

has maintained organized co-operative industrial research. Dr. J. G. King, formerly of the Fuel Research Station, has been appointed director, and Dr. F. J. Dent, who has been responsible for a large part of the research activity of the Joint Research Committee of the Gas Research Board and the University of Leeds, has been appointed joint assistant director.

Of the items mentioned, gas technologists will note with interest the progress in the work on the complete gasification of coal. This shows that several lines of work are being followed—direct hydrogenation under pressure, gasification in oxygen and steam under pressure, and catalytic synthesis of hydrocarbons from carbon monoxide and hydrogen. The laboratory work on these themes is in course of transference to large-scale working in plant erected in a provincial gas works. Research on gas purification holds promise of reducing the sulphur content of purified coal gas to one tenth of the figures currently obtained in public supply in Great Britain. Drying by infra-red radiation emitted by gas-heated sources is being studied and apparently offers certain advantages. Methane, a gas of high calorific value, is a principal constituent of coal gas, from which it can be separated by liquefaction to give a portable liquid fuel which in future may be of great service. Gas engineers have always taken great interest in refractory materials, and the present report again reveals this interest. The report may be said to show that the research association under its new style shows already a wide and widening range of activities.

Terms Used in Telecommunication

THE modern rapid growth of the applications of radio and telecommunications technique makes it desirable, even in war-time, to keep as up to date as possible a collection of definitions of the various terms and phrases used by workers and students in this field. To give effect to this point of view, the British Standards Institution has just issued a revised and enlarged edition of B.S. 204 entitled "Glossary of Terms used in Telecommunication" (obtainable from the British Standards Institution, 28 Victoria Street, London, S.W.1, 2s.). This publication has been prepared in collaboration with the General Post Office and other organizations concerned with communications technique and practice. It comprises revised sections of earlier glossaries dealing with telegraphy, telephony, radiocommunication, television and radio direction-finding, together with a new section on fire alarms. An appendix collects together the various symbols used for the quantities defined in the glossary. While it is doubtful if all workers in this field will agree with all the definitions, the revision, collection and rearrangement of the terms in this new publication will be found of considerable use as a reference manual by all those concerned with the preparation of technical documents and publications, as well as by the large number of other scientific and technical workers in this rapidly expanding field of telecommunications.

Radio-Telegraph Signals

A PAPER on high-speed recording of radio-telegraph signals was read recently in London before the Institution of Electrical Engineers by Messrs. R. B. Armstrong and J. A. Smale, in which the authors first describe the systems in most general use, and then give a brief definition of modulation requirements for telegraph services. The various sources of

distortion encountered are fading, noise and interference from other stations, but chiefly phase distortion due to propagation over more than one route between transmitter and receiver. The on-and-off character of Morse signalling enhances the difficulties which come from most sources of distortion. The paper then describes the general characteristics required in radio receivers designed for the purposes under discussion, including a description of two types of receiver in current use. This is followed by a consideration of special requirements of the recording units into which the receivers work, with a description of a typical unit. The special measures provided to offset the three types of distortion previously mentioned are also dealt with.

Diversity reception is discussed, with particular reference to the special problems of combining the automatic gain-control systems and the receiver outputs. Recording by undulator is chiefly considered in the paper as a whole; but the discussion on the effects of distortion, and the counter-measures taken, is even more applicable to machine-printing systems, since the latter have less margins of tolerance in operation. The paper concludes with an indication of the trend of development towards different methods of signalling, which may reduce difficulties of reception and recording in comparison with the old on-and-off methods of conveying intelligence.

Lighting Reconstruction

THE Illuminating Engineering Society has just issued the first three of a series of Lighting Reconstruction Pamphlets which are planned to be of service to Government departments, local authorities, borough engineers, architects and others who are preparing now for the lighting problems which will confront Great Britain during the period of post-war reconstruction. The present pamphlets relate respectively to "Principles of Good Lighting", "The Lighting of Public Buildings" and "The Lighting of Schools", and they provide excellent summaries of the broad principles of what is needed to make lighting efficient according to the particular application. The pamphlets are obtainable from the Society at 32 Victoria Street, S.W.1, at the uniform price of 1s. each, 9s. per dozen, or £3 per 100.

Distilled Water

THE development of the water-still has been slow, the normal type of apparatus being an externally heated metal boiler and a condenser. These are very inefficient, due to the fact that the number of calories required to heat the incoming cold water to boiling point is small compared with the heat required to convert the water into steam, and many kilowatts are required for an output of 20 gallons per hour. There is also the disadvantage of fur deposition from hard water, which can be diminished by taking only a fraction of the rated output.

A new type of still, called the "Strip-Action Still", is announced by Messrs. Townson and Mercer Ltd., 390 Sydenham Road, Croydon, which uses raw steam such as is available in a factory, and is made in units with a capacity of one gallon per hour. The initial design was in heat-resisting glass. The steam passes through an outer jacket which is air-cooled, and deposits dirt and high-boiling liquids with part of the condensed steam. The clean steam then passes down a multi-surface spiral condenser and comes out at the bottom as distilled water. By avoiding much contact with air, the water is of appreciably better

quality in regard to pH value than ordinary distilled water. The inner condenser is water-cooled, and the flow is adjusted so that the distilled water issues nearly at the boiling point.

Processing Quartz

THE production of a small thin quartz plate from a large crystal weighing several pounds involves a long succession of operations, including repeated cutting, surfacing and checking. Each step requires some form of grinding or lapping, and with the extremely high precisions required and material so hard as quartz, these processes are slow and exacting, although multiple processing reduces the net time per crystal considerably. Until crystals began to be used extensively in electrical work, the grinding of hard brittle substances was limited chiefly to jewels, and the techniques and materials employed were not very well suited to a large-scale processing of quartz. As a result, a considerable amount of research and development was carried out in the Bell Laboratories to discover the most satisfactory methods and to design the most useful machines. An article by W. L. Bond (*Bell Lab. Rec.*, 22, No. 8; April 1944) describes the various lapping and grinding processes employed.

Accidental Poisoning in the United States

IN the United States, about 1,200 deaths occur each year from accidental poisoning. Analysis of the 355 cases occurring among policy-holders of the Metropolitan Life Insurance Company during 1940-43 (*Statist. Bull.*, 25, No. 2; 1944) reveals the following. More than a quarter of the victims were pre-school children, and among these the commonest poison was strychnine (20 cases), taken in the form of sugar-coated strychnine pills intended for adults, followed closely by oil of wintergreen (17 cases), taken by drinking the pleasant smelling liquid intended for external application. Among the adults the list was headed by overdose of sleeping drugs (72 cases); 49 took poison (commonest were lysol, sodium fluoride) in mistake for medicine; 41 drank methyl alcohol believing it to be a satisfactory substitute for ethyl, and 18 drank poison in mistake for an alcoholic beverage.

Anti-plague Campaign in Chimborazo

ACCORDING to Dr. C. S. Vera, of Riobamba (*Bol. Of. San. Panamer.*, 22, 875; 1943), a successful anti-plague campaign was carried out in the province of Chimborazo, Ecuador, during August 1, 1942-July 21, 1943. The central office set up in Riobamba directed the activities of the groups organized in each section of the province. 'Cynogas' and flame-throwers were used in destroying rat nests, and a paste of arsenic and phosphorus was used in rat burrows. During the year 43,876 rats were trapped (*rattus* 13,730, *alexandrinus* 10,322 and *musculus* 19,815), and almost complete extermination was accomplished in some areas. The spleens of 23,629 rats were examined, but only one (*rattus*) was positive. The incidence of plague in Chimborazo was as follows: 1939, 82 cases; 1940, 40 cases; 1941, 30 cases; 1942, 1 case, and in the first six months of 1943 nil.

Swedish Town Population

ACCORDING to recent statistics in the *Anglo-Swedish Review* of April, the population of the Swedish capital rose during 1943 by more than 21,000, which is the largest annual increase ever recorded, to 636,000. Greater Stockholm including the suburban

districts of the capital now has 800,000 inhabitants, or one eighth of Sweden's entire population. The same increasing tendency is registered for most Swedish towns, 111 out of the country's 123 towns showing rising population figures; Sweden's second town, Gothenburg, has 290,000 inhabitants and the third largest, Malmö, 163,000.

Summer School in X-Ray Crystallography

A Summer School in X-ray crystallography applied to industrial problems is being held in the University of Cambridge in September along the lines of the school organized last year which proved to be very successful. It is being arranged again by the Departments of Physics and of Mineralogy and Petrology in co-operation with the Board of Extra-mural Studies. In the course, which has been modified as a result of the experience of last year, emphasis will be placed on the interpretation of practical work and on the application of different techniques to various problems. It is particularly designed for scientific workers and technicians who are using the methods of X-ray diffraction in industry and who have had no systematic training in the subject. The Summer School will extend from September 4 to September 16. In view of the present shortage of staff, apparatus and materials, it will be possible to accept only a limited number of people, and application to attend must be made before July 24. Further information can be obtained from the Secretary of the Board of Extra-mural Studies, Stuart House, Mill Lane, Cambridge.

Announcements

MR. G. D. H. COLE, University reader in economics, Oxford, and director of the Nuffield College Social Reconstruction Survey, has been appointed Chichele professor of social and political theory at Oxford as from October 1.

THE honorary degree of LL.D. has been conferred by the University of St. Andrews on Sir Robert Robinson, Waynflete professor of chemistry in the University of Oxford.

THE honorary degree of LL.D. has been conferred by the University of Aberdeen on Prof. Alexander Findlay, professor of chemistry in the University during 1919-43; Prof. V. M. Goldschmidt, professor of mineralogy and geology, University of Oslo; Sir William Wright Smith, regius professor of botany in the University of Edinburgh.

The degree of D.Sc. has been conferred on Dr. G. A. Cowie, for a thesis on "Study of the Effects of Manures and Rainfall on Yields of Crops grown in Rotation"; J. S. Farquharson for a thesis on "(1) Haboobs and Instability in the Sudan, (2) The Diurnal Variation of Wind over Tropical Africa"; Dr. H. W. Kosterlitz, for a thesis on "Some Observations on the Conversion of Galactose to Glucose in Mammalian Liver and in Yeast". The degree of Ph.D. has been conferred on Charity Waymouth, for a thesis on "An Investigation of Various Substances of Biochemical Importance for Tissue Growth".

MESSRS. H. K. LEWIS AND CO., LTD., 136 Gower Street, London, W.C.1, have been appointed sole distributing agents for the reproductions of German technical books issued by Mr. J. W. Edwards and Edwards Brothers Inc., of Ann Arbor, Michigan. A catalogue of the titles is in preparation. A copy will be sent on request.