranged by countries, is also included.

A New Mechano-Electrical Transducer

RECENTLY the U.S. National Bureau of Standards has announced the development by W. A. Wildhack of a new highly sensitive mechano-electrical transducer in which small mechanical displacements are transformed into large changes of resistance, current or voltage. Displacements as small as 10^{-5} in. can be measured directly without the use of auxiliary electrical amplifying devices. A nickel-alloy wire, chosen because of its high resistivity and small change in mechanical properties with temperature, is coiled into a close helical or conical spring such that the initial tension varies along its length. Thus, when the ends of the spring are pulled apart, the turns separate one by one, the electrical resistance varying from that with the spring completely closed (approximately a cylindrical metal tube) to that with the

spring entirely open (total uncoiled length of wire). The spring transducer is a very sensitive means of conversion, for any small stretching of the spring results in a correspondingly large change in resistance. Used in combination with other transducers, or in a four-arm bridge of which each arm is a spring-transducer, the new transducer should have many scientific and industrial applications.

Wild Birds and the Land

INCREASING interest in wild bird life, both from the economic and natural history points of view, has led to the publication of a bulletin under the above title by the Ministry of Agriculture and Fisheries (H.M. Stationery Office, 2s. 6d.). The bulletin has been prepared by F. Howard Lancum, advisory ornithologist to the Ministry, who has brought together a large collection of fine photographs by some of Britain's leading bird photographers. Each of the fifty species illustrated is accompanied by a note on its physical characteristics and behaviour patterns, along with a statement on its economic significance where this is known. A concluding chapter on the use and method of constructing nest-boxes and bird-tables adds to the value of a publication which could only be published at its present price on behalf of a Government department.

Fossils at the British Museum (Natural History)

THE Department of Geology in the British Museum (Natural History) has now resumed publication of the interesting and informative series of guide-books that were issued at intervals in pre-war years. The exhibition galleries were largely dismantled at the beginning of the War, and the Museum itself was afterwards severely damaged by enemy action. The re-assembling of the exhibits, and the execution of plans for re-arrangement already made in 1938, will require a long time to complete. Meanwhile, as a first step, an exhibit has been set out which is intended to serve as an introduction to the study of fossils. The fossils are stratigraphically arranged, and epitomize the succession of life through geological time. The exhibit also shows how fossils reflect past conditions, and suggests how the various forms of life developed and reacted one on another in diverse environmental associations. The new guide-book, which is primarily intended to be used in conjunction with the exhibit, is entitled "The Succession of Life through Geological Time", the authors being K. P. Oakley and Helen M. Muir-Wood. It is priced at 2s. 6d., consists of 92 pages, and includes an adequate number of well-executed black-and-white drawings and four palaeogeographical maps. There is also an attractive colour plate, figuring, in natural surroundings, a reconstruction of one of the first birds, *Archaeopteryx*, the unique specimen of which, from the Jurassic Limestone of Bavaria, is on exhibit in the Museum. Allowing for the increased costs of production, the price is very modest, and the guide might well prove useful as a supplement to the more orthodox elementary text-books of geology.

Bedfordshire Natural History Society and Field Club

THE original Bedfordshire Natural History Society and Field Club was founded in 1875 with fifty-nine members, and its proceedings were published in three volumes covering the years 1875–84. The Society ceased to exist about ten years later, and no record exists to show why a Society that held such promise

should have ceased to function after such a short life. In October 1946 a new county Society was formed under the old name. The reports for 1946 and 1947 indicate that the Society has made a good start under Mr. Oliver Pike's presidency and should soon gain its rightful place among similar county societies in Britain. Copies of the Society's journals may be obtained from 11 The Avenue, Flitwick, Bedfordshire.

Breeding of Locusts for Research and Instruction

THE supply of living animals for both teaching and research purposes is a perennial problem for zoological laboratories. The new insecticides are partly responsible for the difficulty which has occurred in recent years in obtaining adequate supplies of cockroaches. For many purposes the locust can take the place of the cockroach, and it has the advantages of being larger, easy to rear in laboratory conditions and, for such a large animal, it has a very rapid life-cycle; the whole life-cycle takes about seven weeks, and only about half that time is required from hatching to the emergence of the adults. Instructions for the breeding and rearing of locusts have now been prepared by the Anti-Locust Research Centre, and copies can be obtained from the Director of the Centre, British Museum (Natural History), London, S.W.7. The Centre is not prepared to sell locusts to anyone, but it will supply them free for certain research projects and, so far as possible, for starting stocks for teaching purposes; adults for class dissection will not be sent.

The Physical Society: Annual Exhibition

THE Physical Society's Annual Exhibition of Scientific Instruments and Apparatus will be held during April 5-8, 1949, in the Physics Department of the Imperial College of Science and Technology, South Kensington. The sessions during which the Exhibition will be open are: April 5, 2-9 p.m.; April 6, 10 a.m.-1 p.m., 2-9 p.m.; April 7 and 8, 10 a.m.-1 p.m., 2-7 p.m. During the Exhibition the following discourses will be delivered: "Some Problems of Wave Diffraction in the Ionosphere", by Mr. J. A. Ratcliffe; "Some Modern Aspects of Scientific Instruments", by Mr. A. J. Philpot; "A Review of the Methods and Instruments used in Energy Measurements of Particles in Atomic Nuclei", by Prof. O. R. Frisch. A film on the liquid iodophor or teleidoscope will be shown. The Exhibition will also display entries for the craftsmanship and draughtsmanship competition, which is being revived after a lapse during the war years. This competition is organised to encourage and give recognition to skill and ability in craftsmanship and draughtsmanship among apprentices and learners in the instrument-making industry, and a large number of firms and technical institutions is supporting it. The prize-winning entries will afterwards be shown in the Science Museum at South Kensington.

Management Bulletin

FROM December 1948 the British Institute of Management has been issuing to members and subscribers a *Management Bulletin* concerned with events in the management field as a whole. The first issue includes a list of forthcoming events as well as papers arranged by the Institute for February-May, 1949, with brief notes on the activities of the education department, examinations department and the information and research department, and a list of

recent additions to the library. Suggestions and criticisms with regard to the scope and utility of the *Bulletin* are invited.

Seventh Pacific Science Congress

THE Seventh Pacific Science Congress (see *Nature*, September 11, p. 409) is now in session in New Zealand. Thirty countries are participating, and of these the seventy-one United States representatives form a particularly large delegation. These American men of science are representing not only the United States but also the dependent territories, such as the Pacific Islands and Honolulu, and the occupation authorities in Japan. British and American civil air-lines and also the United States Military Air Transport Service have made special arrangements to fly these American delegates from their respective scattered locations to New Zealand. The Royal Society has sent a delegation of six to the Congress (*Nature*, January 1, p. 17).

Announcements

PROF. PIERRE-PAUL GRASSE has been elected a member of the Section of Anatomy and Zoology of the Paris Academy of Sciences, in succession to Dr. Robert Courrier, who has become one of the permanent secretaries of the Academy.

THE Institute of Metals Medal (in platinum) for 1949 of the Institute of Metals has been awarded to Dr. William Hume-Rothery, lecturer in metallurgical chemistry in the University of Oxford, in recognition of his outstanding contributions to the science of non-ferrous metallurgy.

PROF. F. F. NORD, of the Department of Organic Chemistry, Fordham University, New York, has been awarded the 1949 Carl Neuberg Medal of the American Society of European Chemists and Pharmacists.

PROF. K. S. DODDS, head of the Department of Botany and Genetics at the Imperial College of Tropical Agriculture, Trinidad, has been appointed principal scientific officer of the Empire Potato Collection, Commonwealth Bureau of Genetics, Cambridge.

MR. W. K. B. MARSHALL has been appointed assistant director of research of the British Welding Research Association. Mr. Marshall is well known for his work on light alloy and stainless steel welding, and in his new position he will pay particular attention to non-ferrous welding research.

THE officers for 1949 of the Nairobi Scientific and Philosophical Society (see *Nature*, October 23, p. 647) are: *President*, V. A. Beckley; *Vice-Presidents*, Dr. B. A. Keen, Dr. R. M. Dowdeswell and H. E. Watson.

THE Institute of Navigation has arranged a symposium on "Operational Aspects of Marine Radar", to be held at the Royal Geographical Society on February 18, at 2 p.m., under the chairmanship of Sir Robert Watson-Watt. Papers to be presented include two from the U.S. Institute of Navigation. The meeting is open to non-members.

THE W. H. A. Robertson Medal and Premium will be awarded annually by the Institute of Metals to the author or authors of the best paper contributed to the *Journal of the Institute of Metals* on engineering aspects of non-ferrous metallurgy. For the first award, papers published in the Institute's *Journal* from March 1948 to August 1949, inclusive, will be considered.