

SINCE that time, the American chemical industry has not ceased to expand. In 1913-14 it produced 34 per cent by value—and much more by weight—of the world's chemical output; in 1923-24 this percentage had risen to 47 per cent. At the Congress it will be shown how the infant industries have become the bulwark of national defence, the basis of modern industrial progress and the source of an ever-growing percentage of national wealth. The honorary chairman of the New York Committee is Mr. Francis P. Garvan; the presidents of the great chemical companies are co-operating with the Society. At the chief symposium the outstanding addresses will be by T. Midgley on "Chemical Developments in the next 100 years", and W. B. Bell on "National Planning and the Chemical Industries". In addition, Senator Harrison will discuss economic aspects of the chemical industries in general. Mr. Lamot du Pont will deal with chemistry's sociological results and Senator Wadsworth will consider its importance in national integrity. The Congress will be divided into eighteen divisions ranging from foods to petroleum.

Hydrogenation of Coal

A LECTURE by Dr. Pier before the Technische-literarische Gesellschaft, Berlin, on the hydrogenation of coal, possesses an unusual importance in view of present interest in this subject and also in German efforts at national self-sufficiency. In Germany the first technical success was achieved in the hydrogenation of brown coal and tars produced therefrom. For several years large quantities of petrol have been produced from brown coal at the Leuna works of the I. G. Farbenindustrie A.G. Since 1932, interest has been directed to corresponding treatment of bituminous coal in the Ludwigshafen works of the I.G. Since last year, a plant capable of a daily throughput of 20 tons of coal has been working there, and it is the successful performance of this unit which forms the subject of Dr. Pier's paper. Actually, a somewhat similar plant has been in operation at the Billingham works of Imperial Chemical Industries, Ltd. since 1930, and the large unit (500 tons daily) projected in 1933 will soon be brought into commission. The results of the German tests leave no doubts as to its success.

HYDROGENATION reactions may take several forms, for example, in liquid phase with coal or oil, and in vapour phase with more volatile liquids. At Billingham the petrol is already being made from creosote oils in vapour phase units. The patent rights in these processes are held by the International Hydrogenation Patent Co., and since 1931 experience and information in these processes have been pooled by the I.G., Imperial Chemical Industries, Standard Oil and Shell Oil Companies. Although the literature of coal hydrogenation on the experimental scale is large, information about the construction and performance of manufacturing units has not hitherto been disclosed, and this lends added importance to Dr. Pier's paper. As a result of international

co-operation for scientific and industrial purposes, the work stands in marked contrast to corresponding efforts in the political fields.

Excavation of Norfolk 'Woodhenge'

ACCORDING to an announcement reported in *The Times* of March 29, preparations are being made by the Norfolk Research Committee, of which Mr. Russell J. Colman is president, to explore the site which, from its similarity to that on Salisbury Plain, has been called 'Woodhenge', at Arminghall, near Lakenham Baths, Norwich. The existence of this circle was first ascertained by observation from the air by the Royal Air Force, and certain preliminary examinations carried out soon after revealed the character of the site; but no systematic or extended excavation has as yet been attempted. The present operations will be under the supervision of Dr. Grahame Clark, of Peterhouse, Cambridge, and secretary of the Fenland Exploration Committee, and Mr. Rainbird Clark, honorary secretary of the Norfolk Research Committee. The work will begin in August next and, it is hoped, will be completed when the British Association meets at Norwich in the following month.

Jubilee of the Dublin Naturalists' Field Club

THE jubilee of the Dublin Naturalists' Field Club will be celebrated in Dublin on July 11-13 by a meeting of representative delegates from many of the natural history societies in Ireland and Great Britain, and probably from abroad. Formed fifty years ago with Prof. E. Perceval Wright as its first president, the man mostly responsible for the initiation of the Dublin Naturalists' Field Club was its vice-president, Dr. A. C. Haddon, the veteran anthropologist now at Cambridge. The formation of the Irish Field Club in 1894 brought the Society into closer touch with other natural history bodies in Ireland, while in 1892 it was largely responsible for forming the old *Irish Naturalist* as a monthly journal for the scientific recording of its and other societies' proceedings. Among the more notable workers of the Field Club in its history were G. H. Carpenter, the entomologist and mammalogist, for many years its president, as at the Galway Field Club conference of 1895; Dr. R. Lloyd Praeger, its secretary in late Victorian times, who wrote the flora section of the British Association Handbook for its Dublin meeting of 1908; and David McArdle, of Glasnevin, who wrote the section on mosses and lichens in the same handbook. Other prominent members of the Field Club in its early years were Prof. T. Johnson, its treasurer, Prof. E. J. M. M'weeney of Dublin and Prof. G. F. Fitzgerald of Trinity College.

Twelfth International Congress of Zoology

It is announced that the Twelfth International Congress of Zoology will be held at Lisbon on September 15-21 under the presidency of Prof. A. Ricardo Jorge, professor in the Faculty of Sciences in the University of Lisbon, and director of the Zoological and Anthropological Department of the National

Museum of Natural History (Museum Bocage). His Excellency the President of the Portuguese Republic has consented to become Patron of the Congress, and the Portuguese Government has invited foreign countries to be represented by official delegates. It has been provisionally arranged that the work of the Congress will be carried on in twelve sections, dealing respectively with (1) general zoology (including cytology and genetics), (2) embryology and the mechanics of development, (3) comparative anatomy, (4) physiology, (5) zoogeography and palæozoology (including ecology), (6) protozoology, (7) entomology, (8) invertebrates, (9) vertebrates, (10) parasitology, (11) applied zoology, (12) nomenclature. Some of these sections may be subdivided if the need arises. Among social events proposed are receptions by the President of the Republic, by other Ministers, by the Rector of the University, and by the municipality of Lisbon; and various excursions, including one to Madeira and the Azores to take place after the Congress, are contemplated. Special facilities as regards railway fares and hotel rates are being arranged for by the organising committee. Zoologists desiring to take part in the Congress are requested to communicate with the president, Prof. Arthur Ricardo Jorge, Director, Zoological and Anthropological Department, National Museum of Natural History, Lisbon, Portugal, from whom particulars can be obtained.

The Strangeways Laboratory

THE Strangeways Research Laboratory was founded by the late Dr. Strangeways in Cambridge twenty-one years ago. A recent report by the trustees and director takes the opportunity of recalling the history of its foundation and development during this period, in addition to giving the usual account of the past year's work. The building now used as the laboratory was originally equipped as a small hospital for the treatment and study of chronic arthritis, but Dr. Strangeways soon became convinced that a more complete and fundamental knowledge of the processes of normal growth was an essential condition for real progress in the investigation of this and other diseased conditions. The hospital therefore became a group of experimental laboratories devoted to the study of growth problems by the methods of artificial culture of tissues. Dr. Strangeways died in 1926: his principal collaborator, Dr. Honor Fell, has acted as director since 1928. Since 1931, the Royal Society has made itself responsible for the director's stipend, by a fellowship from its Messel Research Fund. The Medical Research Council has made grants providing for the support of certain members of the staff and for general expenses of the work. Grants have been made by the British Empire Cancer Campaign, by the Fitton Trust and by the Sir Halley Stewart Trust; and the laboratory has received voluntary subscriptions and donations, though both of these sources of income have varied widely from year to year. To enable the work of the laboratory to continue and to expand, an increase in the annual income is, however, required. During the past

twenty-one years, 84 persons have worked in the laboratory and 81 papers have been published. The research work of the laboratory is devoted to fundamental problems of normal and abnormal growth and the effects of different forms of radiation upon living cells, problems of immense importance to the successful treatment of tumours in human beings by X-ray and radium.

A New Rotating Radio Beacon

A ROTATING loop type of radio beacon was developed in Great Britain several years ago, and two stations employing this arrangement are still in use in connexion with aerial and marine navigation. The advantage of the system is that wireless bearings may be obtained at any receiving station merely with the aid of a stop watch or chronometer. The use of such a chronometer is rendered unnecessary in a new type of rotating beacon, which is described in a paper by U. Okada, published in the report of Radio Research in Japan of October 1934, vol. 4, p. 185. In this new system, a vertical loop transmitting aerial is used as previously, to give the usual 'figure-of-eight' radiation characteristic. Instead of rotating this loop continuously, however, it is swung backwards and forwards about a vertical axis through an arc of 180°. During its movement the speed of rotation is uniform and equal to one revolution per minute. The movement in each direction starts from a north and south position alternately, at each of which a characteristic morse signal is emitted. This signal is then followed during the rotation of the loop by a succession of 90 dots, at the rate of 1 dot for every 2°. By counting the number of dots from the starting point to the signal minimum, the bearing of the receiver from the transmitter may be calculated. The additional observation taken with the loop moving in the reverse direction enables the midpoint of a broad minimum to be accurately determined. Tests carried out in Japan on land and at sea have shown that an accuracy of observation of $\pm 6^\circ$ was obtained at distances up to 46 km. with an experimental beacon operating on a wave-length of 950 m. It is considered that by attention to details of the apparatus the maximum error could be reduced to 2°, which it is suggested is sufficient for most practical purposes.

The 100-in. Mirror Aluminised

ACCORDING to Science Service, of Washington, D.C., the 100-in. mirror of the great telescope at Mount Wilson Observatory, Pasadena, California, has been aluminised. It will be remembered that a new process has been developed within the past two or three years, by which coats of aluminium are placed upon glass mirrors by distillation *in vacuo* (NATURE, 134, 522; 1934). The aluminium coat presents several advantages over the usual silver coat, chemically deposited. The aluminium coat is far more durable and resistant to tarnish, and possesses a superior reflectivity in the ultra-violet. Many small mirrors have been successfully coated with aluminium in Great Britain. It is expected that the new 200-in. mirror will also receive an aluminium coat. The