

INSTITUTE OF PHYSICS ANNUAL GENERAL MEETING

AT the thirty-first annual general meeting of the Institute of Physics, held on May 16 at the Institute's House, 47 Belgrave Square, London, S.W.1, the following were elected to take office on October 1: *President*, Prof. W. E. Curtis; *Vice-President*, Dr. J. Topping; *Honorary Treasurer*, Mr. E. R. Davies; *Honorary Secretary*, Dr. B. P. Dudding; *New Ordinary Members of the Board*, Mr. O. W. Humphreys and Prof. S. H. Piper. Dr. A. B. Wood and Mr. C. G. Wynne join the Board as the new representatives of the Physical Society.

The thirty-first annual report of the Board, covering the work of the Institute during 1950, was adopted at the meeting. It records continued progress. The Board met six times and its various standing committees twenty-one times during the year. The total membership increased by 201 to 3,858, though there was a considerable—and from a financial point of view an undesirable—decrease in the number of subscribers. Slightly fewer applications for election or transfer to the various grades of membership of the Institute were received during 1950 than in the previous year. From the detailed analysis of membership given in the report, the effect of the changes made in the regulations in 1949 can clearly be seen. These changes allowed for the creation of the grade of graduate and the raising of the minimum ages of entry and the lengthening of the periods of experience required for grades of fellow and associate. It has recently been decided to establish a graduateship examination, and the regulations and syllabus, which have been drawn up by the Institute's Education Committee, will shortly be issued.

Details of the activities of the eight branches and the seven specialist subject groups of the Institute are listed in the report. The Australian Branch, which consists of five divisions, held thirty-three meetings for lectures and discussions, and, in addition, a four-day conference in Sydney during November on photometry and its applications. The Manchester and District Branch, in collaboration with the British Society of Rheology, held a summer conference on the physics of lubrication, and the Midland Branch held a two-day conference in Birmingham on vacuum physics at which several firms exhibited various types of vacuum equipment. Under the auspices of the Scottish Branch, well-attended courses of lectures on atomic and nuclear physics, and on industrial and medical applications of atomic physics, were given at the University of Glasgow and University College, Dundee, respectively.

Most of the groups, in addition to holding lecture meetings, organized or participated in conferences lasting over several days. The Education Group discussed physics in schools; the Electronics Group, gas discharge tubes; the Stress Analysis Group, electric strain-gauge techniques; and the X-Ray Analysis Group, both the production and application of high-intensity X-ray beams, and the development and application of Fourier methods in crystal structure analysis. The Industrial Radiology Group held a five-day summer meeting and exhibition in London in association with the Sixth International Congress of Radiology. This group has also been responsible for the production of memoranda on the

training of industrial radiographers and on radiological units, in addition to the publication of a second edition of the "Handbook of Industrial Radiology".

At the suggestion of the British Iron and Steel Research Association, the Institute organized a conference on some aspects of fluid flow. This was held at the British Iron and Steel Federation's house, Ashorne Hill, near Leamington Spa, during October 25–28 and was attended by about a hundred and fifty, of whom one-third were members of the Institute. The papers presented and a summary of the proceedings are being published in book form by Messrs. Edward Arnold and Co.

The report mentions that thirty-three technical colleges have now received official recognition, after inspection by the Institute, as institutions suitable for the training of physicists. During 1950, for the first time candidates were presented for the Higher National Certificate in Applied Physics issued jointly by the Ministry of Education and the Institute, and four of the six candidates were successful. For the Ordinary National Certificate there were sixty-four candidates from England and Wales; thirty-eight were successful. Seven candidates entered for the first examination to be held in Scotland, and six were successful.

The Institute has continued to take an active part in the discussions by various bodies on the training of technicians and on higher technological education. The Board has decided to discontinue the Institute's Certificate in Laboratory Arts, and no further examinations will be held after December 1951. The proposals put forward by the City and Guilds of London Institute's Advisory Committee on the education and training of laboratory technicians for an appropriate examination under the auspices of that Institute are regarded by the Board as very satisfactory and suitable for replacing the Certificate examination.

The report states that the new monthly periodical, *British Journal of Applied Physics*, which began publication in January 1950, has been well received. Both in this journal and in the *Journal of Scientific Instruments*, a high standard has been maintained. Other publications during 1950 include a monthly *Bulletin* circulated to members; "Acceleration of Particles to High Energies", in the "Physics in Industry" series, containing the papers delivered at the symposium held in 1949 by the Electronics Group; and a revised and enlarged edition of "Notes on the Preparation of Contributions to the Institute's Journals and Other Publications".

The Institute has kept in close and constant touch with the American Institute of Physics, and is represented on many joint committees and bodies, including committees of the Royal Society and the British Standards Institution.

A growing number of inquiries from members and others about salaries, conditions of service, consulting fees, insurance and radiation hazards, and other professional matters were received and dealt with by the executive officers of the Institute. At the annual conference of the Branch and Group officers, the Board was requested to develop further the Institute's already extensive professional activities and to include a greater interest in the economic status of physicists, particularly those who are teachers in schools. A new survey, similar to that of 1948, of salaries and emoluments paid to Fellows and Associates is to be undertaken, and a new set of

notes on terms of engagement suitable for physicists is being prepared. The appointments register has been discontinued, but notices of vacancies for physicists have been included in the monthly *Bulletin*, and from the steadily increasing demand from employers for such space it would appear that this new procedure is satisfactory.

FIRST NATIONAL POLISH SCIENCE CONGRESS

THE First National Polish Science Congress was held at Warsaw during June 29–July 2, in the magnificent hall of the reconstructed Polytechnic Institute. The Congress was called together to deal chiefly with the reorganization of science in Poland, and the discussions, therefore, concerned administrative problems rather than the details of scientific researches as such. Nevertheless, it was of great importance for Polish science, which lost some 40 per cent of its personnel, and suffered widespread destruction of buildings and equipment in the Second World War. Re-organization was required by the great expansion of facilities and numbers of newly trained scientific workers. It had come to be felt on all hands that a unified National Academy of Sciences was a necessity.

The principal formal business of the Congress consisted, therefore, in the incorporation of the former leading scientific organizations, such as the Cracow Academy of Sciences (Polskie Akademii Umiejętności) and the Scientific Society of Warsaw (Warszawska Towarzystwo Naukowe), both dating from the early years of the nineteenth century, into the new National Academy. The Cracow Academy had always been an honorific and essentially publishing body, while the Warsaw Society, though partly concerned with popularization of science (like the British Association), had come to possess a number of research institutes of its own. The new National Academy, modelled on those of the U.S.S.R., China and other countries, will now possess a network of research institutes, and the academicians will be mainly directors of institutes or departments of institutes.

Preparations for the Congress had involved more than a hundred conferences and meetings covering all branches of science and technology. At these meetings there had been discussion of the best arrangements for the organization of the new institutes. At the Congress itself it was emphasized, in the speech of the president (Dr. Jan Dembowski, zoologist), that during the period of re-organization there would be the minimum interruption of research projects currently under way. But besides these problems, the preliminary meetings had evidently also devoted much time to discussion of theoretical problems in the various sciences—a process no doubt stimulated by the desire of the younger generation of Polish men of science to incorporate the philosophy of dialectical materialism into the background of their thought. The interesting speeches of Dr. Dembowski and of Dr. K. Petruszewicz at the opening plenary sessions were made available to foreign representatives in languages of Western Europe, and it would seem very desirable that they should be published in some way in Great Britain.

Foreign countries were represented by small groups of up to about half a dozen members. The Soviet

delegation, headed by Prof. Oparin, the biochemist, was naturally the largest; but there were also delegations from France, Germany, China, Hungary, Sweden, Rumania, etc. From the United Kingdom, Dr. J. Needham brought a message of greetings to the new National Academy from Prof. E. D. Adrian, president of the Royal Society. The foreign representatives were able to listen to the speeches in simultaneous translation, and had the opportunity of meeting a very large number of Polish scientific workers of all generations and all specialities. There can be no doubt that the Congress, and the Academy which it was called upon to found, represent an important step forward in the organization of science in Poland.

J. NEEDHAM

CRYSTAL STRUCTURE OF A LOW MOLECULAR WEIGHT PROTEIN

Electron Microscopy of β -Lactoglobulin Crystals

ELECTRON microscopy of protein crystals has in the past been concerned solely with proteins or nucleoproteins of high molecular weight¹⁻³. In this investigation the electron microscope reveals structure in crystals of a protein of a much lower molecular weight, namely, β -lactoglobulin, molecular weight 36,000, which has already been examined by X-ray diffraction methods⁴.

Preparations for the electron microscope were made according to the pseudo-replica technique of Wyckoff⁵, the specimens being shadow-cast with palladium before stripping from the glass surface. The bulk of lactoglobulin was dissolved out in water before examination of the replica.

The accompanying micrograph is typical of the results. It shows the (100) face. The striations on the crystal face are parallel to the *b*-axis of the crystal. The periodicity is 105 ± 5 Å. Molecular steps similar to those shown in earlier published pictures of *n*-hexatriacontane^{5,6} occur on the crystal

