

PROGRESS IN COKE RESEARCH IN GREAT BRITAIN

AN established annual event is the joint meeting of the Coke Oven Managers' Association, the Institution of Gas Engineers and the British Coke Research Association. These three institutions cover the technical interest of the carbonizing industries in all its facets. This annual gathering has become noteworthy for the fact that some matter of absorbing interest is discussed at the meetings.

It will be recalled that in the autumn of 1958 the Duke of Edinburgh opened the new Coke Research Centre of the British Coke Research Association at Chesterfield. A special feature of this research station is that it contains, besides chemical and physical laboratories, a large workshop laboratory for pilot-scale plant, an excellent information centre, and a full-scale plant for making coke and its by-products. This last feature was a bold venture, which had been in the minds of the practical men of the industry for upwards of a decade.

At this year's tripartite meeting, held recently, the director of the Research Association, Mr. G. W. Lee, gave an encouraging account of the work that had been carried out during its first year at the Coke Research Centre. Naturally, everyone was interested to hear how the full-scale plant had operated in practice, for the coke-oven manager knows full well the teething troubles that may be expected to be encountered in such an undertaking. Mr. Lee was able to unfold a story of quite substantial success.

The coke oven is to be used for producing sufficient coke to enable performance trials to be made of the resultant cokes in production blast furnaces. One cannot use less than a hundred tons of fuel for trial on an industrial unit of such magnitude. There is also a by-product plant to deal with the collection of tar and other products distilled from the carbonizing coal in the oven. To overcome all the teething troubles successfully in the coldest period of the year when there was 17° F. of frost—and incidentally seventeen coke braziers required—was no mean achievement. To train also the composite team of operators, having both technical ability and practical experience of plant operation, to run the plant had been a problem in human relations. It has to be remembered that the plant was quite unique, and the carbonizing of each charge of coal a huge scientific experiment calling for accurate instrumentation, measurement of numerous values and precise analysis.

In the upshot, the standard of repeatability of yields achieved was good, and in the final runs reported 'very good', in Mr. Lee's modest claims; we should say, in such demanding conditions, excellent.

Perhaps the most satisfactory outcome of these trials was to prove that the results of full-scale trials confirmed the usefulness of trials in smaller experimental ovens, a range of which the Association has for long been using. Such a situation makes for accelerated progress in the matter of producing still better qualities of coke from coals of diminishing suitability for the purpose, as the reserves of coking coal of good quality become depleted.

The Coke Research Association has established, as have other research associations in Britain, a world-wide reputation for the quality of its research. In the new Research Station the equipment and the staff are such that the good work can be continued at an accelerated pace. 40 per cent of its research effort is devoted to improvement in the quality and yield of coke, and 11 per cent to the thermal behaviour of coal and the fissuring of coke. The remainder is concerned with a wide range of fundamental and applied studies that the future welfare of the industry demands.

The layman is rightly concerned about the pollution of the air and of the rivers which industrialization carries in its train. These subjects have not been overlooked. The effluent problem in the coking industry has many features in common with that of the gas industry, and accordingly these industries have joined forces in tackling the water pollution problems that arise from their activities. The Coke Research Association is supporting both financially and technically the work of the Joint Research Committee and the University of Leeds through its Ammonia Effluents Sub-committee.

As regards the field of atmospheric pollution, investigations of the Coke Research Centre have included preliminary studies of the chemical and physical nature of the smoke emitted from a coke oven. Naturally, problems of suppression are also being studied.

All these matters that concern the future prosperity of the coal industry contain reassuring features of particular interest to those enlightened sections of the British public which already recognize that the future of coal must depend upon the technological effort put into its utilization.

SOIL SALINITY COURSE IN TUNISIA

FOLLOWING an invitation of the Government of the Republic of Tunisia and with its sponsorship, Unesco's Middle East Science Co-operation Office organized a Regional Training Course on Diagnosis, Improvement and Management of Salt-affected Soils as a part of the Arid Zone Project. The course was held in Tunis during September 7–October 3, 1959. It consisted of one week of lectures, followed by two

weeks of laboratory work and a field trip to the arid regions and saline soils in Tunisia.

The chemical aspects were treated by Dr. A. D. Ayers, formerly with the U.S. Salinity Laboratory, Riverside, California, now with the Agricultural Research Service U.S. Department of Agriculture, Rome; the geological and pedological aspects by Prof. G. Aubert, Institute of Tropical Soil Investiga-

tions, Office for Technical and Scientific Research for France Oversea, Bondy, France; and the physical aspects by Prof. W. R. van Wijk, Agricultural University of Wageningen, Netherlands. Dr. Ayers served as general technical director.

Reclamation of saline soils and use of saline water for irrigation are problems of primary importance in Tunisia. This was stressed by the President of the Republic of Tunisia, Habib Bourguiba, who opened the conference and welcomed the group. Prof. Kovda, director of the Unesco Department of Natural Sciences and one of the foremost Russian soil scientists, thanked the president on behalf of Unesco. Prof. Kovda stayed at Tunis during the first week of the course. He and several French scientists, consultants to the Tunisian Government, gave lectures on special subjects as capillary rise of saline ground water, genesis of saline soils, Tunisian soils, plant associations in Tunisia, crop research in Tunisia, distribution and quality of surface and underground waters in Tunisia. The Secretary of State for Education, Mahmoud Messadi, the Secretary of State for Agriculture, Abdessalam Kenani, and many other Tunisian authorities attended at one or more lectures.

The lectures and laboratory work were held in the Ecole Supérieure d'Agriculture (director Prof. Haffani), where also the participants were housed. There were thirty-two participants from ten Middle East countries. Of these, fifteen were from Tunisia, the others from Iran, Iraq, Jordan, Lebanon, Lybia, Morocco, Sudan, Turkey and the United Arab Republic. Most of the participants were graduate staff members of universities or research institutes and several held responsible positions in their countries.

The enthusiasm and interest of the participants contributed much to the success of the course.

The field trip was offered by the Tunisian Ministry of Education. Leaders were Prof. G. Aubert and Mr. Roederer, head of the Pedological Service of the Ministry of Education. First the Medjerda valley was visited where an ambitious and magnificent project of reclamation, land amelioration and irrigation is in progress. Thereafter the arid and desert areas in the south were visited where a variety of soils of different degrees of salinity were studied. The capriciousness of the weather and the statistical meaning of the concept of climate were convincingly demonstrated on that occasion. A heavy thunderstorm caused a delay of several hours before the 'Landrovers' could cross the flooded parts of the route Kairouan-Gafsa (annual precipitation between 4 in. and 8 in.) and the main road Gafsa-Tozeur was badly damaged. From Tozeur the field trip went to Kebili and Gabes, crossing the famous salt marsh of Chott el Djerid. The plans were to visit the fast saline area around Gabes. Again, however, a heavy thunderstorm interfered. The expedition was practically isolated for two days in Gabes as the environments were flooded, and then had to return to Tunis.

This note on the Salinity Course would be incomplete if no mention were made of the hospitality which the participants and in particular the Unesco instructors received from officials and private persons, Tunisian as well as French. On such visits the impressive achievements but also the still remaining problems of the young Republic in the fields of education, public health, organization and employment of labour were frankly discussed.

W. R. VAN WIJK

THE NATIONAL CHEMICAL LABORATORY

THE Report of the National Chemical Laboratory for 1958 follows the same general lines as previous reports (Department of Scientific and Industrial Research. Report of the National Chemical Laboratory, 1958. Pp. iv+97. London: H.M. Stationery Office, 1959. 5s. 6d. net). After a preliminary statement that the name of the Laboratory has been changed to indicate more precisely its true functions and that a steering committee is now responsible for the research programme, the Report sets out the various lines of work on which the Laboratory has been engaged. Broadly speaking, these fall into six main groups: the extraction of metals, the preparation of pure elements and compounds and the determination of their properties, the corrosion of metals, the development of new materials, analytical research and services, and microbiology. Some at least of these divisions have been represented by work in the Laboratory over a period of years, that on the corrosion of metals being a special case in point. Each year, however, new problems have come forward and as a result it appears that the staff of the Laboratory is now much larger than it was formerly.

In addition to its own work the Laboratory has for some years maintained an advisory service. Each year numerous inquiries are received for advice and assistance on all topics related to its own work, particularly such as concern the corrosion of metals and the purification of organic compounds. In

addition, the Laboratory is often approached for advice on topics quite outside the scope of its researches. One example mentioned in the field of corrosion is that of the pitting of domestic copper piping in a housing scheme, and others show that this advisory service must be a valuable feature of the general activity of the Laboratory and that the problems coming in through it may sometimes prove very suggestive and important in relation to its own work.

The parts of the Report dealing with corrosion show that some fundamental work on the mechanism of corrosion is proceeding alongside investigations on various aspects of more directly practical interest, such as those on inhibitors. Work on the extraction of metals included studies of the extraction and recovery of uranium from a variety of ores, which is of interest to the United Kingdom Atomic Energy Authority, and on the separation of the rare earths. Of special interest is the section of the Report dealing with the preparation and properties of pure elements and compounds. In the case of metals it has long been known that the presence of even minute traces of impurities, sometimes so small as to prove extremely difficult to detect by ordinary analytical procedures, can lead to profound changes in properties such as hardness and chemical activity. The increasing importance of pure metals in modern metallurgical technology makes this part of the work of the