

and shows how a desert region of Western Siberia was transformed in twenty-five years into an industrial centre of 400,000 inhabitants. The site is 400 miles from the nearest large town and endures a winter temperature of -50°C . About 50 per cent of the electric power of the plant is obtained from waste products. The town is supplied with waste heat and gas from the coking plant. Other industries, for example, a cement factory and a food-processing works, are integrated with the combine.

The question of the best method of using power for metal production attracted some interest. One paper describes the methods of production of the light metals, aluminium, magnesium, titanium and beryllium, both by electrolytic and thermal processes; another, the production of ferro alloys (silicon, chromium, manganese); and a third the economics of producing pig-iron and steel electrically. As a rough rule, it is stated that economic equilibrium is attained between blast and electric furnaces for pig-iron production when the price of 1 kgm. of coal is about five times greater than the price of 1 kWh. of

electricity. For countries with a surplus of water-power the electrolytic production of hydrogen is suggested. This can be used as a raw material in nitrogen factories for fertilizer and other chemicals. The electrolysis of water at 30 atmospheres is described as being very efficient and requiring few personnel.

Generally the suggestion is that countries with large resources of power, particularly hydro-power, should encourage the construction of a large integrated metallurgical industry.

The Conference reviewed many aspects of development and much detailed information is published. There is little that is completely new except for the desire of the backward countries, now gradually being realized, to equip themselves with power resources. There was a growing awareness that many problems can only be solved by international co-operation, and that the world is becoming a single economic unit. The day must come when national power systems become international systems and international systems become continental power grids.

F. D. ROBINSON

OBITUARIES

Dr. G. A. Steven

GEORGE ALEXANDER STEVEN, whose death occurred on April 7 at his home in Yelverton, South Devon, was born at Freswick, Caithness, on April 13, 1901. He was an undergraduate at the University of Edinburgh during 1924–28, being Vans Dunlop Scholar in 1926. He was appointed student probationer at the Plymouth Laboratory of the Marine Biological Association of the United Kingdom in 1928, and joined the permanent staff of the Laboratory in 1929.

Steven, who had practical experience of the sea and fishing in his youth, studied chiefly the biology of commercial fishes, especially the rays and skates and the mackerel. His comprehensive survey of the biology and fishery of the mackerel in the English Channel and its western approaches formed a noteworthy contribution to our knowledge of that species. He also undertook special investigations to assess the possible damage to local fisheries in Devon and Cornwall by seals, and shags and cormorants. In the study of seals he visited all the likely caves on the north coast of Cornwall and made a census of the population.

In 1939 he accepted the post of director of the Newfoundland Fisheries Research Laboratory at St. Johns, in succession to Dr. Harold Thompson. Almost immediately, however, the St. Johns Laboratory was destroyed by fire, and further activities were curtailed by the outbreak of war. After his war service he decided to remain on the staff of the Plymouth Laboratory.

Steven saw service with the Expeditionary Force in France in the First World War, and in the Second World War he served in the Royal Navy. During 1942–45 he was seconded from the Navy to act as fishery development officer of Sierra Leone under the Colonial Office. He was based at Freetown, and under the many difficulties created by the circumstances of war he helped to lay the foundations for post-war fisheries development in West Africa.

His practical knowledge of fishing vessels was put to good use in the assistance he gave in the design and equipment of the Association's research vessel

Sarsia. His interest in fishing gear led to the writing of a small book entitled "Nets: How to Make, Mend and Preserve Them", which proved very successful. During 1930–40 and 1946–48 he took part in the supervision of the university students' Easter courses at the Plymouth Laboratory. Steven was a D.Sc. of the University of Edinburgh and Fellow of the Royal Society of Edinburgh.

The sympathy of his many friends will go to his widow and two sons.

F. S. RUSSELL

Mr. Frank Kingdon-Ward, O.B.E.

WITH the passing of Frank Kingdon-Ward on April 8, at the age of seventy-two, the last of the great plant collectors and explorers in the Forrest-Farrar tradition has left the scene. It is now no longer possible for westerners to travel alone for months in the vast areas of Tibet, north Burma and western China, where many of the best of the plants now cultivated in our gardens are to be found in their native habitats. Perhaps the artificial barriers which now block the way will one day be lifted but, in any event, conditions have changed. The aeroplane saves weeks of foot-slogging, and modern medicine provides the prophylaxis to keep the traveller fit. No doubt soon the helicopter will deposit the plant collector on the tops of mountains which it would otherwise have taken months to reach.

Those who are prepared to accept the penalties of one-man exploration—the physical hardship, the utter loneliness of months in a strange land among strange people, the nauseating dullness of a diet of tampa washed down with rancid butter tea and all the inconvenience of travelling 'light', must possess exceptional courage, determination, loyalty to their sponsors and devotion to their purpose. These qualities, combined with modesty—for all the great explorers were modest men—are qualities which make men great and Kingdon-Ward possessed them in full measure. He was no mere explorer and plant collector. It is true that his contributions to our knowledge of the geography of Tibet, north Burma