

rapidly increased in amount and importance, and the laboratories and staff have been greatly extended in recent years. It is obvious that in the wide sense the scientific investigation of raw materials provides an enormous field, and it was necessary to limit the work of the department to those materials which are considered to be of most importance from a commercial point of view and are best dealt with in this country, and also to a large extent to limit the scientific investigation of these selected materials to the subjects requiring elucidation from the commercial viewpoint. Even with these necessary limitations a large number of scientific papers have been communicated by the staff of the department to the Royal Society, Chemical Society, Society of Chemical Industry, and other societies, whilst a number of materials of promise in scientific research have been passed for investigation to workers in other institutions, including the Universities of Manchester, Liverpool, Leeds, Aberdeen, and London.

To the research laboratories, which are provided with the proper equipment for experimental research, have been added testing plant and machinery for enabling small-scale technical trials of certain raw materials to be carried out. Arrangements have also been made with manufacturers for trials on a commercial scale of materials which appear to be suitable for commercial employment, and the department is now utilised not only for such investigations as have been indicated, but by manufacturers and merchants in this country for obtaining information as to supplies of raw materials, their nature and composition, and also as to their uses and the means of overcoming technical difficulties in regard to their industrial employment.

The scientific results of investigation conducted by members of the staff are, as a rule, communicated to the special societies concerned, whilst records of some of the principal results obtained in their commercial bearings are printed in the quarterly Bulletin of the Imperial Institute.

THE LISTER INSTITUTE OF PREVENTIVE MEDICINE.

THE institute originated from a public meeting summoned by the Lord Mayor in July, 1889, to hear statements from scientific men as to the efficacy of Pasteur's treatment for hydrophobia. The lack of any institute in this country with objects similar to those of the Institut Pasteur in Paris was discussed, and it was pointed out that England should continue to take her share in the discovery of means to control disease and not be dependent upon the national laboratories of France and Germany.

A committee was formed, of which Lister became chairman, and in 1891 the British Institute of Preventive Medicine was founded.

During the first nine years of its existence the permanent income of the institute was hopelessly inadequate to the requirements, but in 1900 it received a gift of 250,000*l.* from Lord Iveagh, which for the first time placed it in possession of an assured income. In 1903 the title of Lister Institute was adopted.

The central institute is situated on the banks of the Thames at Chelsea. It contains laboratories equipped for the study of bacteriology, biochemistry, protozoology, experimental pathology, entomology, etc., and a library and theatre. These accommodate, in addition to the staff, 20-30 graduates who are engaged in researches in some subject pertaining to preventive medicine under the guidance of the staff. The institute is a school of the University of London, and graduates of any university may proceed to the degree of doctor of science after having satisfactorily

conducted during two years a research under the direction of a member of the staff who is a recognised teacher in the University.

In addition to its central laboratories in London the institute has a branch where antitoxic sera, bacterial vaccines, and calf-vaccine lymph are manufactured, and where investigations into the improvement of these curative and prophylactic agents, their standardisation, etc., are carried out.

The institute is administered by a governing body of seven, upon which the Earl of Iveagh has three representatives and the Royal Society one. The remaining three are elected by the members.

The income of the institute is derived from two sources, about one-third from endowment and the remainder partly from the sale of antitoxins, etc., and partly from moneys received from Government Departments and municipal authorities as remuneration for investigations and diagnoses carried out at their request.

THE NATIONAL PHYSICAL LABORATORY.

IF fifty years ago a Government had proposed to allocate 150,000*l.* per annum for the furtherance of scientific research, it would have met with an unsympathetic response in Parliament, and in all probability would have been turned out of office as too visionary and unpractical. The growth of the belief in the influence of research on industry and commerce was slow in this country, and was due, perhaps, more to the successful application to the production of electricity and of light of the laws of electromagnetic induction discovered by Faraday than to any other fact. When Dr. (now Sir Oliver) Lodge urged the necessity of a National Physical Laboratory in his address to the Mathematical and Physical Section of the British Association in 1891, Berlin and Paris had already taken action. A committee of the association, under the chairmanship of Sir Douglas Galton, drew up a scheme for the foundation of such a laboratory, and, after a favourable report by a Treasury Committee under Lord Rayleigh appointed to consider the matter, the laboratory was founded in 1901, with Dr. (now Sir Richard) Glazebrook as director and an annual income of 5000*l.* The control was vested in the council of the Royal Society, who appointed an executive committee. Owing to the rapid growth of the work of the laboratory, the financial responsibility became too great for the Royal Society, and the financial control was taken over by the Government in 1918. So well has the laboratory justified its foundation that the Government is prepared not only to make the annual grant mentioned in the opening sentence, but also to support a Department of Scientific and Industrial Research, and National Chemical and Engineering Laboratories are not outside the bounds of possibility.

THE DAVY FARADAY RESEARCH LABORATORY OF THE ROYAL INSTITUTION.

THE Davy Faraday Research Laboratory of the Royal Institution was founded and endowed by the late Dr. Ludwig Mond, F.R.S., with the object of providing opportunity for original investigation to extend knowledge in the domain of pure chemical and physical science by persons (men and women of any nationality) who could satisfy the authorities of the laboratory of their scientific training and qualifications to conduct original research.

The laboratory was opened on December 22, 1896, by his Majesty King Edward VII., who took

occasion to point out that "Dr. Mond's foundation was a most important accession to the resources which had been placed at the command of the institution for the advancement of chemical and physical science. The Royal Institution has long enjoyed a world-wide reputation, thanks to the marvellous work of the succession of illustrious men whose researches carried on within its walls have very largely contributed to secure and maintain for this country a foremost position as a source of great discoveries and important advances in science and its applications."

Mr. Robert Mond was nominated in the deed of trust honorary secretary for life.

The managers appointed the late Lord Rayleigh and Sir James Dewar the directors without remuneration.

The following is a selection of inquiries executed in the Davy-Faraday Research Laboratory communicated to scientific societies by fellows of the Royal Society:—Dr. H. Debus, "Contributions to the History of Glyoxalic Acid"; Hugo Muller, "Quercitol, Cocositol, Inositol, Flavon"; Horace T. Brown, "Starch: Its Transformations and Derivatives"; J. Y. Buchanan, "The Specific Gravity of Soluble Salts"; J. Emerson Reynolds, "Silicon Researches"; J. E. Petavel, "Standards of Light" and "Gaseous Explosive Mixtures"; A. Scott, "Atomic Weight of Carbon, etc."; W. J. Russell, "Action of Wood on Photographic Plates in the Dark, etc."

The following papers have been published:—A. Croft Hill, "Reversibility of Enzyme or Ferment Action, etc."; W. Wahl, "Optical Investigations of Solidified Gases, etc."; W. Gluud, "Derivatives of Allylamine, Phenylglycine, etc."; Sir J. C. Bose, "The Response of Inorganic Matter to Stimulus, etc."; Miss Ida Smedley, "Colour Derivatives of Fluorene"; and Miss A. Everett, "Colour Photography."

THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

THE International Catalogue of Scientific Literature was constituted in 1900 at an International Conference held in London under the auspices of the Royal Society. It is a unique attempt to secure an accurate and exhaustive bibliography of pure science by international co-operation, each country being responsible for the indexing of its own literature. Each volume contains an author index and a subject index. An annual issue is composed of seventeen volumes indexing the seventeen branches into which science is divided for convenience of reference. The books and papers catalogued are those published since January 1, 1901, papers published before that date being indexed in the Royal Society's Catalogue of Scientific Papers.

The control of the catalogue is in the hands of an international council composed of one representative from each country taking part in the work. This council appoints an executive committee, which meets in London, but each of the countries co-operating has its own regional bureau to prepare index cards and send them to a central bureau in London for publication. Since the foundation of the catalogue about three million such cards have been received from the bureaux. More than two hundred volumes have been published.

Until the outbreak of the war in 1914 more than thirty countries were taking part in preparing the catalogue, and the harmony with which they worked together is one of the most remarkable features of the enterprise. Even the Russo-Japanese War did not

hinder the delegates of Russia and Japan from meeting at the conferences.

Although the recent war and the present condition of Europe create a difficult position for all international undertakings, it is much to be hoped that means may be found for continuing the work of the catalogue on an international basis, and without sacrificing those distinctive features which have met with such widespread appreciation.

THE TROPICAL DISEASES BUREAU.

THE Tropical Diseases Bureau came into existence in July, 1912, as a development of the Sleeping Sickness Bureau founded in 1908. The main function of the bureau has been to review current papers on tropical diseases, *i.e.* exotic diseases occurring in the tropics and sub-tropics. The medium of publication is the *Tropical Diseases Bulletin*, now in its fourteenth volume. The *Bulletin*, which appears monthly, contains classified summaries of all papers within its scope which come under notice. Each subject is in charge of a "sectional editor," whose initials are appended to his summaries. Thus the results of the most recent researches on tropical disease in every country, new methods of treatment, and improved means of prevention quickly become available for the remote worker in the tropics. Critical reviews of books are also published.

The bureau issues also the *Tropical Veterinary Bulletin* quarterly, the object of which is to deal with the diseases of domestic animals in the tropics in the same way as the *Tropical Diseases Bulletin* does with the diseases of man.

The bureau maintains a library under the charge of Capt. R. L. Sheppard, which contains complete or nearly complete files of all the tropical medical journals, in addition to others, some two hundred series in all, and a large number of reports and reprints. Though the library is mainly intended for the use of the sectional editors, it is open to any inquirer without formality.

The bureau is under the management of a committee appointed by the Secretary of State for the Colonies, the expert members of which are Sir John Rose Bradford, Sir David Bruce, Sir Havelock Charles, Sir Wm. Leishman, Sir Patrick Manson, and, representing veterinary medicine, Sir John M'Fadyean and Sir Stewart Stockman. Dr. A. G. Bagshawe is the director. It is maintained by a grant in aid from the Imperial Treasury and by contributions from the Governments of India, the Sudan, the Union of South Africa, and certain colonies and protectorates, to which copies of its publications are supplied gratis. By the general public the *Tropical Diseases Bulletin* can be obtained at an annual subscription of a guinea, and the *Tropical Veterinary Bulletin* at 10s.

The offices of the bureau are at present situated at the Imperial Institute, South Kensington.

WOMEN AT CAMBRIDGE.

IN February, 1896, the council of the Senate reported the receipt of four memorials relating to the admission of women to degrees. A syndicate was appointed to consider the question, and in February, 1897, the majority reported recommending that degrees should be conferred on women by diploma, but not that they should become members of the University on the same terms as men. The liveliest interest in and opposition to these proposals were occasioned, and a discussion lasting three days took place in the Senate House. Finally, in May, 1897, the report