

civil aviation. Sir F. H. Sykes spoke upon the great advantages to be gained by the establishment of a complete system of aerial routes linking up the wide-spread portions of the Empire, with Egypt as the "Clapham Junction" of the India, Australia, and Cape routes. The last route was discussed at some length, and an account given of the work which has been done in establishing a chain of aerodromes from Cairo to Cape Town. The great usefulness of the aeroplane as a means of reaching outlying places near the route which have at present no rapid means of conveyance was commented upon.

The main outline of the lecture is summed up as follows:—

"It is not enough to believe—as I firmly do—that aerial transport being right is bound eventually to succeed. The seasoned tree can stand alone; the shooting sapling must be stayed. Some of the requirements of aviation on an Imperial basis are:—

"(1) The maintenance of a highly efficient fighting force.

"(2) The expansion of commercial aviation to promote British trade and to supplement the fighting force when necessary by a reserve of *personnel* and material, knowledge and experience.

"(3) The co-ordination and co-operation of aerial communication throughout the Empire, and its relations to other countries.

"(4) The organisation of routes, aerodromes, ground communication, and meteorological services on an Imperial basis.

"(5) The energetic promotion of research and the encouragement of design.

"(6) Money to assist the institution of experimental mail services.

"(7) The encouragement of land survey, forest patrol, and other work in which aircraft can be utilised.

"This year will, I hope, go down to history as marking the birth of a sound, virile, and truly Imperial air policy."

As a practical commentary on the lecture comes the projected *Times* flight by a Vickers' "Vimy" aeroplane from Cairo to the Cape, referred to last week, over the route described by Sir F. H. Sykes. The machine left Cairo at 9.45 a.m. on February 6, and reached Khartum on February 8, leaving there on February 10. Should the flight along the African continent prove a success, the feat will be the third great triumph for this type of aeroplane, the present machine being practically identical with those which accomplished the Atlantic and Australian flights. The crew consists of two pilots, one mechanic, and a rigger, while the well-known zoologist, Dr. P. Chalmers Mitchell, is passenger and scientific observer. The object of the flight is primarily to determine the possibilities of the new route, but it is also to be regarded as the first attempt at exploration from the air, as much of the country to be crossed is at present unsurveyed. The result of this experiment will be awaited with interest. If success is achieved, a new proof of the commercial possibilities of the aeroplane will have been established—a proof that should convince the most sceptical.

THE DEVELOPMENT OF SPITSBERGEN.¹

IN view of the increased public interest in Spitsbergen on account of the revival of mining activity and the recent political settlement, Dr. R. N. Rudmose Brown's new book upon the

¹ "Spitsbergen: An Account of Exploration, Hunting, the Mineral Riches and Future Potentialities of an Arctic Archipelago." By Dr. R. N. Rudmose Brown. Pp. 319. (London: Seeley, Service, and Co., Ltd., 1920.) Price 25s. net.

country is particularly opportune. It is further welcome because it provides the only modern work in English dealing with Spitsbergen in its general aspects; for Sir Martin Conway's "No Man's Land" is an historical volume, narrating the discovery and the early history of whaling and hunting in the archipelago and the adjacent seas. The only other recent general works are those of Holmsen in the Norwegian, and of Cholnoky, curiously enough, in the Magyar language.

Whatever its mining possibilities are (and scepticism has recently arisen), the situation of Spitsbergen as the most easily accessible polar land, along with its wonderful climate, will inevitably lead to its becoming a favourite European playground. In summer, Spitsbergen has a climate, especially in its central and western regions, which is a good deal more tolerable than the average British spring; and, apart from the drawback of polar darkness, its winter climate is said to compare quite well with that of Canada. It has glorious mountain, fiord, and glacier scenery, and the study of its spectacular physical features and natural history will afford exhaustless attractions for scientific travellers.

Dr. Rudmose Brown's book first deals pleasantly with the discovery, physical features, climate, and natural history of the Spitsbergen Archipelago, the geology, however, being deferred to the chapter describing its mineral wealth. The succeeding chapters trace the history, exploration, and economic development of the country. Spitsbergen history may be divided naturally in order of time into the whaling, hunting, exploratory, and economic periods. The whaling industry has been extinct for a century or more. Hunting and trapping have recently revived, after a period of exhaustion, in response to the high prices now obtainable for furs. Dr. Brown records and deplores the unfair and ultimately disastrous poisoning methods practised by some Norwegian hunters. The Norwegian Government, it is hoped, may now be able to deal adequately with this and other crying abuses.

The mining development of Spitsbergen dates from 1904, although coal and other minerals had been found much earlier. The only large-scale mining has been in the excellent Tertiary coal of Advent Bay, which was opened up by an American company, but is now carried on by Norwegians. In 1912 40,000 tons were raised, but in 1919 it is believed that this total will have been more than doubled. While British companies claim areas more than three times as large as those of all other nationalities combined, the war unfortunately stopped their development schemes, and it was only in 1918 and 1919 that they were able to resume their activities and send up prospecting expeditions.

Besides coal, iron ore of good quality is said to occur; gypsum is certainly present in enormous amount; and traces of copper, gold, molybdenum, lead, and asbestos have been found. Oil and oil-shales are possibilities. Nevertheless, Norwegian geologists, who for the last ten years have carried

on extensive prospecting work, especially in the western mountain ranges, are very sceptical as to excellent and doubtless contribute to its high price, but the two maps are comparatively poor.

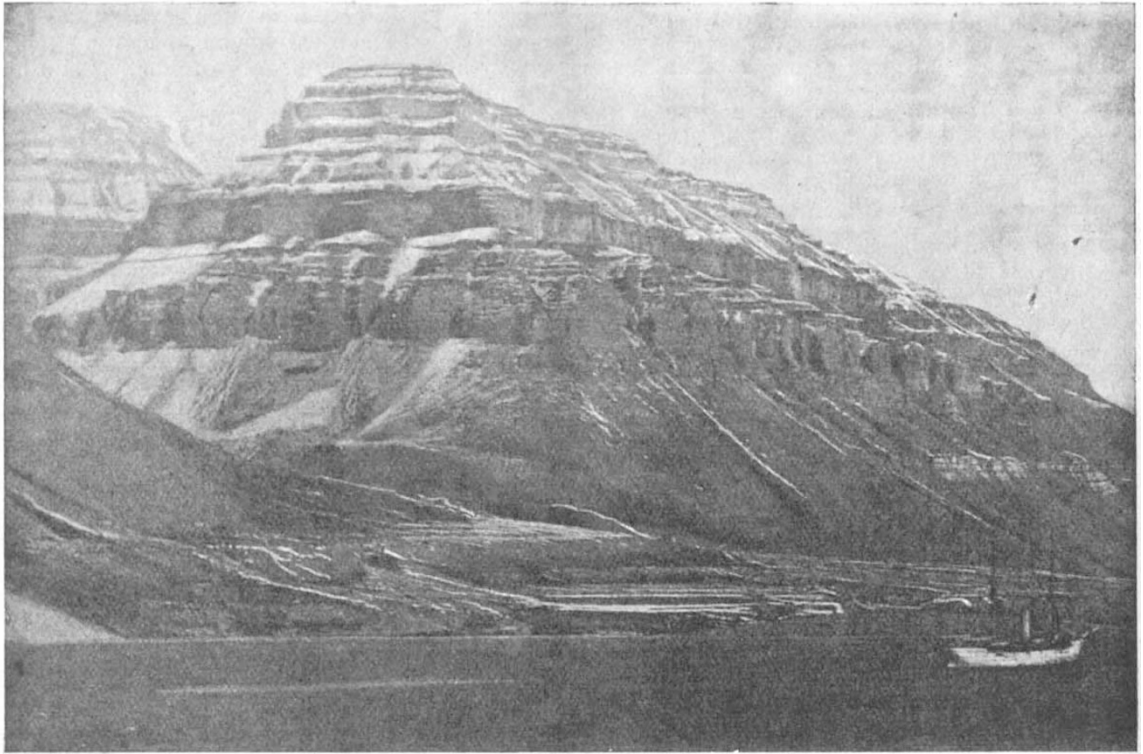


FIG. 1.—Temple Mountain from Bjona Haven. The Prince of Monaco's yacht, the *Princess Alice*, at anchor. One of the most important British estates in Spitsbergen is situated here. From "Spitsbergen."

workable mineral resources, except coal, as may be gathered from a perusal of recent correspondence in the *Mining Magazine*. A fierce but feeble answer to these letters by a representative of a British company interested in Spitsbergen fails to meet the facts brought forward by the Norwegian geologists, especially in regard to metalliferous ores. The reviewer believes that mining development in Spitsbergen will rest largely upon coal, with perhaps oil and oil-shale, obtained from the flat-lying rocks of the central tracts.

The later chapters of the book discuss certain German schemes for the exploitation of Spitsbergen, now happily brought to naught, its modern history, and its political status. Spitsbergen is no longer a No Man's Land, and the last chapter of Dr. Brown's book is therefore already outdated by the decision of the Supreme Allied Council to assign the sovereignty of Spitsbergen to Norway.

The twenty-two plates illustrating the book are
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Mistakes and misprints are commendably very few. "Ordovician" is misspelt on p. 216, and

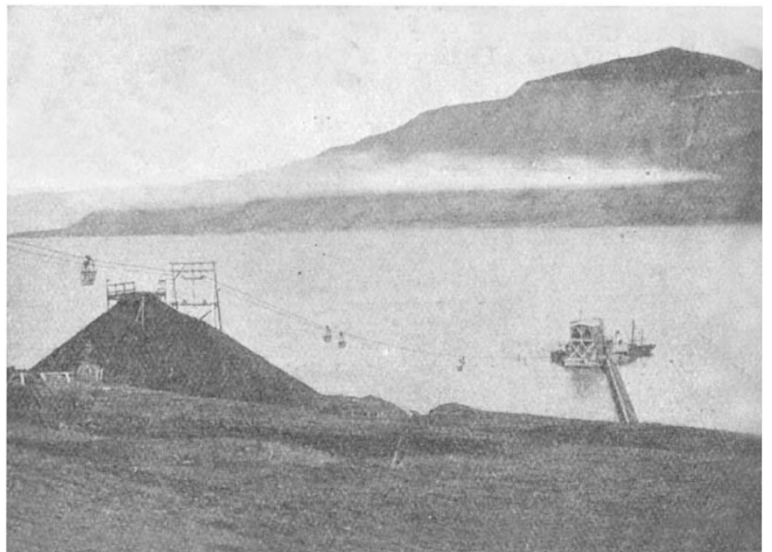


FIG. 2.—Longyear Mine, Advent Bay. Wire ropeway from the mine, coal dump, and jetty with a vessel loading alongside. From "Spitsbergen."

there is a discrepancy in the story of Klaus Thue's wintering on p. 106. A bibliography of the more

important works on Spitsbergen would have enhanced the value of the book to interested readers, who will nevertheless find it the best available compendium of Spitsbergen information.

G. W. T.

THE LEAGUE OF UNIVERSITIES.

A REPRESENTATIVE body of British university men and women spent the autumn of 1918 in America as the guests of the United States. By invitation of the Government of the French Republic a similar delegation visited the universities of France last May. From the Belgian Government an invitation was received and accepted in November. The reports of these three university missions may be obtained from the Universities Bureau, 50 Russell Square, W.C. 1. In each of the countries visited the representatives of the United Kingdom were received with profuse hospitality and treated with the utmost consideration by the Head of the State and his Ministers, as well as by the heads of the universities and their professors. In innumerable speeches the general objects of this university "entente" received eloquent and enthusiastic expression, stress being laid upon the necessity, in the interests of the world's peace, of bringing the intellectual leaders of the allied and associated countries into closer and permanent touch. There may be rivalry amongst the universities of the civilised world, but there can be no competition, in the sense in which commercial enterprises compete, with the risk of producing discord. All are engaged upon a common task, the making of knowledge, and the training of men and women for professions and occupations in which learning is the only trustworthy equipment.

During the last three or four years the universities of the United Kingdom have discovered that their power and influence may be greatly strengthened by taking counsel together, without any sacrifice of independence. There is the same need for conference and co-operation amongst the universities of the world. Amongst definite problems discussed was the interchange of teachers and students—the migration of those who dispense and of those who seek knowledge, adjusted to modern conditions. The reports of all three missions are in approximately similar terms. It is recognised that professors who are heads of departments have many administrative duties in addition to their duties as teachers. Their universities cannot spare them for any considerable time, nor can their duties be taken over by strangers. Heads of departments might with great advantage give short courses of lectures in foreign countries, provided the language difficulty can be overcome. Professors of highly specialised or recondite subjects, for which the demand is limited or occasional, might well distribute their services amongst several universities, spending an occasional year abroad.

With regard to migration of students, it is clearly desirable that students of languages should

spend a part of their undergraduate career in foreign countries; but with this exception it is almost universally agreed that only in rare instances would it be to the advantage of a student to leave the university in which he is matriculated until after graduation. The first year's work at any one university is not easily articulated to the second year's work at any other. Nor would any university be content to part with its third-year students. For a graduate, every possible facility for migration should be afforded. Even though his new university be not so well equipped for work in the subject to which he is devoted, it is to his advantage that his experience should be enlarged. So far as British universities are concerned, post-graduate study will be encouraged by the new Ph.D. degree which all have now established. The same degree is obtainable in the U.S.A., and its equivalent, the doctorat de l'Université, in France and Belgium.

NOTES.

THE new session of Parliament was opened in state on Tuesday by the King, who was accompanied by the Queen and the Prince of Wales. Among the matters referred to in the King's Speech were a Bill to make further provision for education in Ireland, measures to stimulate and develop the production of essential foodstuffs within the United Kingdom, and to encourage and develop the fishing industry, and Bills providing against the injury to national industries from dumping and for the creation of an adequate supply of cheap electric and water power.

As successor to the late Mr. Henry Watts in the editorship of the Journal of the Chemical Society, and as the first secretary and registrar of the Institute of Chemistry, Mr. Charles Edward Groves, F.R.S., was for many years a very prominent figure in the chemical world. His scientific education was received under Hofmann at the Royal College of Chemistry, where he was contemporary with a group of young men of whom many became distinguished men of science. In October, 1862, Mr. Groves became senior assistant to Dr. John Stenhouse, F.R.S., who had established a private laboratory for research in Rodney Street, Pentonville, and there he remained as factotum until Dr. Stenhouse's death in 1880. He then became lecturer in chemistry at Guy's Hospital. The greater part of Mr. Groves's scientific work was done in the Pentonville laboratory, and was published under the joint names of Stenhouse and Groves, though, in consequence of Dr. Stenhouse's infirmity, the work was mostly done by his assistant. Mr. Groves was a good manipulator and a skilful analyst, and not only assisted in the research laboratory, but for five years also took part in the work of external assayer to the Royal Mint—an office held by Dr. Stenhouse until 1870, when it was abolished. Mr. Groves in his early days was a very active walker and climber in the Alps. For many years he spent his summer holidays in Switzerland, and will be remembered by many of the senior members of the Alpine Club. His death on February 1, at an age approaching eighty years, leaves