ALUMINIUM REFLECTORS

It is well known that the power to reflect incident light is possessed by various metal surfaces to a very varying degree even when such surfaces have been reduced to the same condition so far as possible by grinding, polishing, etc. Not only does the reflectivity vary over the visible range taken as a whole, but it also varies for different wave-lengths and not always in the same manner. The reflectivity of a silver mirror, for example, is very high when measured on the longer waves, but decreases to almost vanishing point over a narrow band in the ultra-violet. In a paper presented by Mr. N. D. Pullen, a description is given of a dual anodic process designed for the treatment of aluminium surfaces in order to produce a high degree of reflectivity. The first bath, in which the electrolytic brightening is produced, is a mixture of sodium carbonate and sodium phosphate in the approximate proportions of 3 : 1 having a strongly alkaline reaction. The second bath, in which a reinforcing film is produced, consists preferably of a strong solution of acid sodium sulphate. Data are given showing the reflectivity of aluminium surfaces treated by this method compared with a standard silver mirror and other surfaces such as chromium plate, nickel plate, etc.

THE FUNDAMENTALS OF FORGING

All metallurgists are familiar with Prof. Portevin's methods of treating the practical problems of industry in a fundamental manner. The complex properties of castability and weldability have been greatly elucidated by his publications in the past, and now, together with his colleague Dr. Paul Bastien, he has applied the same method of treatment to the study of forgeability. In their paper, "Study of the Forgeability of Various Light and Ultra-Light Alloys", the authors have endeavoured to determine, by means of laboratory tests, the optimum conditions for hot-working. With this in view they have compared the results obtained from static bending and compression tests and dynamic bending and tensile tests. They have indicated the important part played by the rate of deformation, and have shown that the bending test appears to be the most convenient, speedy and sensitive. The tests were carried out on aluminium ; on copper-aluminium alloys containing 6 and 12 per cent of copper ; on aluminium-magnesium alloys containing 5, 10 and 15 per cent of magnesium ; on magnesium ; on magnesium-copper alloys containing 5, 10 and 15 per cent of copper ; and on magnesium-aluminium alloys containing 3, 6 and 9 per cent of aluminium. The methods of testing employed have made it possible to define the capacity for hot-work of these various alloys.

International Quaternary Association

CONFERENCE IN VIENNA

THE Third Conference of the International Quaternary Association (INQUA.) was held in Vienna on September 1–8 under the patronage of Dr. Kurt von Schuschnigg, the Austrian Chancellor, and Dr. Hans Pernter, Minister of Education. Dr. Otto Ampferer, director of the Geologisches Bundesanstalt in Vienna, who is well known for his researches on the interglacial gravels of the Alps, presided over the Organization Committee, and Dr. Gustav Gotzinger was president of the meeting. To these latter and to the genial and multi-lingual secretary, Dr. Helmut Gams of the University of Innsbrück, the meeting owed its undoubted success. That the attendance far exceeded expectations may partly be ascribed to the opportunity of hearing the veteran Prof. Albrecht Penck, who acted as honorary president and spoke on most of the subjects discussed during the Congress.

The geographical situation of Vienna is ideal for such a conference, being accessible without undue travelling to most European nations. To those from the west, the opportunity of seeing a country which, during Quaternary times, took on the character of a pronounced steppe, was a great temptation, and the thick loess deposits of the Austrian Weinviertel north of the Danube came in for much attention. Here in both fossil and recent examples it was possible to study two of the climatically controlled soil types which the researches of Russian scientific investigators have recently brought into prominence, namely, the black-earth or *chernozem* which margins the steppes, and the brown-earth or forest soil of the better-watered areas. This utilization of the physical character and colour of the soil to interpret the climatic conditions under which it was formed is a novelty to glacialists from the leached podsol areas of the north-west, and seems to afford a subtle and useful criterion of changing climate. The main fossil soil zone of the Austrian sections lying between the Younger and Older Loess is locally dated by archæological finds of Aurignacian type just above it, and is therefore presumably of interglacial or Riss-Wurm age, the loess being glacial. These sections were ably demonstrated by Dr. Gotzinger, who, with others, wrote a descriptive guide book for the Congress.

During the visit to Krems, a halt was made at Spitz in order to be present at the unveiling of the memorial to Josef Beyer, the celebrated Austrian archæologist. On a subsequent visit to Eggenburg, Beyer's collections were inspected in the museum, and those who visited this town will long remember the hospitality of its inhabitants. An excursion in the Austrian Alps on September 9–23 was largely attended and enabled the participators to see the terraces and moraines of the quaternary glaciers and a number of interglacial deposits, including the famous Hotting breccia.

The difficulties of language were keenly felt by many members of the Congress. Most of the papers were delivered in German, but, one understands, not always in German as spoken north of the Danube. Many were read from manuscript at undue length and at a speed which made them unintelligible to foreigners. It is surely possible to find some cure for this. Much would be gained if authors would make a point of reading their papers in abridged form in some language other than their own. *This*

procedure, which enables preparation to be made, would not be much of a linguistic feat for most members of the Congress and would add greatly to the intelligibility of the proceedings.

There was a universally expressed desire on the part of the members to meet in England at some future date in order to see the classic sections of East Anglia and Yorkshire.

Contributions of Chemistry to Pharmacy and Medicine

THE Hanbury Gold Medal of the Pharmaceutical Society of Great Britain, which is awarded for "high excellence in the prosecution or promotion of original research in the Chemistry and Natural History of Drugs", was presented to Dr. F. Pyman at the opening of the School of Pharmacy on October 7.

Dr. Pyman afterwards delivered the inaugural sessional address, in which he reviewed the contribution made by chemistry to pharmacy and medicine during the twentieth century. He pointed out that whereas medicine has contented itself for many thousands of years with the use of drugs of animal, vegetable and mineral origin and of their simple extracts, it is only within a comparatively short period of the world's history—barely 130 years—that the development of organic chemistry and other sciences has enabled these crude drugs and pharmaceutical preparations to be replaced in many instances by principles isolated from them in the form of pure chemical compounds. This tendency has been reflected in the diminution in the number of crude drugs and galenical preparations included in successive British Pharmacopœias. This isolation of the pure active principles of drugs has been of importance not only as an end in itself, but also as a means of giving the organic chemist opportunities of working on the constitution of these compounds both analytically and synthetically.

Expense may prevent the widespread substitution of the synthesized product for that obtained from natural sources but, Dr. Pyman noted, the improvement in the methods for the production of tropinone by Robinson is at least one example of a laboratory synthesis which has brought the time appreciably nearer when both atropine and cocaine may be commercially available as synthetic products. The extraction of chemical constituents of vegetable drugs has stimulated the search by biochemists for the active principle of biological products. Raw liver taken by sufferers from pernicious anæmia over long periods caused nausea, and many patients were unable to continue the treatment. The work of Cohn led to the introduction of a method by which the activity present in the original liver could be concentrated in a fraction which represented about one thirtieth of the original bulk, while further work has enabled still more concentrated preparations to be made. Attempts to effect still further concentration and to isolate the active principle are making slow progress, firstly owing to the instability of the active principle and secondly to the fact that there is no satisfactory animal test for its efficiency in pernicious anæmia.

The consideration of these researches led Dr. Pyman to review the development of chemotherapy, research in which postulates co-operation between chemist and biologist. It is a commentary upon the difficulties in this field of research that the pioneer work of Ehrlich and Bertheim in 1907 still remains the outstanding example of the application of chemotherapeutic principles. That the laboratory worker will steadily add to the products available for the physician is certain, and there is no doubt that in many directions laboratory products will produce results not otherwise attainable. Nevertheless, the isolation of an active principle does not mean the death of the original vegetable or biological product. Tincture of nux vomica, tincture of digitalis or extract of ergot will have their place in medicine and may well produce physiological effects which cannot be obtained by their isolated active principles.

Educational Topics and Events

CAMBRIDGE.—The Central Committee for Agricultural Research Organizations has appointed H. Hunter, of St. Catharine's College, to be director of the Plant Breeding Institute in succession to Sir R. H. Biffen.

The director of the Solar Physics Observatory has made the following appointments: W. Moss, to be first senior observer, J. C. Dobbie, of Trinity College, to be second senior observer, E. G. Williams, of Trinity College, to be first junior observer.

OXFORD.—Dr. H. M. N. H. Irving, of Queen's College, has been appointed tutor in natural science at St. Edmund Hall—a new appointment.

Mr. Alec Naylor Dakin, formerly Lady Elizabeth Hastings Scholar of Queen's College, has been elected to the Lady Wallis Budge Fellowship in Egyptology at University College. Mr. Dakin was educated at Heath School, Halifax, and was placed in the first class in Classical Honour Moderations and in the second class in the Final Honour School of *Literæ Humaniores*.

The Right Hon. W. G. A. Ormsby-Gore has been elected to an honorary fellowship at New College. Mr. Ormsby-Gore's work when Under-Secretary of State for the Colonies in a former administration, as well as his archæological writings, which have achieved a wide success, and his work in the preservation of ancient monuments while acting as Chief Commissioner of His Majesty's Office of Works, thus receive well-deserved academic recognition.

SHEFFIELD.—The following appointments have been made: Dr. R. Rado, to be assistant lecturer in mathematics; Mr. T. L. Morgan, to be assistant lecturer in civil engineering; Dr. W. A. Kirkby, to be lecturer in fuel technology.

THE formal opening of the thirty-fifth session of the Sir John Cass Technical Institute took place on the evening of October 6, when an address was delivered by Bishop Paget to those assembled in the Great Hall, which forms a part of the recently erected extension of the Institute. The chairman of the Governors, the Rev. J. F. Marr, who presided, remarked that during the past two sessions, in which the additional accommodation provided by the extension has been in use, the volume of work has increased 15 per cent. This continued expansion is creating a new demand for additional laboratory accommodation for chemistry and biology, and also for lecture rooms for chemistry and physics