possible should be done to encourage in the profession a continuous supply of men of that type. There are, in the profession, young men, many as yet little known, who have courage and initiative to come forward with new work, to read papers, and to make useful and sensible contributions to discussions. To be able to express themselves clearly and with assurance on matters on which they can claim to know something is a valuable asset in itself. He would suggest to the younger members that much could be done to acquire this ability by good reading, by cultivating the habit of mixing with men of other professions, and by taking an active interest, not only in the proceedings of the societies devoted to their science, but also in the world of affairs generally. The supply of men and women for administrative posts is a difficult problem. There is another side of the question, however, namely, that in attaining an administrative post with the responsibility that it entails, there is a danger of the chemist losing touch with his science, so that it becomes more and more difficult for him to encourage the workers in the laboratories. Dr. Pickard was re-elected president of the Institute for the ensuing year.

Smoke Reducing Grates for Domestic Use

IN NATURE of January 23, an article on the prevention of smoke and dust emission referred to the difficulty experienced in burning raw coal smokelessly in the conventional open grate, and stated that investigations are now in progress having as their object the removal of this source of atmospheric pollution. The fundamental cause of smoke production from a domestic fire is the low temperature obtaining in the space above the fuel bed, combined with the cooling of the hot products of combustion by excess air entering the face of the grate. This normally gives rise to partial combustion of the hydrocarbon distillation products and the evolution of materials rich in carbon, but at certain periods, notably on kindling and on refuelling, the tarry matter may pass into the atmosphere unchanged.

To overcome these defects, a number of grate designs have been advanced, and the more important may be divided roughly into four classes. In the first, preheated air is supplied to the space above the fuel, increasing the temperature and promoting the early combustion of the volatile matter. This method can only be partially successful, as both the air supply and its temperature will be lowest just before adding a fresh charge. The second class, which is used in many multiple purpose grates, employs a draught which carries the distillates downwards through the hot fuel, giving conditions more suitable for their combustion. In these two, the smoke from the ignition charge is little altered. Gas is used in the third class as an auxiliary to burn the smoke. A novel example of this type was demonstrated recently by the Coal Utilisation Council, British Industries House, Marble Arch, London, W.1. The final class consists of more complicated devices in which the heat from the fire partially carbonizes raw coal contained in a suitable receptacle, the distillation products passing through the burning fuel where they are consumed. Dr. Arnot's smoke consuming grate (1855) was the forerunner of this type, but more recently a gravity feed from a hopper behind the fireback brings it more into line with modern ideas.

Control of the Grid System in Great Britain

IN a paper, read to the Institution of Electrical Engineers on February 10, Mr. J. D. Peattie describes the control rooms provided by the Central Electricity Board for controlling the generating stations supplying electricity to the grid and for supervising the operation of the transmission lines. The whole of Great Britain with the exception of northern Scotland is now divided into nine schemes. These are grouped into seven systems which are controlled from seven centres, at Glasgow, Newcastle, Leeds, Manchester, Birmingham, Bristol and London respectively. For short distances, continuous metallic circuits are provided, but for longer distances the Post Office channels pass through repeating stations and alternating current signals only are transmitted. The telephones and automatic indicating apparatus are always combined in one equipment suitable for use in conjunction with the channels hired from the Post Office. The vital line of communication is that connecting the control engineer on duty and the operator at the distant station.

IN general, the control engineer has access to, and a prior claim from his desk on, the outgoing channels. By means of automatic indicating apparatus he knows the position of the circuit breakers, the routine instruction signals and the readings of the load. In most cases the transmitting and receiving equipment for the signals are developments of apparatus used in automatic telephony. As a check on the frequency and time control carried out by the operators at the generating stations, meters connected to the local supply are installed in each control room. Differential dials are provided showing the difference between the time given by a high-grade standard clock and the system time given by the synchronous motor clocks. The standard clock is checked daily against the Greenwich radio time signal. Differential dials are also provided showing the difference between the time given by the standard clock and the system time given by a synchronous motor clock.

Recent Acquisitions at the Natural History Museum

AMONG recent acquisitions in the Department of Zoology are the mounted head of a Mexican bighorn sheep presented by Mr. John Lawson, the head of a Newfoundland caribou presented by Mr. W. Lawson, and the head of a woodland caribou presented by Captain D. A. Lawson. The study collection has been enriched by an Argali sheep skin from Samarkand, the gift of Mr. Douglas Carruthers, and a tiger skin and skull from Perak presented by the Zoological Society. Miss Emma Hutchinson of Grantfield, Leominster, Herefordshire, has presented to the Museum the collection, contained in four cabinets, of British Lepidoptera made at Leominster by her

mother and other members of the family, mostly between 1860 and 1900, though Miss Hutchinson has added to it odd specimens and notes up to 1936. The specimens number some 10,000, and included with them are Miss Hutchinson's note-books in which all the records are kept. Among donations to the Geological Department is one from Mr. C. T. A. Gaster, who collected the material during many years of intensive study of the chalk of the South Downs. This collection includes 10,000 Polyzoa, 3,200 Echinoderms, 700 Sponges, 360 Annelids, 85 Mollusca, and 450 Brachiopods, and forms a valuable source of information on the succession of faunas in the Chalk. The Mineral Department has acquired by gift from Dame Maria Ogilvie Gordon, a carefully labelled series of rocks and minerals which were collected by her in the Monzoni district, Val di Fassa, Italy. She first visited this region in 1891 when on Baron von Richthofen's geological excursion. Since then she has carefully studied the structure of the western Dolomites and has made a geological map of the whole area. The present gift is a first selection of all the original material studied. Prof. S. J. Shand, of Stellenbosch University, has given a fine series of igneous rocks from localities in South Africa, South-West Africa, and Kenya Colony.

COLONEL R. H. INGHAM CLARK has placed on permanent loan in the Botanical Department of the Museum a large collection of gums. Two enormous pieces of Kauri gum, one the largest ever discovered in New Zealand, are in the collection; and one sample of Demerara Animi is the largest example known. The collection was shown at the Paris Exhibition of 1878. Since then it has been added to mainly by F. W. Fell Clark. Many of the gums are no longer obtainable, the demand having considerably decreased from a commercial point of view, and the 'workings' have reached a point where there is too much water to make the mining of gum a commercial proposition. A collection of about 1,100 Phanerogams and 50 Cryptogams from around Kangersdlugssuck at the southern end of Knud Rasmussens Land, East Greenland, has been received from Dr. H. G. Wager (British East Greenland Expedition). The importance of the collection is that it was made from inland nunataks, which has only once previously been achieved. Dr. Wolfgang von Hagen has presented seventy-three Phanerogams and nine Cryptogams from the Galapagos Islands. The Department has also received the first consignment of 420 plants collected on the Swedish Expedition to South Africa and Southern Rhodesia (1930–31) by Thore C. E. Fries, T. Norlindh and H. Weimarck.

British Science Guild

A BRIEF review of the formation and activities of the British Science Guild, including a list of subjects investigated by its committees, details of the Norman Lockyer and Alexander Pedler Lectures, the Research and Development Lectures and other lectures arranged by the Guild has recently been issued as a final statement to members. Some notes on the Parliamentary Science Committee, which has been constituted a separate body and is not included in the scheme of incorporation with the British Association, are also given. The statement gives a list of the officers and members of Council at the time of incorporation with the British Association, together with the final income and expenditure account and capital account.

An Astronomical Handbook for 1937

IN addition to the standard astronomical ephemerides, such as the "Nautical Almanac", there are published each year a few handbooks which supply, for the non-technical inquirer, astronomical tabular matter and information that is generally wanted concerning the aspects of the heavens. The 1937 edition of Flammarion's "Annuaire Astronomique" (Paris: Ernest Flammarion, 1937. 14 francs) has for some years reached the status of a modest text-book, and is an excellent example of what a non-technical ephemeris should be. An important feature of this compilation, which runs into 450 pages, is the large number of tables and diagrams, many of them conveying at a glance some fact of astronomical or of geophysical interest. This annual handbook, which is carefully revised each year so as to include the latest observations of note, should be of real use to those requiring an elementary guide to the study of the heavens.

Institution of Chemical Engineers: Medal Awards

AT the fifteenth annual corporate meeting of the Institution of Chemical Engineers, held on February 26, the following medal awards were made: Osborne Reynolds Medal to Viscount Leverhulme in recognition of his work in the interests of chemical engineering during the year 1936, especially as president of the Chemical Engineering Congress; Moulton Medal to Dr. D. M. Newitt for the paper on "The Design of Vessels to withstand High Internal Pressures" as the most valuable paper among those read before the Institution during the year (1936); Junior Moulton Medal and prize of books to Mr. Roy F. Hayman for the paper on "Corrosion", read before the Graduates and Students Section in 1936; William Macnab Medal to Mr. G. U. Hopton, for meritorious work in the Associate-Membership Examination, 1936. At this meeting Dr. William Cullen was elected president of the Institution for the year 1937.

Fitzwilliam Museum, Cambridge: New Director

MR. L. C. G. CLARKE, curator of the Museum of Archæology and Ethnology, Cambridge, has been appointed director of the Fitzwilliam Museum, Cambridge, in succession to Sir Sydney Cockerell. Mr. Clarke was appointed curator of the Museum of Archæology and Ethnology in 1922, succeeding Baron Anatole von Hügel. He has travelled extensively in Central and South America, and in Abyssinia and other parts of Africa; and he has