

WORLD POWER CONFERENCE

SECTIONAL MEETING IN NEW DELHI

A WORLD Power Conference (Sectional Meeting) was opened in Delhi on January 11 concurrently with the Fourth Congress of the International Commission on Large Dams and the First Congress on Irrigation and Canals. The number of delegates was 770. Of these, 340 were from thirty-eight different countries, and 430 from India. The delegates to the World Power Sectional Meeting alone numbered about four hundred, one-third being from India.

An inaugural address to the joint conferences was delivered by Mr. C. Rajagopalachari, Home Minister of India, who welcomed the delegates and in the course of his speech said that the world needs all sorts of people, but especially those who can discover and conserve natural resources of materials and forces, and can create the means for using these for the benefit and convenience of society with the minimum cost and the maximum useful results. The President of India, Dr. Rajendra Prasad, in a message read at the inaugural meeting, said such meetings provide the best opportunities for collecting the findings and pooling the experience of all participating countries for the greater benefit of humanity. Indeed, such international collaboration in the matter of advancement of scientific technique and knowledge is bound to unite the various nations with ties of goodwill and understanding, and help to establish an easing influence on the international political feeling.

Among other speakers at this meeting, Sir Vincent de Ferranti, chairman of the World Power Conference International Executive Council, stressed the need for adequately harnessing the power resources of the world for the good of mankind. He hoped that the Conference would forge many new ties between the East and West, and expressed the view that men of science, engineers and statesmen working together could raise the standards of living of the peoples to a level never before known. Among the papers to be presented at the Conference, he emphasized particularly those dealing with the use of electricity in agriculture and the co-ordination and development of industries and power resources. During this inaugural meeting, the Indian International Engineering Exhibition in New Delhi was opened by Sri N. V. Gadgil, Minister of Works, Mines and Power. The subsequent sessions of the three conferences were held independently in the Parliament House.

The programme of the World Power Sectional Meeting included forty-four papers submitted by engineers from fourteen different countries, including one delivered verbally from the U.S.S.R. The papers were classified into two broad groups. The first dealt with the use of electricity in agriculture and comprised papers relating to the use of electric power on the farm, in the home, in the processing of agricultural products and in irrigation. The second group included papers dealing with power applied to cottage industry, to light industry, heavy industry, railway traction and other transport, and to mines and power load planning. One paper covered the organization of research for dealing with problems of power generation and utilization. Six sessions were held, each of about three hours in duration, and each under chairmen appointed from different countries. Lord Citrine presided over the first of these. At the

commencement of each session a brief résumé of the papers to be considered was given by a reporter who also summed up at the close of the session.

Unfortunately, it had been found impossible, except in a few cases, to circulate the papers in advance of the meetings, so that speakers for the most part made their contributions to the subject under consideration without reference to the printed papers, and sometimes these contributions were only remotely concerned with the subject. Of the papers in the group dealing with the application of electricity to agriculture, that describing rural electrification in the United States was perhaps the most comprehensive; but each paper made some contribution of particular national interest. For example, a contribution from France indicated special measures taken in that country to develop rural loads; a British paper emphasized the benefits derived from the work of the Electrical Research Association and the National Institute of Agricultural Research relating to the supply of electricity for various farm processes including soil warming; "Rural Electrification in Ireland" described attempts to justify on financial grounds the supply of power to isolated farms; a paper from Canada showed how progressive reduction in supply-rates had been achieved by simplifying equipment and by the development of new methods of processing farm products; "Electricity in Danish Farming" described the use of electricity on a co-operative basis which has provided service to 93 per cent of the farms in Denmark; rural electrification in Madras State was considered in a paper which stressed the fact that 80 per cent of India's population live in villages and urged the importance of electrification as a factor in raising the standard of living. The last-quoted contribution described the use of electricity in the drying and withering of tea.

The supply of power to cottage and the light industries was referred to by a number of authors, and all dealt with various economic aspects of the problem. Some stressed the importance of State aid, having in view the desirability in some countries of dispersing into the rural areas the crowded population of the towns. There was some considerable argument on the economic advantages of distributing power in rural areas by single-phase circuits. One author emphasized the need for encouraging the farmer to use electric power by providing knowledge of improved farm techniques and by research into his special problems.

Several papers were devoted to the use of electricity in the production of fertilizers. Of particular interest in this connexion was the description of the Indian ammonium sulphate plant at Sindhri (Bihar State) now under construction, which when completed will have an annual output of 300,000 tons and use continuously about 40,000 kW.

The importance of irrigation to India and other countries in connexion with food production gave special interest to several papers on this subject. One from Egypt discussed the revival of basin irrigation by means of hydro-electric energy, and described interesting methods of combining irrigation and flood control with special reference to the

example of the control of the Nile waters. One from France considered the co-ordination of power development in existing irrigation systems. Another discussed a novel experiment in the United Provinces (India) of large-scale irrigation by lifting sub-soil water by tube-wells, using electric power derived from local low-head hydro-electric plants. Achievements of the Bureau of Reclamation in the United States, which included the use of hydro-electric power in multi-purpose river developments, were described. Apart from satisfying industrial and domestic demands, the electrical power generated from rivers is used in pumping plants to irrigate lands not served by gravity canals. It was urged that a scheme of this nature should be applied in many parts of the world in order to assist in augmenting food supplies for the needs of the increasing populations.

In the second group of papers, those dealing with traction, load planning, and the application of electricity to the light and heavy industries and to mining and metallurgy were most prominent. From the various papers on traction there appeared to be little difference of opinion as to the advantages of electric traction other than as regards the heavy initial capital expenditure. The merits of different systems were discussed in relation to local conditions, and the conclusion was reached by some authors that, owing to the high capital cost, D.C. traction is only justified with high traffic densities.

The economic advantages of A.C. power were discussed in a paper from France which gave information of experiments being carried out both there and in Germany, whereby the use of A.C. power at 50 c./s. can be facilitated and the overall cost of electrification reduced. In this connexion reference was made to the intention of British Railways, some of which operate at special frequencies, to change over to 50-c./s. supply with a view to interconnexion with the National Grid. With regard to power in the heavy industries, papers dealt with statistical information from several countries, indicating what has already been accomplished and what remains to be done. The point was stressed that the entire industrial economy is based on the availability of cheap power and that everywhere heavy industry is 'power hungry'. Information was given of the position in several countries of the present consumption in the major heavy industries such as electro-metallurgical and electro-chemical, in the manufacture of iron, steel and cement, the textile and allied industries, and the extent to which these industries are likely to expand in the future according to national needs. Two valuable papers were presented dealing with power and mines, one being more particularly concerned with problems relating to coal mining, and the other with metalliferous mining.

The papers on research dealt with the facilities needed to assist in providing the most effective plant for electrical power generation and distribution, and included reference to the various types of research organizations in Great Britain and the United States. An important paper from Great Britain on load planning stressed the fact that over the past half-century electricity supply has developed from a purely local amenity to a comprehensive, integrated service in connexion with which long-term planning is essential. It showed the relationship between electricity supply and the various aspects of national economy and gave illustrations of the interrelationships between industrial output and energy consumption in Great Britain and the United States.

A notable contribution that attracted much attention was the reference by Prof. Velander, of Sweden, to an economic survey that had been made in connexion with the transmission of energy over very long distances, in which the use of high-pressure gas of suitable calorific properties compared favourably with electrical power transmitted at extra high tension.

For the reasons already given, there was little discussion on the papers themselves; no very striking contributions came from the considerable number of engineers who spoke, and who for the most part referred to limited personal experience in the subject under discussion, and in some cases gave only a review of already well-known facts. While, in general, the discussion brought out little of value, the Conference was a successful one and of real value not only in providing a permanent record of a great fund of up-to-date knowledge, but also in providing opportunities for individual discussion and exchange of experiences between engineers having similar interests and coming from a number of different countries.

The handling of three large conferences simultaneously, as well as dealing with the impact of the International Engineering Exhibition, was a great feat of organization. The success of the meetings was greatly helped by the availability of Parliament House with its spacious and excellent accommodation, which enabled the three conferences to proceed simultaneously without overcrowding or mutual interference. Apart from the organized programme, advantage was taken of the presence of a number of international experts to hold a discussion on the problem of high-pressure, high-temperature steam for power generation in relation to India's needs. The U.S.S.R. delegates held an informal discussion on engineering problems of their country, to which delegates from other countries were invited.

The World Power Conference ended in Delhi on January 16, after which a large number of delegates joined the two study tours, visiting various industrial centres and engineering plants in India. The tours extended from Amritsar in the north-west to Calcutta in the east, and ended in Mysore in early February. During the Conference delegates were invited to a reception by the President at Government House, to a banquet at the Imperial Hotel, and to a reception by the Institution of Engineers (India) held at Red Fort. A week-end excursion to see the Taj Mahal and the Fort at Agra was organized. Various events of local interest were planned for the ladies of the party.

A. P. M. FLEMING

BIOLOGICAL HAZARDS OF ATOMIC ENERGY

A CONFERENCE on "The Biological Hazards of Atomic Energy" was held at the Royal Institution, London, during October 20-21, 1950, under the auspices of the Institute of Biology and the Atomic Scientists' Association, and with the support of the British Association and the British Institute of Radiology.

A large attendance, representative not only of science and medicine, but also of industry and public affairs, and which contained many overseas observers, left no doubt of the desire for a more general assess-