

## THE BULGARIAN ACADEMY OF SCIENCES

By DR. D. R. NEWTH

Department of Zoology, University College, London

ALTHOUGH it can be said to have its origins in the foundation, in 1869 at Braila in Rumania, of the Bulgarian Literary Society, the Bulgarian Academy of Sciences did not become a model of the traditional European academy until much later. The Literary Society moved to Sofia in 1878 after Bulgaria's liberation from Turkish rule; but it was not until 1911 that the intentions of its founders were realized and it became, in fact and in name, an Academy of Sciences. From then until 1944 it remained a body of scholars, with the publication of learned periodicals and the holding of scientific meetings as its main functions.

Plans for the extension of the work and responsibilities of the Academy were discussed between 1944 and 1947, and its present form was determined by a law passed in 1947 and a decree issued in 1949. These have turned the Academy into a body controlling the activities of a number of research institutes and exercising quasi-ministerial authority over a great deal of Bulgarian science. At present its work is carried on by seven sections, each with several institutes. These are: (1) Physics, Mathematics and Technology (with three institutes); (2) Geology, Geography and Chemistry (with three institutes); (3) Biology and Medicine (with twelve institutes); (4) History, Archaeology and Philosophy (with seven institutes); (5) Law and Economics (with two institutes); (6) Linguistics, Ethnography and Literature (with three institutes); (7) *Beaux arts* (with three institutes). In the near future the section of Biology and Medicine is to be divided into two, a new section of Agrobiolgy with five institutes and a section of Medical Science with seven.

Not all these institutes are primarily research organizations. Thus the Zoological Gardens in Sofia and the Ethnographic Museum have the status of Academy institutes. In establishing new institutes it has been the policy of the Academy to proceed with some caution. Where the case for a new institute

is held to have been made, it is started with a small nucleus of workers, perhaps as few as three, and probably not in quarters of its own. It is then allowed to grow, and if its work flourishes it will be given buildings designed for it, some years after its inception. Most of the fully fledged institutes have between fifteen and twenty scientific workers headed by a director (normally, but not always, an academician) and controlled by a council upon which are represented the sectional committee of the Academy, appropriate Ministries and the heads of the institute's research teams. Such institutes may publish an annual bulletin of researches; thus the Biological Institute (until his recent death directed by Prof. M. Popov) has just issued its fifth, while the younger Institute of Morphology, under Prof. Hadjiolov, has just published its first.

The bulletins and the other publications of the Academy are well produced and the use of French and German, and to a lesser extent English, is common.

The Academy is also represented at the conferences which plan the work of institutes other than its own, and through its Presidium, Council of Co-ordination and planning commissions is coming more and more to co-ordinate the scientific life of the whole country. University departments do not come under the Academy or receive grants from it; but university teachers may use the facilities of Academy institutes for researches that can best be carried on in them.

At the present time there are forty-eight academicians, forty-six corresponding members and approximately five hundred full-time qualified workers in the Academy's institutes.

The Academy is conscious of the fact that during its re-organization it has not paid as much attention as is desirable to developing working relations with scientists abroad, and particularly with those of the West. It hopes next year to take a first step in improving its international contacts by inviting numbers of foreign scientists to visit it.

## INSTITUTE OF CHEMISTRY OF IRELAND

## SUMMER SCHOOL IN ORGANIC CHEMISTRY

THE Institute of Chemistry of Ireland held its first summer school during July 6-9 in University College, Dublin, the school being a refresher course on organic chemistry, with ninety-four participants. In his opening address, the president of the Institute, Prof. T. P. Dillon, of University College, Galway, stressed the necessity for chemists during their careers to return to the university at intervals to obtain some knowledge of advances made in fields of chemistry outside their special interest.

A series of four lectures on stereochemistry was given by Prof. T. S. Wheeler, professor of chemistry, University College, Dublin. He showed how hybridization of *s* and *p* orbitals gives the shapes of the methane, ethylene and acetylene molecules. He described how *sp*<sup>2</sup> hybridization is involved in the Walden inversion and explained how the original Mills-Nixon theory was no longer applic-

able. In treating of the stereochemistry of tetrahedral carbon, he discussed the necessary and sufficient conditions for molecular dissymmetry. Fisher's system of projection and his ideas as regards relative configurations were explained. Rosanoff's glyceraldehyde standard and the manner in which it is related to the serine standard by the Ingold school were described. After a discussion of absolute configuration, the stereochemistry of *cyclohexane* and the decalins was demonstrated by means of models, and the application of conformational analysis to steroids was shown. In his closing address, Prof. Wheeler outlined recent work on the absolute configuration of natural products such as the steroids. The fluorescent glass models of *cyclohexane*, decalin and steroid systems made by Mr. W. Brady, of University College, Dublin, were greatly appreciated.

In two lectures Prof. Wesley Cocker, University professor of chemistry, Trinity College, Dublin, dealt with new reagents and techniques. He criticized the old idea that the aldehyde-Girard products are more stable than the ketonic adducts and went on to describe newer methods for isolating carbonyl compounds. He then described modern specific catalysts for reducing alkene and carbonyl compounds. Recent oxidizing agents which are specific for various groups were outlined, and in conclusion the work of Linstead and others who have produced long-chain fatty acids by a variation of the Kobe electrolytic synthesis of paraffins was described.

In the two hours allotted to him, Mr. P. W. D. Mitchell, Lasdon Fellow of the Medical Research Council of Ireland, described briefly the symbols and terminology used in absorption spectroscopy. He indicated how the positions of the regions of absorption and the intensity might be correlated empirically with the nature and distribution of chromophores and auxochromes in the molecule and then described some work in which he is engaged for the Medical Research Council of Ireland. In this work the ultra-violet absorption spectra are used as a means of determining molecular weights and also as a method for the identification of sugar osazones.

Dr. E. F. McCarthy, senior Fellow of the Medical Research Council of Ireland, outlined recent advances in electrophoretic technique and its application to the separation of high- and low-molecular-weight substances of biological importance. He discussed the relative merits of boundary and zone electrophoresis with reference to his own work on the identification of blood proteins. Dr. McCarthy also described the more recent refinements in the estimation of molecular weights by osmotic pressure measurements.

Two lectures on "Distillation" were delivered by Mr. F. T. Riley, lecturer in chemistry in University College, Dublin, dealing with liquid-vapour equilibria and with the theoretical basis of modern laboratory fractional distillation. Laboratory fractionation practice in the 1920's was contrasted with present-day methods. Mr. Riley emphasized the changes brought about by the introduction of controlled reflux, and packed columns. He then reviewed the factors influencing separation efficiency and described the high-efficiency column working in the Department of Chemistry of University College, Dublin. This column has a packed length of 9 ft., and its performance is equivalent to that of a column containing at least two hundred theoretical plates. A feature of this column is the intermittent vapour draw-off device which is useful with an azeotropic mixture that separates on condensation.

Prof. F. J. Coll, professor of chemistry in University College, Galway, gave two lectures on "Chromatography" and discussed this technique under the following headings: absorption chromatography, partition chromatography, paper chromatography, ion-exchange chromatography and electrochromatography. Many excellent paper chromatograms of sugars, prepared by Prof. Coll, were used for illustrating the points described. Other experimental demonstrations were much admired.

Two lectures on organic chemistry and analysis were given by Dr. Cecil L. Wilson, reader in analytical chemistry in The Queen's University, Belfast. Beginning with a review of the development of analytical chemistry, he went on to discuss the use of micro-methods in the laboratory. He described the appli-

cation of organic reagents in gravimetric, titrimetric and colorimetric procedures and showed how the requirements for a 'classical' organic reagent have been modified by the addition to this class of the 'complexones', which cannot be regarded as following the accepted pattern. The inorganic analyst, in particular, is bound, in the future, to take more note of the methods of his organic colleague, since he will more and more be faced with problems of compound analysis rather than of ion analysis.

Mr. C. D. O'Briain, Department of Chemistry, University College, Dublin, organized an excellent display of scientific apparatus, the material being supplied by a number of manufacturers and agents.

EVA M. PHILBIN

## PHYSICS IN ISRAEL

THE seventy-fifth birthday of Prof. Albert Einstein was celebrated in Israel by a scientific convocation which was held on March 14 in Jerusalem, under the joint auspices of the Hebrew University of Jerusalem; the Technion, Haifa; the Weizmann Institute of Science, Rehovot; and the Research Council of Israel. Tributes were paid to Prof. Einstein by Mr. Y. Ben-Zvi, the Israeli president, Mr. M. Sharett, the Israeli prime minister, and Prof. B. Mazur, president of the Hebrew University, and various aspects of Prof. Einstein's contributions to science were discussed by Prof. G. Racah of the Hebrew University (quantum theory), Prof. C. Pekeris of the Weizmann Institute (Brownian movement), Prof. N. Rosen of the Technion (relativity) and Prof. S. Sambursky, director of the Research Council (cosmology).

In addition, the March number of the *Bulletin of the Research Council of Israel* (3, No. 4; 1954) is dedicated "with the highest esteem and affection of the scientists of Israel" to Einstein in honour of his birthday, and contains a photograph of Prof. Einstein as frontispiece. The contents consist of twenty-four original contributions, mainly devoted to mathematics or theoretical physics, the abstracts of the papers presented at the inaugural meeting of the Israel Physical Society held during April 12-13, 1954, and six short research notes. The *Bulletin*, which is in English, contains, in addition, abstracts of the original contributions in both Hebrew and English.

The inaugural meeting of the Physical Society consisted of a general session, opened by the Society's first president, Prof. G. Racah, at which two addresses were delivered, one by E. D. Bergmann on the influence of modern physics on organic chemistry and the other by M. Chwalow on the role of physics in industry, and four other sessions devoted to general and industrial physics; theoretical physics; atomic, nuclear and molecular physics; and methods and instruments. The abstracts indicate that work in the experimental field of physics is gradually being built up alongside the numerous theoretical studies, and show that recent activities include the construction of a thin lens magnetic  $\beta$ -ray spectrometer, and of a Couette viscometer for precision measurement in the centipoise ranges, the measurement of the absorption and scattering of 1-3 cm. radiation by a d.c. discharge in helium and air using a low-powered klystron as microwave generator, and experiments on luminescence.

S. WEINTROUB