

CHEMISTRY AND PHYSICS IN SPAIN

DURING the period April 15–21 the Real Sociedad Española de Física y Química celebrated its fiftieth anniversary. The proceedings opened with an official reception at which representatives of various foreign chemical and physical societies presented congratulatory addresses, followed by an address on the Society itself by the president, Prof. M. Lora Tamayo. Witness was given to the importance with which science is regarded in modern Spain by the fact that on the dais no less than four ministers of State were present, namely, the Ministers for External Affairs, for National Education, for Industry, and a Minister representing the Sub-Secretariat of the Chief of State. In attendance were the majority of the ambassadors of the foreign delegates. The Minister for National Education welcomed the foreign delegates to Spain.

The actual work of the conference was preceded by a Requiem Mass in the Church of Consejo Superior de Investigaciones Científicas. Four days were devoted to colloquia and to the communication of papers on original work carried out by Spanish men of science. In addition, a number of open lectures were given on special themes. These included the following: the physical limits of vision, by Prof. J. M. Otero; lignin and its formation, by Prof. K. Freudenberg; the total synthesis of nucleic co-enzymes, by Prof. A. R. Todd; the determination of geological age by isotopic methods, by Prof. Otto Hahn; diene synthesis in natural products, by Prof. Kurt Alder; the role of chromatography, by Prof. A. Tiselius; and electrochemical polarization, by Prof. A. Rius. These alone indicate the truly international character of the meeting.

The meeting also gave opportunity for a reunion of the International Commission on Optics and for the officers of the International Union of Chemistry to discuss the forthcoming meeting at Stockholm.

The Minister for Industry welcomed the delegates and showed them around the permanent exhibit of the activities of the Instituto Nacional de Industria. This is a truly impressive display of the industrial activities which are being developed in Spain. Research work on the lines of that in Britain by the Department of Scientific and Industrial Research is being carried out to the large pilot-plant scale in Madrid on various topics. These include the treatment of shale for the production of lubricants and the utilization of waste raw materials of vegetable origin such as grape stones, sprouts, vine shoots and straw by the process of fermentation followed by briquetting of the non-hydrolysable residue. It is contemplated that 30,000 metric tons a year of yeast for animal consumption, 24,000 tons of petrol and higher ketones for motor fuel, 35,000 tons of wood preservatives and 145,000 tons of charcoal will be produced, together with acetone, methanol and other by-products. The pilot plant has operated successfully, and engineering drawings for the larger plant are now almost completed.

The Instituto Nacional de Industria participates with private firms in a great number of industrial operations which are required for the reconstruction of the national economy in Spain. The outcome of this welding together of national effort and private enterprise will certainly be a matter which the rest of the world cannot ignore.

As will be seen from this brief account of the proceedings of the anniversary meeting of the Society, attendance at and participation in the scientific meetings were tasks of no mean order. In addition, the proverbial Spanish hospitality was on a truly lavish scale, including opera, dinners and tours. Spanish men of science can, at least so far as the foreign delegates are concerned, rest assured that the anniversary celebrations of their Society was an event of outstanding interest. ERIC K. RIDEAL

RUMFORD BICENTENNIAL SYMPOSIA AND AWARDS

MARCH 26 was the two-hundredth anniversary of the birth of Benjamin Thompson, Count Rumford, who although an American by birth, has left his mark on European science and technology. Apart from his purely scientific achievements, he is best remembered in Britain as the founder of the Royal Institution; he also established the Rumford Medals, one series of which is awarded by the Royal Society and another by the American Academy of Arts and Sciences, the latter for work carried out in America only.

To celebrate the anniversary, the American Academy of Arts and Sciences organized a conference in Boston to which were invited all former Rumford medallists, but which was also open to the scientific public. A great number of the American medallists were present, as well as four medallists of the Royal Society—Sir Alfred Egerton and Prof. F. E. Simon from Britain, Prof. M. Siegbahn from Sweden and Prof. P. Debye from the United States. The celebrations started with a banquet given by the American Academy in the Harvard Club at Boston; the president of the Academy, Dr. Edwin H. Land, of 'Polaroid' fame, presided, and Sir Alfred Egerton transmitted the greetings of the Royal Society and

of the Royal Institution. The menu included Rumford's famous soup which he devised for feeding the poor; fortunately, as part of an opulent dinner it produced none of the bad effects it had when for a time, about a hundred years ago, it became the sole diet of the inmates of a British prison! The main speaker was Prof. Sanborn Brown, who gave a very informative and amusing talk on Rumford as a physicist and technologist, and also presented a picture of his personality which made it clear why Rumford was not too popular with many of his contemporaries.

The first symposium was held on the morning of March 27 in the rooms of the Academy and dealt with recent developments in thermodynamics. Prof. P. W. Bridgman spoke on "Reflections on Thermodynamics", Sir Alfred Egerton on "Management of Flame", Prof. L. Onsager on "Reciprocal Relations in Irreversible Processes" and Prof. F. E. Simon on "Helium and the Range of Stability of the Solid State". In the afternoon another symposium took place on recent developments in atomic spectroscopy; Prof. M. Deutsch discussed "Positronium", Prof. W. E. Lamb, jun., "Excited Hydrogen Atoms", Prof. E. M. Purcell "Line Spectra in Radio Astro-

nomy" and Prof. I. I. Rabi "Molecular Beam Radio-frequency Methods for the Study of Excited States of Atoms".

In the evening, Rumford Medals were presented by Dr. Land to Profs. E. Fermi, W. E. Lamb and L. Onsager, who were introduced by Profs. P. Debye, N. F. Ramsey and J. G. Kirkwood, respectively. After the ceremony a reception for the Rumford Medallists was held in the very pleasant rooms of the American Academy of Arts and Sciences. There was also an opportunity of visiting an exhibition of Rumford's scientific works.

On March 28 there was a final symposium on recent developments in nuclear physics. The speakers were Prof. E. Fermi on "Meson Physics", Prof. J. R. Oppenheimer on "Recent Progress in the Understanding of Nuclear Forces", Prof. M. Siegbahn on "Nuclear Spectroscopy" and Prof. V. F. Weisskopf on "Problems of Nuclear Structure". All the symposia were followed by lively discussions, and as there were not more than about a hundred people present the intimate atmosphere contributed very much to the outstanding success of the meetings.

The symposia were organized in a quietly efficient way, and the guests were sincerely grateful for the gracious and generous hospitality accorded to them. Their thanks are due to the officers and staff of the American Academy, in particular to Prof. Harlow Shapley, the chairman of the Rumford Bicentenary Committee, and to Mr. R. W. Burhoe, the executive officer of the Academy.

F. E. SIMON

THE BRITISH DYESTUFFS INDUSTRY

THE address, "Our Changing Chemical Industries: an Appraisal", which Dr. Herbert Levinstein delivered to the British Association of Chemists on February 27 on the occasion of the award to him of the Hinchley Medal, further expounds a disturbing passage in Sir Henry Tizard's Messel Memorial Lecture last July. Sir Henry Tizard had expressed disquiet at Britain's apparent lack of success in competing in the world's markets for chemicals, and quoted figures to show that our share of world trade in chemicals had gone down steadily from 22 per cent in 1913 to 18 per cent in 1950. Germany had been out of the world's markets twice in this period and her share fell from 37 per cent in 1913 and 36 per cent in 1937 to 11.5 per cent in 1950. Dr. Levinstein recognized that the chemical industry in Britain is changing in character as, in accordance with the general tendency to expansion across industrial frontiers rather than within them, firms like the Distillers' Co. and the petroleum firms have extended their manufacturing activities far beyond their original field. There are now in Britain half a dozen firms, with large capital, making chemicals, whereas formerly there was only one; however, we have not yet begun to reap full advantage of the operations of these big companies.

These changes should substantially strengthen the chemical industry of Britain, diminish dollar imports and help exports; but nevertheless, Dr. Levinstein urged that there is much to justify Sir Henry Tizard's misgivings. Arguing that in Britain, as in Germany and in Switzerland, the dyestuffs industry is the foundation of organic chemical industry, he suggested that consideration of the beginnings of this industry,

the reasons for its leaving its birthplace in Britain, and its growth to really gigantic proportions in Germany would explain much that has disturbed Sir Henry Tizard. Reviewing the beginnings of the industry and its decline in Britain by the 'seventies, Dr. Levinstein said that the absence of a patent law in Germany until 1877 and, until much later, in Switzerland, and of any provision in British patent law for working in Britain, allowed German and Swiss inventors to take out British patents without obligation to manufacture here, while during this period they could infringe British or other patents in their own countries. The weakness of the British patent system was also exploited by the Germans during 1877-1914, after the Imperial patent law of 1877 embodied Caro's definition of a chemical invention, namely, the obtaining of a new and unexpected technical effect.

The imposition in Britain of the same duty on pure alcohol for industrial purposes as on potable spirits also gave a great advantage to the Germans, and this was not modified until nearly thirty years later when the Government wished to make cordite. A further factor was the difficulty in obtaining capital for new and risky developments, a position which persisted until the comparatively recent formation of the Finance Corporation for Industry. Dr. Levinstein dismissed as irrelevant the view that the superior education of the German chemist or the neglect of research by the British manufacturer had played any real part in the transfer of the dyestuffs industry to Germany. It is true, he said, that training in organic chemistry was better in Germany and in Switzerland than in Britain in the early years of the period. The first large and distinguished school of organic chemistry in Britain was under W. H. Perkin, jun., at the Victoria University, Manchester; but there was never any difficulty in obtaining good German, Swiss, or British chemists from abroad. As regards research, Dr. Levinstein claimed that more research was carried out by his firm at Blackley than was justified by the sales, and that, although on a modest scale compared with that of the Germans, far more research was done there than by any other firm in Britain.

Reviewing the achievements in restoring the British industry on the outbreak of war in 1914, and which, in fact, prevented the Germans from using their stocks of dyestuffs for bargaining at the Peace Conference, Dr. Levinstein pointed out that in 1919 imports into Great Britain had fallen to 3,232 tons from 18,900 tons in 1913, and that we were already exporting 5,446 tons. Although the British range of dyes was incomplete and the plants employed were not necessarily the best for peace conditions, the back of the task was broken and a large research organization had been established. Delays in implementing the promise to introduce the Dyestuffs (Import Regulation) Act and other political and economic factors led to the partial dispersal of the research and technical staff; but Dr. Levinstein expressed his concern that a recent book, "Twenty-five Years Ago, the Story of the I.C.I. Merger", issued by Imperial Chemical Industries, Ltd., had not given a fair account of what had been done to re-establish the British dyestuffs industry before that combine was formed. He also contested the claim that the Dyestuffs Act was only intended to protect the home market and not, by securing the home market, to build up exports. The object of the Act was to secure for the home market a wide, substantially complete range of