Chemical Societies and Co-operation

IN his presidential address to the Society of Chemical Industry at Nottingham on July 13 under the title "Ourselves and Kindred Societies", Prof. G. T. Morgan discussed various aspects of the problem of reunion or co-operation among societies concerned with the furtherance of the professional and scientific welfare of chemists. The original territorial organisation of the Society of Chemical Industry in local sections holding their own meetings and other activities has in recent years been supplemented by the inception of subject groups, commencing with the Chemical Engineering Group in 1918.

Two such groups, the Food Group and the Plastics Group, have been formed during the past year, and this development alone is one which induces consideration of the relations of the Society with certain specialist societies and the possibility of such fusions or federations as was witnessed in 1882, when the Newcastle Chemical Society threw in its lot with the Society of Chemical Industry, and again this year, between the Food Group and the Society of the Food Industry.

An analysis of fourteen out of the sixteen separate societies concerned with the scientific and professional interests of chemists shows that the societies in 1930 had a total membership of 23,605 and a combined income from subscriptions of £46,557. Ignoring the fact that many individuals were members of several societies, the average annual subscription is thus about £2, the expenditure of which is divided as follows: 32·5 per cent for scientific literature, 6·5 per cent on social amenities, 6 per cent on library facilities, and 55 per cent on administration. This latter high proportion is attributed to the reluctance of chemists to assume such functions, and while paying tribute to the efficiency of administration of the societies generally, Prof. Morgan suggested that an important means of reducing this proportion of expenditure would be found in the societies drawing closer together and centralising or simplifying office appointments as losses from the staffs occurred through retirement, resignation, or other causes.

So far as the publication of scientific literature is concerned, the main burden is shared by the Chemical Society and the Society of Chemical Industry, and the formation of the Bureau of Chemical Abstracts already represents a measure of co-operation between the two Societies which, by eliminating duplication, adoption of a single format and index, etc., has enabled them to deal with the increasing volume of literature which requires abstracting. Attempts to organise an Anglo-American scheme have so far fallen through, but if the fourteen societies could collaborate in technical publication and pool their financial resources, there appears to be every prospect of the Bureau being able to deal effectively with the steadily increasing number of original memoirs in all branches of chemistry, unembarrassed by financial anxiety.

Following this step of co-operation in abstracting, Prof. Morgan suggested that the publication of joint in place of individual transactions would be a further economy. The steps recently taken by the Faraday Society and the Chemical Society for publishing ordinary contributions to the Faraday Society and physico-chemical papers of the Chemical Society as a new joint journal is an example that might well be followed. Similarly, the possibility of a joint chemical newspaper which would replace the more ephemeral part of *Chemistry and Industry* might also be well worth exploring. This journal would be able to present a wide survey of current topics of personal interest to English-speaking chemists, as well as including progress reports and summaries of scientific researches, and affording a suitable medium for the publication of the jubilee lectures or the lectures now arranged by the Institute of Chemistry on modern developments in the main branches of chemistry.

Improvement of library facilities, research facilities, and vocational education in chemistry are other matters that might be expected to follow the reunion or rationalisation of the profession. Effective action can, however, only be expected when, as Prof. Morgan pointed out, the members of the individual societies face the problem from the point of view of the well-being of the profession as a whole and not of the interests of an individual society.

Sunset Glows and the Andean Eruptions

ATTENTION was directed in NATURE of June 25, p. 932, to a report from Johannesburg of sunset afterglows in South Africa following the eruptions in the Andes last April. Two other correspondents have been kind enough to send further extracts from letters from the same place. Mr. A. Stanley Pye-Smith, 51 Wickham Road, Beckenham, Kent, sends the following extract from a letter dated May 3: "We are having very wonderful sunrises and sunsets, as a result of the volcanic dust from South America. The sky glows red long after the sun is visible, while there are no clouds at all to catch the light, as far as one can see. It is a pleasant change to have prolonged light in this latitude where darkness falls so quickly." Miss Cecilia F. O'Connor, 402 Milton Road, Cambridge, has sent extracts from a letter, dated May 4, received from her brother, Mr. E. R. O'Connor, Germiston, Transvaal, which give more precise details, stating that "at sunset the colours are magnificent, but it is about an hour later when they are best. Normally at that time it is pitch dark. But now the western sky is lit a flaming red light to the zenith—as though there were a huge volcano belching out volumes of fiery smoke. The red light is so powerful that everything catches a reflected tint, but yet you can see stars shining through, even to the west! What clouds there are, are etched in flame, and, towards the zenith, the red shades through purple to the ink blue of night." The same writer in a further letter, dated May 18, describes the sunsets as appearing to get finer, possibly because of the unsettled weather.

A letter, dated May 20, since received from Dr. E. Kidson, director of the Meteorological Office, Wellington, New Zealand, suggests that the volcanic dust had travelled on with the prevailing westerlies to New Zealand early in that month; it is probable therefore that the complete circuit of the southern temperate zone has long since been completed. Dr. Kidson describes the sunset afterglows that began about the end of the first week in May as very beautiful, ranging in colour from pale pink to yellowish pink in the western sky, the appearance showing a certain amount of structure suggestive of thin high smoke. Several reports of unusual manifestations of halo or corona have been received by his Department.

A particularly interesting point to which Dr. Kidson directs attention is that daily determinations of the intensity of the solar radiation at noon, made with the aid of an Ångström pyrheliometer, showed a sudden decrease of about ten per cent on May 5 and a slight recovery since. As an effect of this kind is likely to be general over the region affected by volcanic dust at high levels, it appears probable that the excess of solar radiation now being received by the earth's surface over the northern as compared with the southern hemisphere, on account of the season, is distinctly greater than usual. Although some effect on the weather is probable, it would be unsafe to refer abnormal weather at a particular place to this source, and there are not enough meteorological observatories at present to allow of a comparison between average weather conditions in the two hemispheres before and since the eruptions, in order to trace their effects.

E. V. N.

The Laboratory for Fresh Water Biological Research on Windermere

IN Great Britain, research on fresh water biological problems has, for many years, suffered from the lack of adequate laboratory facilities—a curious fact since so much valuable pioneer work has been done in the British Isles, particularly on the lakes. The opening, last September, of a laboratory under the control of the Fresh Water Biological Association of the British Empire has removed this drawback, and investigators wishing to pursue the various branches of fresh water research can now be assured of obtaining the requisite facilities.

The laboratory is situated in Wray Castle, about three miles from Ambleside and on the north-west shore of Windermere. The lake reaches its maximum depth, just over seventy metres, about a quarter of a mile from the boat-house, and different types of inflowing streams and of shore lines are within a convenient distance. There is also a large number of streams and of smaller bodies of standing water within a short distance of the laboratory, these including examples of very diverse types, while almost the whole range of British fresh water habitats can be found within a distance of fifteen miles. There is thus abundant scope for biologists interested in plants or animals of special groups or in their habitat conditions.

The laboratory is equipped for most of the usual types of biological research. It contains ample facilities for microscopical and for experimental work, both purely physiological and also chemical. Gas for heating purposes is provided from a petrol-air installation. There is a large range of basement cellars which are used for aquaria or for storage purposes, while dark rooms are also available. The usual equipment for plankton investigation is provided, and for this and other forms of lake work a motor launch is available, as well as a smaller boat. This launch is a twenty-four-foot sea-going pinnace, fitted with gears so that very low speeds can be maintained for dredging operations. It also has a derrick and a winch driven by the motor for lifting heavy apparatus. The launch is provided with electric light and navigation lights for night work.

Persons working in the laboratory can obtain a variety of accommodation in Ambleside, and simple accommodation is available in the Castle itself, rooms having now been fitted up for this purpose. Inquiries about working places and research facilities may be made to the Naturalist-in-charge, Wray Castle, Ambleside, Westmoreland, or to the Honorary Director, Dr. W. H. Pearsall, The University, Leeds.

The Neutron

A GROUP of three important papers on the production and properties of neutrons has appeared in the June number of the *Proceedings* of the Royal Society. The first, by J. Chadwick, is an account of his own experiments and a general discussion of the problems involved.

The experiments are in principle quite simple. Beryllium or boron is exposed to the α-particles of polonium, and the resulting penetrating radiation, probably a mixture of γ-rays with neutrons, examined with an electrical particle counter. The neutron has the property, otherwise only associated with radiation quanta, of being recorded by the secondary ionising action of some particle with which it has collided—in this case usually, if not invariably, the nucleus of an atom. Apart from the use of one of the new forms of electrical counters, the main point of the experiments seems to be that a very strong preparation of polonium is required.

Amongst the interesting questions which are touched upon in Dr. Chadwick's survey are the effective collision area which various nuclei offer to a neutron and the allied problem of the nature of the interaction. Dr. Chadwick finds by direct experiment that both for light and heavy nuclei the effective area is not much different from the usually quoted values for the size of the nucleus, and since experiments with lead indicate that neutrons are scattered about equally well in all directions, he suggests that the interaction may occur well inside the nucleus, which is in accord with the very limited region throughout which a neutron would be expected to have an appreciable field.

The other papers, by N. Feather and P. I. Dee, are concerned with the application of the Wilson cloud chamber to the problem. Dr. Feather has obtained a number of photographs of the collisions between neutrons and nitrogen nuclei, in which, on account of its negligible interaction with electrons, the neutron itself does not give a trail. The collisions appear to be of several types. In some, presumably elastic, there appears only the short, heavily ionised trail of the fast nitrogen nucleus which has been set in motion. The inelastic collisions were of two main types, in the first of which the neutron is captured and an α-particle liberated, whilst in the second the neutron is not captured but probably a proton liberated.

Mr. Dee's contribution is a search for visible evidence of the interaction of neutrons with the electrons of molecules in the air, using a most carefully adjusted Wilson chamber. This was not found, and the quantitative formulation of his results shows that the probability of interaction of a neutron with an electron, with the production of a recoil electron track, is less than one per cent of the probability of similar interaction with a nitrogen nucleus. The ionisation along the path of a neutron is given as less than one ion pair in three metres of air.

University and Educational Intelligence

ABERDEEN.—The University Court has decided that in future the professor of surgery shall devote the greater part of his time to the duties of the chair, and that his private practice will be limited to cases seen and treated in Aberdeen—with rare exceptions. It is understood that preference will be given to those candidates of wide experience of clinical surgery and acknowledged power of teaching who, by their special training and record, have given evidence of their capacity for and interest in research. The appointment to the chair is made by the Crown on the recommendation of His Majesty's Secretary of State for Scotland.