

rich contrast in vegetation to the rest of the Division. It is regrettable that the nature of the writer's duties did not permit more than two hurried visits to these falls and that geographical notes then taken have since been lost.

THE MOUNT EVEREST EXPEDITION AND THE MOUNT EVEREST FLIGHT

THE fourth Mount Everest Expedition is now completely organized and some of the party of fourteen have sailed for India on the s.s. *Comorin* with Mr. Hugh Ruttledge; others followed a week later, and at Darjeeling will meet those members already in India. About March 20 they will leave Darjeeling on the long march through Tibet, probably by the Chumbi valley, as in former years, though perhaps if transport can be arranged by the shorter but less frequented route *via* Gangtok and the Serpo La. They should be at the old base in the Rongbuk valley, above the monastery, some time after the middle of April, and may hope to have established the advanced base at Camp III, or even perhaps at the North Col, by the middle of May. One must pray that this year they will not be driven out again by unseasonable storms, as their predecessors were in 1924, and lose essential time and strength in re-establishing themselves.

The leader has from the Mount Everest Committee only the most general instructions. He will be free to choose his route and his plan of attack; but there is no reason to anticipate that there can be any deviation from the route of 1922 and 1924 as far as the camp below the Northeast Shoulder. No one has ever found a better way: arguments have been heard in favour of climbing the whole way from the head of the glacier by the north-eastern arête, cutting out the North Col Camp with its approach that is usually nasty and has been at times dangerous. But one may conclude from former experience that the North Col has one great merit as a place for Camp IV, if it has not changed very much: that there is a terrace of ice below the crest, which gives some shelter from the prevailing west wind, and might even provide a site for ice caverns in the style of Bauer's on Kangchenjunga.

On the other hand, one must bear in mind the possibility that the topography of the North Col may have changed so much since 1924 that it is no longer a sheltered terrace but offers only a wind-swept crest defended by crevasses. No one has ever, we think, explained why the North Col is as it is. The slopes which it connects are steep and nearly bare of snow. There is no collecting basin for the ice which fills the eastern slopes. It must therefore come from accumulations of snow gathered in the lee of the crest. But why then is it glacier ice in solid masses, deeply crevassed, instead of the *névé* snow usual in such a position? That is a problem which invites solution: a little burrowing into ice caverns may help in its solution, and it will be perhaps the only geographical problem to be solved by this expedition, which is resolutely unscientific.

There were some who had ambitions to see the photo-theodolite which did such good work in the Shaksgam applied to the detailed survey of the mountain.

The highest summit of the world deserves cartography more precise, if it could not be more beautiful, than the map which M. Charles Jacot-Guillarmod drew from the not too precise surveys and the admirable camera pictures of former expeditions. If two of the party could have been chosen for this stereo-survey, and left to deal with it while the others climbed, that would have sufficed. But it has been from the first the policy of the Committee to keep this year one single object in view, to gain the summit, and nothing has been allowed to divert any part of the strength from that objective. It will therefore be a sombre and strenuous business, with no scientific relief; nor, if we understand the intention of the leader, any of those other diversions which have been a little conspicuous in some Himalayan climbs. No gramophones will affront the silence of the mountains on the pretence that they amuse the porters. No man with a kinematograph camera will be allowed to pose a party for a good shot, still less to stage in a convenient crevasse any scenes of climbing the ice walls that guard the summit. There will be no film at all of standard size, and nothing of the beautiful pictures so boldly made and so little staged by Captain Noel in 1922 and 1924. A few cine-kodaks there may be in the hands of the party, enough perhaps to enliven and elucidate the account of the earlier stages in the operations. But it is doubtful if they will get beyond the North Col. Indeed, if one recalls the events of former years, one seems to remember that though there were V.P.K. cameras on the high climbs, they produced very few pictures. Somervell took a few in both years, being of that resolute character that could pull out a sketch-book also and make a pastel drawing at 26,000 feet: the drawing which is preserved in one of the frames that hang in the corridor on the first floor of the Society's house.

The present expedition has had the good fortune to find in its leader a man who was able and willing to devote his whole time to the job from the day of his appointment early in September, and to have as its secretary a traveller of great experience in the Arctic. It is certain therefore that every detail of the equipment and stores and clothing has been most carefully considered. It was early determined that no great supply of oxygen should be carried: there was only too much reason to fear that the outfit of 1924 had contributed to failure rather than success. But a much smaller and lighter oxygen apparatus will, if circumstances permit, be carried to the highest camp, and then used if it seems desirable, for a final stimulus or restorative.

The expedition will carry a field receiver for W/T reports of the progress of the monsoon, but will have no transmitting apparatus. Despatches will be sent back from the base camp from time to time, with photographs, and the world rights in these despatches have been purchased this year by the *Daily Telegraph*, to which our readers are referred for the latest news of the expedition. The *Journal* will, as in former years, publish each month from April or May a summary of the news.

The expedition is commanded by Mr. Hugh Ruttledge, formerly of the Indian Civil Service, who has climbed for many years in the Himalaya round Nanda Devi. His party is made up of the following gentlemen whose names are given in alphabetical order: Captain E. StJ. Birnie, of Sam Browne's Cavalry, one of those of the Kamet Expedition who reached the summit; Major Hugh Boustead, Commandant in the Sudan Camel Corps, who made an

expedition to Lhonak in the Eastern Himalaya to prepare himself for Mount Everest; Mr. T. A. Brocklebank, stroke of the Cambridge boat for three years, and well known in the Alps; Mr. Colin G. Crawford, who made an attempt on Kangchenjunga in 1920, and was a member of the Mount Everest Expedition in 1922; Dr. C. R. Greene, one of the two medical officers of the expedition, another of the Kamet party who gained the summit; Mr. J. L. Longland, of Durham University, one of the best known of the younger generation of British guideless climbers in the Alps; Dr. W. W. McLean, recently appointed to the English Mission Hospital in Jerusalem, the second medical officer of the expedition, and a member of the Alpine Club; Mr. E. O. Shebbeare, of the Indian Forest Service, transport officer of the Mount Everest Expedition of 1924; Mr. E. E. Shipton, another member of the Kamet party, who recently climbed Mount Kenya; Mr. F. S. Smythe, a member of the Dyhrenfurth Expedition to Kangchenjunga in 1930, and leader of the successful expedition to Kamet; Mr. L. R. Wager, one of Mr. Watkins's expedition in East Greenland in 1930-31, who took part in the strenuous climbing of Mount Forel; Mr. G. Wood-Johnson, also a member of the Dyhrenfurth Expedition to Kangchenjunga, who will be one of the transport officers of the expedition; and Mr. P. Wyn-Harris, who was a companion of Mr. Shipton on climbs in Kenya and Ruwenzori.

By a coincidence which may be either happy or embarrassing, as events will prove, the organization of a British flight to Mount Everest has matured at such a time that a powerful machine, fitted with survey cameras, may fly over the summit from the south while the climbing expedition is approaching it from the east and north. The plans submitted to the Council of our Society by Colonel Blacker in preliminary form in the spring of last year have since been greatly modified and improved, thanks to the generosity of Lady Houston, whose financial support has made it possible to plan the flight without having as its first and compelling object the production of a saleable film. The Council expressed to the Secretary of State for India the opinion that good photographs of the massif of Chomolung from the south would be of scientific interest and importance, and we understand that the principal object of the flight as now organized, under the command of Air Commodore Fellowes with the Marquess of Clydesdale as chief pilot, and Colonel Blacker as principal observer, will be to secure these photographs, vertical and oblique. They will have more importance than can be realized immediately. The problem of plotting a map from a series of photographs in which the ground scale will vary so rapidly must be soluble, but at present cannot be considered fully solved. It is therefore very necessary that the cameras shall be calibrated with all possible precision and the plates carefully preserved after they have served their immediate purpose. The ground control must at present be insufficient: but there is no reason why in some future time it should not be possible to make it sufficient by stereo-survey from ground stations, even at great distances, as for example from the Singalila ridge.

The two expeditions are complementary. The climbers are permitted to pass through Tibet, but have always been refused entry to Nepal. The airmen have received permission from the Nepalese Durbar to fly high over Nepal, and have undertaken not to trespass over the border of Tibet.

The Society will wish both expeditions all success, and will hope that about July it may be possible to illustrate the climbers' conquest of the summit by a photograph from the Mount Everest flight.

SCIENTIFIC RESULTS OF DR. TRINKLER'S CENTRAL ASIAN EXPEDITION

WISSENSCHAFTLICHE ERGEBNISSE DER DR. TRINKLER'SCHEN Zentralasien Expedition. Band I (viii+134+xvi pages). Geographische Forschungen im westlichen Zentralasien und Karakorum-Himalaya. By [the late] EMIL TRINKLER; nach dem nachgelassenen Manuskript herausgegeben [by ILSE TRINKLER and GÜNTHER KÖHLER]. Band II (x+196+xxii pages). Geologische Forschungen im westlichen K'un-Lun und Karakorum-Himalaya. By HELLMUT DE TERRA. *Berlin: Dietrich Reimer and Ernst Vohsen 1932. 12 × 9 inches; illustrations and maps. M.32 and 44 (two vols. together M.70)*

IT is sad that the learned author of the brilliant study which forms the first of the two volumes here noticed should have been the victim of a motor accident. The book, which has been edited by Frau Ilse Trinkler and Dr. Günther Köhler, contains admirable descriptions of the country seen during the journey Dr. Trinkler made during 1927-1928 with Drs. H. de Terra and W. Bosshard across the Tibetan Highlands and over part of the Tarim Basin. But it is something much more than a series of descriptions of country, for it contains philosophical discussions of a variety of problems regarding Central Asia to the development of which the author has brought great erudition, wide experience, and shrewd judgment. For such a compendium of geographical observations it is unusually readable on account of the judicious mixture of fact and theory.

The first part of the work is concerned with the lofty highlands lying between the Upper Indus Valley and the Tarim Basin. In the second part attention is directed to the Tarim Basin itself, and to a short synthesis embracing all of Central Asia. The route is at first described stage by stage from Leh on the Indus, *via* the Chang pass, Tankse, Pangong, Shyok, Marsimik, Chang Chenmo, Lanak Lingzitang, Laktsung, Aqsaichin, Yang pass, and Qaraqash to Sanju, and then back *via* Kilian, Suget, Baksum Bulaq, Karakoram pass, Depsang, Burtsa, Sasir pass, Panamik, and Kardung pass to Leh. From there the party followed the well-known route *via* Nurla, Kargil, and Dras to Srinagar. In this region three main topographical units were distinguished. The Karakoram bundle of ranges lies in the south-west, the western Tibetan Highland plateau including Lingzitang and Aqsaichin in the central part and the Kun Lun mountains with their foothills to the north-east. The topography supplies abundant evidence, which is lucidly described, that the present features are a result of ice and frost action upon an older preglacial surface of normal sub-mature character. The original hills and valleys were subjected to extensive glaciation which rounded off some of the protuberances and scoured out some of the depressions. When the ice melted great masses of gravel were deposited in the upper parts of the valleys and much fine-grained detritus was swept out to the plains and deposited as outwash fans or mud-flats. The gravel was then consolidated into conglomerates and fanglomerates, after which an advance of the ice occurred and