

At the inaugural session in the Law School of the University of Chile, where most of the sessions were held, the delegates and representatives were welcomed by Don Enrique Molina, the Minister for Education, and Don Juvenal Hernández, rector of the University; Dr. Felipe Justo, president of the Chemical Society of Argentina, replied on behalf of the delegates.

In his speech formally opening the Congress, Dr. Edouardo Cruz-Coke, professor of biochemistry in the University of Chile and president of the executive committee of the Congress, stated that this Congress was the largest yet held in South America and was planned to cover a wider field of chemistry than was possible at the Third Congress held at Rio de Janeiro in 1940. He indicated the executive committee's particular pleasure at the presence of so many representatives of non-South American countries, and later accepted on behalf of the committee a letter of greetings from the president of the Chemical Society brought from London by Prof. Cook and a copy of the fellows' register presented by Prof. Dodds on behalf of the Royal Society.

The Congress, which was particularly well organized, due largely to the efforts of Prof. Cruz-Coke, the two secretaries, Prof. Jorge Mardones and Prof. Hermann Schmidt-Hebbel, and their associates on the executive committee, was divided into thirteen sections. These covered the fields of physical and electro-chemistry, inorganic and geochemistry, organic chemistry, biochemistry, chemistry in relation to medicine and toxicology, nutritional chemistry, chemistry in relation to agriculture and applied botany, industrial inorganic and organic chemistry, metallurgy, fuels, chemical engineering and chemical education. During the course of the week, some four hundred papers were read, abstracts of which were made available to delegates in the form of a well-prepared 131-page printed booklet before the opening of the Congress. In addition to these, there were also eight 'Conferencia', two of which were given by British representatives. On March 3 Prof. Cook read a paper on "The Chemical and Biochemical Oxidation of the Aromatic Polynuclear Hydrocarbons", and on the following day Prof. Dodds lectured on "The Proteins as Biochemically Active Substances".

During the course of the week, the British representatives, who were very hospitably received, were given an opportunity of visiting many of the Chilean chemical and medical schools, museums and industrial organisations. The tour around the impressively equipped and staffed Hospital del Salvador was made in the company of Profs. Alessandri and De Amesti, who have been largely responsible for making this one of the most modern and efficient hospitals in South America, comparing favourably with the best European and North American hospitals.

The work of Profs. Edouardo Cruz-Coke and Hector Croxatto and their colleagues at the Medical Schools of the University of Chile and the Catholic University respectively on a wide variety of subjects, including the cardiac stimulants, the biochemistry of the hormones and vitamins, biological oxidations, organic iodo compounds, antibiotics, etc., was found to be both academic and developmental in outlook and conception. The science schools of the Chilean universities, unlike those in Britain and the United States, rely on outside sources for much of their income, and the teachers and students of these two schools consequently associate themselves closely with certain industrial organisations, and particularly with the Instituto Médico Técnico "Sanitas" S.A., a

company producing a wide variety of organic chemicals including penicillin, organic arsenicals, D.D.T., and the more common pharmaceuticals. The Government-sponsored Instituto Bacteriologico operates in a similar field, and like Sanitas has modern and well-equipped factories and laboratories, and a well-informed and research-minded staff.

For the final sessions, the delegates were taken by road and special train to Valparaiso, where they were first entertained by the directors of the Nitrate Corporation at an impressive al fresco luncheon in the beautiful Parque de Salitre under conditions reminiscent, as one distinguished delegate observed, of Europe before the First World War. In the afternoon, the delegates were shown round the Santa Maria Technical University, where the formal closing session was held later.

The week's activities were rounded off at a colourful reception at the Vergara Palace, in the hills behind Vina del Mar, the beautiful and world-famous South Pacific health resort.

SCIENCE MASTERS' ASSOCIATION (SCOTTISH BRANCH)

THE first annual general meeting of the Scottish Branch of the Science Masters' Association took the form of a three-day meeting in the University of Glasgow during April 1-3, under the presidency of Sir Hector Hetherington, principal of the University. The meeting was attended by about 250 members of the Branch, and there were many visitors. The close and active co-operation of the staffs of the various departments of the University resulted in many exhibitions and demonstrations being available.

During the first day the Department of Chemistry staged exhibitions of the first-year practical course, new apparatus for esterification and distillation, fluorescence spectroscopy and photochemistry. Specimens of rare chemicals were also on view. The Department of Natural Philosophy had much to show in connexion with research in nuclear physics. Cloud-chamber experiments were demonstrated, a large magnet was seen in course of erection for cosmic ray studies, and various artificial radioactive isotopes were produced by neutron bombardment. Great interest was shown in the new 30-million volt synchrotron, under construction by Messrs. Metropolitan-Vickers, and the million-volt proton accelerator attracted many visitors. Prof. W. M. Smart, of the Department of Astronomy, arranged for the Observatory to be open for inspection during the afternoon, while in the Zoology Department the magnificent museum was open to members, and new biology films were shown. The Botany Department contributed a series of demonstrations in plant physiology, antibiotics (penicillin and streptomycin) and products manufactured from marine algae. New methods of preserving biological specimens in transparent plastics were also shown.

The afternoon of the second day was set apart for visits to well-known Scottish firms specializing in the manufacture of special steels, coal-cutting machinery, nautical instruments, optical instruments, sulphuric acid and in shipbuilding.

One feature of the meeting was the exhibition of apparatus designed and constructed by members, and there was a special exhibit showing surplus apparatus available at very low prices to schools

through the Ministry of Supply and the Scottish Education Department. In cases where service apparatus could not be used in schools without adaptation, methods of doing this were demonstrated.

Mr. F. A. Meier, of the London Institute of Education, gave two lecture-demonstrations on the construction and use of scientific apparatus, and lectures were given by Prof. J. W. Cook, on "The Effects of Some Chemical Compounds on the Growth of Cells", by Prof. P. I. Dee, on "The Elementary Particles of Matter", and by Dr. H. F. Steedman, on "Practical Methods in Zoology".

At a discussion on "School and University Teaching", the chair was taken by Sir Hector Hetherington, and leading parts were taken by Prof. J. Walton, Prof. W. M. Smart and Mr. F. G. Daldy, of Trinity College, Glenalmond. Many other members of the Association joined in the discussion, and in response to suggestions put forward steps have been taken to promote a closer liaison between Scottish members of the Science Masters' Association and the faculties of science in the Scottish universities.

At the annual business meeting, Mr. H. S. Sowrey, Glasgow Academy, was elected chairman of the Branch in succession to Mr. W. J. Lodge, Fettes College. The joint secretaries are F. G. Daldy, Trinity College, Glenalmond, and J. Wallace, Melville College, Edinburgh, and the treasurer is W. P. D. Wightman, Edinburgh Academy.

A 150-TON UNIVERSAL STRUCTURE TESTING MACHINE

W. AND T. AVERY, LTD., of Birmingham have recently designed and built a 150-ton universal structure testing machine for Short Bros. and Harland, Ltd. (*Engineer*, December 26, pp. 594-596).

It is significant that it is no longer considered sufficient to carry out tests on the material from which a complicated structure is made, and to base design upon calculations made from the results of such tests alone. There is a growing need to apply as near full-scale tests as possible. Geometrical similarity in test-pieces tested under laboratory conditions show a dimensional effect which it is often difficult to explain, except by assuming an anisotropy or inhomogeneity of the material. It is still more difficult to predict the behaviour of a material under complicated stress distributions from the results of the standard mechanical tests carried out on carefully prepared samples of shapes designed to make the interpretation of the results as simple as possible.

The new Avery machine can accommodate specimens up to 9 ft. 9 in. long in tension and 15 ft. in compression, while it can also be adapted for carrying out transverse tests on specimens up to 7 ft. span.

The tension and compression units are separate. They are, in fact, two testing machines but having a common hydraulic oil pump for applying loads and a dynamometer and indicator cabinet which can be used with either. The advantages to be gained by the separate units are that the effective height is greater, so that longer specimens may be used; and although the two units cannot be used simultaneously, setting-up can proceed in one while testing goes on in the other. This is an important consideration when it is desired to attach the large number of strain gauges often required for the full interpretation of complicated sections or built-up structures.

Against the separation of the testing units must be set one disadvantage, namely, the far greater space occupied by the whole machine.

The method of operation and load recording is similar to previous machines made by Avery's and to other machines of this type. There are four load-ranges: 0-150 tons in increments of 0.5 ton being the highest and 0-15 tons in increments of 0.05 ton the lowest. It is doubtful whether a machine of this capacity can, in fact, be used with any degree of accuracy on the lower range, and it would appear to be preferable to omit this range entirely and to use the machine for the purpose for which it was designed and for which it is eminently suitable.

C. F. TIPPER

GROWTH-PROMOTING SUBSTANCES IN HORTICULTURE

A CONCISE review by Dr. T. Swarbrick of recent developments in the application of growth-promoting substances in horticulture, with special reference to the researches carried out at Long Ashton since 1939, appears in Occasional Publications on Scientific Horticulture No. 5 (published by the Horticultural Education Association, c/o Gibbs and Sons, 16 Orange Street, Canterbury, Kent). Present applications include the acceleration of rooting in cuttings, the prevention of pre-harvest drop in apples and pears, the induction of parthenocarpic development in tomato and other plants, and finally their employment as selective weed killers.

Parthenocarpic fruits of apple and pear have been obtained with certain varieties but not with others, employing 2-4 dichloro-phenoxy-acetic acid, 2-6 dichloro-phenoxy-acetic acid and also beta-naphthoxy-acetic acid. In all cases, however, the artificially 'set' fruit grew slowly and never attained normal size. Similar development was induced in Miller's seedling apple and Conference pear following frost damage to the 'set' fruit during the spring of 1945. Beta-naphthoxy-acetic acid has also proved effective in inducing a very marked increase in 'set' and yield of the self-sterile varieties of strawberry, Tardive de Leopold and Oberschlesien.

Two interesting lines of investigation are suggested by the fact that crude extracts of the flowers have been found to induce parthenocarpic development in tomato, and secondly, that stilbestrol, a synthetic oestrogen of high potency in animals, is similarly effective. Certain of these growth substances, when used at concentrations higher than that required to induce parthenocarpy, produce modification of leaf shape and venation and clearing of the veins closely simulating many characteristic symptoms of virus infection. This raises interesting conjectures concerning the nature of the action of virus on host. The effect of tri-iodo-benzoic acid in modifying lateral and terminal vegetative shoots of tomato to form flower trusses constitutes an interesting parallel to the suspected action of naturally occurring hormones which are believed to initiate the formation of flower primordia.

The progress already achieved in this field suggests that a joint attack by biochemist and plant physiologist may be expected to lead to a rapid expansion in our knowledge of the biochemical control of development and reproduction in plants.