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he displayed in the life-history of the various communities visited, were richly rewarded, and his graphic account of the experiences which came to him and the episodes of which he heard tell, makes excellent reading.

It is perhaps not surprising to find him occasionally off the rails in regard to matters of historical fact, and as the book is admittedly not of the type to which one would look for history, the point is not of much moment; but what surely is greatly to be deplored is the author's light-hearted readiness to play the rôle of Simon Peter, and to belittle the faith of his fathers as gratuitously as he does (pp. 46 and 213). Oh, Shade of Charles Doughty!

When the reviewer reads these passages he cannot help recalling the case of an Oriental who was once a candidate for a clerical post in his employ. To a letter enumerating his qualifications and enclosing his credentials, this gentleman naïvely added the following: "P.S.—I am ready to convert at any time."

But did our author really become a Muslim, as seems to be assumed? Surely he must have misunderstood Shaikh Medtkal, when he quotes the latter as saying that "there is nothing more required to live as a true Muslim and enter Paradise than the repetition of La Illaha illullah: Mohammed Rassoul Ullah." Time was when a touch of the surgeon's knife was also essential for the fashioning of the complete Muslim, but to that rite our author does not seem to have submitted hinself, so after all he may not be irrevocably lost to the Christian fold. P. Z. C.

THROUGH THE HEART OF AFGHANISTAN. By EMIL TRINKLER. Edited and translated by B. K. FEATHERSTONE. *London: Faber & Gwyer* 1928. 9×6 *inches;* 246 *pages;* 44 *illustrations;* 1 *folding route-map.* 15*s*

AFGHANISTAN; EINE LANDESKUNDLICHE STUDIE. By EMIL TRINKLER. (Ergänzungsheft Nr 196 zu *Petermanns Mitteilungen*) *Gotha: Justus Perthes* 1928. 11×7 *inches;* 80 *pages;* 3 *text-figures,* 4 *illustrations and* 4 *maps*

Dr. Emil Trinkler is a German geologist who in 1923–24 made a journey across Afghanistan from Turkestan to the Khyber Pass on behalf of a newly founded Afghan trading company. His geological investigations enabled him to see more of the country than would fall to the lot of an ordinary traveller. Moreover he was prepared for his task by an interest in the countries of Asia dating from his school days—an interest sufficiently intense to lead him to equip himself with a knowledge of Persian. In 'Through the Heart of Afghanistan' he has given a delightful pen picture of his travels. The book has gained, rather than lost, by Mr. Featherstone's sympathetic translation; the English edition is more attractively produced than the original German, and has a map showing the author's route. Entering the country—after lengthy delays resulting from a lost passport—at Chehil Duktaran, he travelled by Herat, up the Hari Rud valley, across the Akserat and Unai Passes to Kabul. The winter of 1923–24 was spent in the Afghan capital; in January 1924 a geological expedition to investigate the coal and iron deposits in the Hindu Kush north of Kabul was undertaken at the request of the Amir. Kabul was left on March 18 *en route* for Peshawar, but a return was made in June, the capital being finally left in October. The author has given us more than a pleasant account of his sojourn in a country which was, until very recently, closed to Europeans. The summer of 1924 was marked by a serious rebellion, in the instigation of which there is no doubt Russia took a serious part. "Afghanistan is for Russia the stepping-stone to India. The inhabitants were discontented with the many changes brought about by the King; taxes

were heavy ; the people were grumbling, and the time was ripe for Russia to organize a revolution." Dr. Trinkler believes that " the Hindu Kush will again play a leading rôle in the decisive battle between the Russians and the British for the overlordship of Asia," but at the same time does not hide his admiration for British administration and statesmanship—" for where the Union Jack flies there is peace and good order. One is astounded when one sees what England has done for India."

The scientific results of the expedition, the publication of which was promised in the first book, have been summarized in ' Afghanistan ; eine Landeskundliche Studie.' This is an excellent, systematically arranged account of the geography of the country, with a valuable bibliography. It is interesting to note that the bulk of the literature dealing with Afghanistan is in English and is largely the work of officers connected with the Indian Government or Indian Army. Dr. Trinkler has evidently not seen the recently published work of M. Raymond Furon (' L'Afghanistan,' Paris, 1926), and it is interesting to compare the two works. Dr. Trinkler has collected systematically what is known of the country ; M. Furon has attempted a synthetic geographical description after the manner of the regional surveys of the French school. The French work is the more interesting and conveys a more vivid picture of the country to the mind of the reader. M. Furon has travelled more widely in the south on the Kandahar roads, and brings his personal experience to bear on the question of present-day communications in Afghanistan. Dr. Trinkler, on the other hand, gives an interesting summary of what is known of the routes followed by Alexander the Great, the Chinese Buddhists of the fifth to seventh centuries, the Arab geographers, the Mongol Jinghis-Khan, Babur, Marco Polo, and Benedict Goes. The French and German works are thus largely complementary, and both authors are to be congratulated on their contributions to the serious geography of the buffer state of Asia. L. D. S.

A TOUR IN SOUTHERN ASIA, 1925–1926. By HORACE BLEACKLEY. *London : John Lane Ltd.* 1928. 9×6 *inches ;* viii+298 *pages ; illustrations and sketch-map.* 12*s* 6*d*

This is a well-written travel book, which, going over familiar ground, furnishes, as such books should, a " live " report of places and peoples as they are now. The descriptions are good ; the author has an observant and humorous eye, a shrewd and caustic tongue. Perhaps his views are none the less enlivening because he occasionally lets his prejudices run away with him and land him in some inconsistencies.

There is a good deal of information on the problem of the half-caste. The Briton, though he will not agree, will do well to study the attitude of French and Dutch towards this most difficult question. Without giving any decisive judgment, the author at least implies that the common view of the half-caste inheriting " the vices of both races and none of the virtues " is a shallow one. Of course it depends entirely on the actual parents, usually drawn from a low class on both sides, whilst " chance " children are naturally sadly neglected. Given a reasonably decent parentage and fair opportunity the half-caste makes good. But whether his production is to be encouraged is another matter.

The most interesting part of the book deals with Cochin China—ancient and modern. A large section is devoted to Malaya and its constitutional questions. Unfortunately, on his own confession, the author did not come into any real contact with the Malays, and his remarks on the ubiquitous Chinaman do not show much understanding. There is a vivid account of the little-known Singapore mutiny of 1915, showing that the wild rumours of the China coast at the time were not so very exaggerated.

ship indeed—the *Buen Jesus*—which he had taken off the Chilean coast had been laden with treasure (some 10,200 lbs. of gold), but the Spanish captain had thrown it all overboard before his vessel was taken.

The *Mauritius* and *Hoop* reached the Philippines in October 1600, where they cruised for some time, making prizes of several Chinese and Japanese junks. On December 14 they were attacked off Manila by a Spanish galleon—the *San Diego*—and a " galizabra "—the *San Bartolomé*—under the command of Antonio de Morga. The *Mauritius* was boarded by the *San Diego*, and the Spaniards speedily made themselves masters of the upper works and deck. The Dutch crew retired below and at one time showed signs of yielding, but Van Noort seized a lighted torch and threatened to blow up the ship should they do so. This so impressed his crew that they renewed the struggle and forced the Spaniards back on their own ship, which got loose and sank in a few moments with great loss of life. Meanwhile the *Hoop* had been overhauled and boarded by the *San Bartolomé*, and her crew surrendered on promise of life—a promise which was afterwards inhumanly violated in Manila. The *Mauritius* continued her voyage to Borneo and thence to Madura and Java. After a short stay in this part of the Malay Archipelago the *Mauritius* continued her homeward voyage *via* the Cape of Good Hope, and arrived in Holland on 26 August 1601, having met with no further adventure worth relating.

Among the most interesting parts of the book are the description of the Chinese and Japanese junk trade to Manila, and Van Noort's fights with the Spaniards in the Philippines. The work is beautifully produced and supplied with excellent maps, a very full bibliography, and index. C. R. B.

THE ROYAL TOUR OF THE DUKE AND DUCHESS OF YORK. By TAYLOR DARBYSHIRE. *London : Edward Arnold & Co.* 1927. 7×5 *inches ;* xii+304 *pages, and illustrations.* 7*s* 6*d*

The duties of Royalty on tour are apt to be exacting, and the official journalist's in selecting the material for writing a vivid account of a Royal Tour not less so. Functions, ceremonies, addresses, and ovations occupy so much time and attention that the inward spirit of the places visited, their setting, the interesting natural features, are given but fleeting glimpses or are even altogether neglected.

From a geographical standpoint such a book as this cannot in any case give very much that is new, since the route chosen is naturally such that it takes in one populous and representative centre after another. Only very occasionally does the party escape from towns and crowds into the domains of nature.

Mr. Darbyshire's book forms a pleasantly readable account of the royal journey round the world. It is written in a brisk vein, with an eye not only to the distinguished travellers and their doings, but also to the striking incidents, and the interesting persons and things met with on the way. There is no question that the object of the tour in cementing the bonds of Empire were fully accomplished, and it is fitting that some accurate and readable record of it, such as Mr. Darbyshire has prepared, should be available to all of British race and allegiance. E. W. S.

INDIA BY AIR. By Sir SAMUEL HOARE. *London : Longmans, Green & Co.* 1927. 8×5 *inches ;* xx+156 *pages ; illustrations and sketch-map.* 6*s* 6*d*

This book has an interest of its own as the account of a flight to India which may be regarded rather as the first of a hoped-for regular series than as a pioneer flight in the usual sense of that term. It was carried out to a regular time-table and without any sensational variation from its plan. This fact was the outstanding feature and the chief merit of the flight, since it gives evidence that most of the physical and mechanical difficulties have been overcome.

Several of the photographs used as illustrations have considerable value as views of distinctive types of scenery, especially those of the desert and of some of the arid mountain country of the North-West Frontier of India. It is a minor comment that for one stage—Khoms to Benghazi—the route shown on the outline maps printed as end papers differs somewhat from that described in the text.

The route followed is one of the most obvious—across France and by the west coast of Italy to Malta, thence to Tripoli and along the coast to Palestine and on to Basra, from which it was again coastal to Karachi. It is clear that the development of such long-distance air-routes will raise new problems in the communications of the Empire, particularly in its political relations.

The book is well printed and illustrated; but its price seems high for the amount of matter in it. C. B. F.

REMINISCENCES OF ADVENTURE AND SERVICE. By Major-General A. W. GREELY. *New York: Charles Scribner's Sons* 1927. 9×6 *inches;* xii+356 *pages; illustrations.* 15*s*

To the geographer the main interest of General Greely's book lies no doubt in the fresh account which he gives of the Arctic Expedition of 1881–1884. Writing after forty years the leader is able to confirm his earlier judgments both of the men and the events, and of the self-sacrifice and devotion which were such conspicuous features of the ill-fated expedition. Apart from that, the book contains accounts of pioneer life in the Western States and more particularly of the difficulties of maintaining telegraphic communication in the seventies and eighties of last century. Some new sidelights are thrown on the Spanish-American War. All that General Greely writes is of interest, and equally so is the unconscious revelation of a life marked by high integrity and devotion to duty. J. M. W.

THE ELEMENTS OF ECONOMIC GEOLOGY. By J. W. GREGORY, F.R.S. *London: Methuen & Co. Ltd.* 1928. 8×5 *inches;* 312 *pages;* 63 *illustrations.* 10*s*

Professor Gregory has interpreted Economic Geology in a broad sense, and yet has contrived to compress an outline treatment of the whole into the brief space afforded by 300 pages. Written in a terse, almost jerky style, it would be difficult to find a geological text-book more closely packed with information. The author, as is well known, is a man of unusually wide interests and unusually extensive experience, and the reader of this book benefits by both. In a few words the non-scientific reader will find answers to questions of current or everyday interest which are neglected in larger treatises. What is kerosene? How did Noah caulk the ark? How does water become hard? At what rate is England growing at the expense of the sea? are all examples of questions answered by a single sentence. It follows inevitably that the book is dogmatic—"if the book had been twice as long some views would not have been rejected with the apparent dogmatism rendered necessary by the limitations of space." To a considerable extent, however, the author disarms criticism in this particular by giving very numerous references to original sources of the most varied character.

Rather more than half the volume is devoted to the consideration of ore deposits. Though frankly favouring one school, the author gives a clear summary of the varied theories of ore formation, and this is perhaps the best part of the book. On the other hand, to treat of modern soil science in less than seven pages is beyond even Professor Gregory's powers of compression.

L. D. S

The abolition of the slave trade proved an even more difficult matter than the suppression of piracy, and considerable friction was caused at times with foreign powers owing to the gross abuse of European (chiefly French) flags by the Omani slavers. As Sir Arnold puts it, "British men-of-war had to see slavers plying with impunity under the protection of a flag on which red, white, and blue—in the Gulf at all events—stood for something different from Liberty, Equality, and Fraternity." However, with the inauguration of the "Entente Cordiale" the position was considerably improved and the traffic is now practically wiped out.

Although this book is admittedly an historical rather than a geographical work, it is a pity that Sir Arnold Wilson has not told us more about the interesting, if unpleasant, characteristics of the geography and climate of the Gulf; for these must have had their share in moulding the character of the fierce and lawless tribes who inhabit its shores. As it is, this want is supplied in some measure by the excellent photographs which accompany the text and give us a good idea of the scorched and rugged grandeur of some parts of the coast.

The book does not pretend to be more than a compilation, but the work of selection has been judiciously carried out, and mistakes are singularly few. Plate XIII(*a*) is obviously wrongly attributed (unless painted at Ormuz in the Ice Age!), the date of Solebay (p. 167) given as 1676 should be 1672, and Sir Arnold's version of the first Dutch war in the Gulf contains several errors, but these are only minor slips, when the book is viewed as a whole. There is a very full bibliography and an excellent index.

A study of this work cannot fail to bear out Mr. Amery's statement in his Foreword: "Our record in the Gulf will bear the closest scrutiny. We have worked, not for ourselves alone, but for all nations. . . . We have been content to place our energy and enterprise into free competition with those of others, and to abide by the result. We can survey a century's work with a stout heart and a clear conscience." To which it might be added that Sir Arnold Wilson is not the least of those who have enabled us to do so. C. R. B.

TRAVELS IN TARTARY, THIBET, AND CHINA (1844–6). By E. R. Huc. Translated from the French by W. Hazlitt. With an Introduction by Paul Pelliot. 2 volumes. The Broadway Travellers Series. *London: George Routledge & Sons, Ltd.* 1928. 9×6 *inches;* V. 1, xliv+387 *pages;* V. 2, viii+406 *pages; and a map.* 25*s*

The record of the famous journey made by the Lazarist missionaries, Huc and Gabet, through Mongolia to Lhasa deserves a place in this fine series of travel books, and the editors have done well to keep Hazlitt's admirable translation unimpaired. It has not been reprinted in full for many years, although a new French edition was issued from the Imprimerie des Lazaristes, Peking, in 1924, edited by J. M. Planchet. Unquestionably Huc's 'Souvenirs' have everything which goes to make a great book of travel. They are the record of a journey which lasted eighteen months through country which at that time was almost unknown to Europeans: as Professor Pelliot might have mentioned in his introduction, no white man followed the missionaries until 1921, when the late Brigadier-General George Pereira succeeded in entering Lhasa from the east. Then the journey was one of almost unremitting hardship and danger; the caravan consisted of no more than three camels, a white horse and a black mule, with a couple of portmanteaux for personal baggage and a single cameleer for staff. And even more than this, the narrative itself has just those qualities of vividness and readability which are essential to make it live: those graphic touches, reported snatches of conversation, and intimate discursiveness which make it comparable with 'The Bible in Spain.'

Professor Pelliot supplies the modern transcription of the Chinese, Tibetan, and Mongol names in the text, and his introduction is scholarly, critical, and informative; he gives a sketch of Huc's and Gabet's careers; does not hesitate to show how Huc trimmed his narrative for public consumption, and discusses the debated question as to what induced the missionaries to penetrate as far as Lhasa. He proves, we think conclusively, that this was in the nature of an accident. There is no doubt that their instructions sent them to outer Mongolia with a view to founding a mission among the nomads. Yet Huc, when not ambiguous, definitely asserts that Lhasa was their objective from the start. Gabet, on the other hand, speaks of their détour to Lhasa as an accident. Professor Pelliot considers that "we must attribute to a combination of fortuitous circumstances the changes in the itinerary which, leading them to the south-west, eventually brought them to Lhasa," and suggests that the welcome the fathers received on their return to Canton turned Huc's head a little, and that, not wishing it thought that he had become a great traveller by accident, he let it be supposed that they had gone to Lhasa as a result of mature deliberation in the beginning. Such a conclusion is certainly in keeping with Huc's temperament and may well be the true explanation.

The two volumes are well indexed and handsomely produced, but they have one grave defect: the map is quite inadequate. It is on far too small a scale and shows few of the places mentioned in the text; while the spelling does not correspond either with Huc or with the scientific transcription. It would surely have been possible for the editors to have provided a map for each volume which would have enabled the reader to follow each stage of the journey as it is described. Their omission to do so is a serious blemish on a production for which, otherwise, there can be nothing but praise. O. R.

A RELATION OF A VOYAGE TO GUIANA BY ROBERT HARCOURT. Ed. by Sir C. ALEXANDER HARRIS, K.C.M.G. Hakluyt Society, Second Series, Volume 60. *London* 1928. 9×6 *inches;* xii+192 *pages; illustrations and maps*

In editing for the Hakluyt Society this early narrative dealing with British colonization in Guiana Sir Alexander Harris has carried out his task with painstaking accuracy, and the result is a volume which will be of real use to all who are interested in the origin and growth of imperial development as well as to students of the geography and ethnology of Guiana.

It was, however, unfortunate that the editor remained in ignorance of Dr. J. A. Williamson's standard work, 'The English in Guiana, 1604–1668' (published in 1923) until after he had completed his introduction. He would have been able therewith to strengthen the historical section of his introduction, which, as it stands, can hardly be regarded as adequate. Harcourt's 'Relation' is slight in actual size, but it constitutes a document of the first importance for overseas expansion in the early seventeenth century, and therefore merits more detailed treatment, from the historical side, than it has received in this edition. There are, for example, references to Harcourt in the Privy Council registers, the High Court of Admiralty Examinations, and other State papers in the Public Record Office, which it would have well repaid Sir Alexander Harris to examine. No serious student can afford to ignore the Record Office.

The chief importance of Harcourt lies in the fact that he played a notable part in the transitional period during which the English slowly turned from bucanneering and the pursuit of such will-o'-the-wisps as El Dorado to the more sober and more fruitful gains of trade and settlement. The present editor would have us believe that Harcourt was solely bent upon these latter aims and held in contempt the contemporary mania for "mountains of gold." Such a view would

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PRE-GHAL IN WAZIRISTAN: *A paper read at the Meeting of the Society, 4 June 1928, by*

CAPTAIN W. R. HAY

THE North-West Frontier of India is formed by a confused mass of mountainous ranges running roughly south-west and north-east from near Karachi on the sea to Chitral in the extreme north. The Afghan border, which is usually known as the Durand Line, follows a tortuous course through or along or below these ranges. For administrative purposes this mountainous tract, or rather such portion of it as is on the Indian side of the Durand Line, is divided into two Provinces—Baluchistan and the North-west Frontier Province; the latter, with which we are chiefly concerned this evening, being the more northerly of the two.

The North-west Frontier Province consists of five Districts and five Agencies. Reading from north to south the Districts are those of Hazara, Peshawar, Kohat, Bannu and Dera Ismail Khan. The Agencies are Dir Swat and Chitral, which is one unit, and the Khyber adjoining the Peshawar District, the Kurrum adjoining the Kohat District, North Waziristan adjoining the Bannu District, and South Waziristan adjoining the Dera Ismail Khan District.

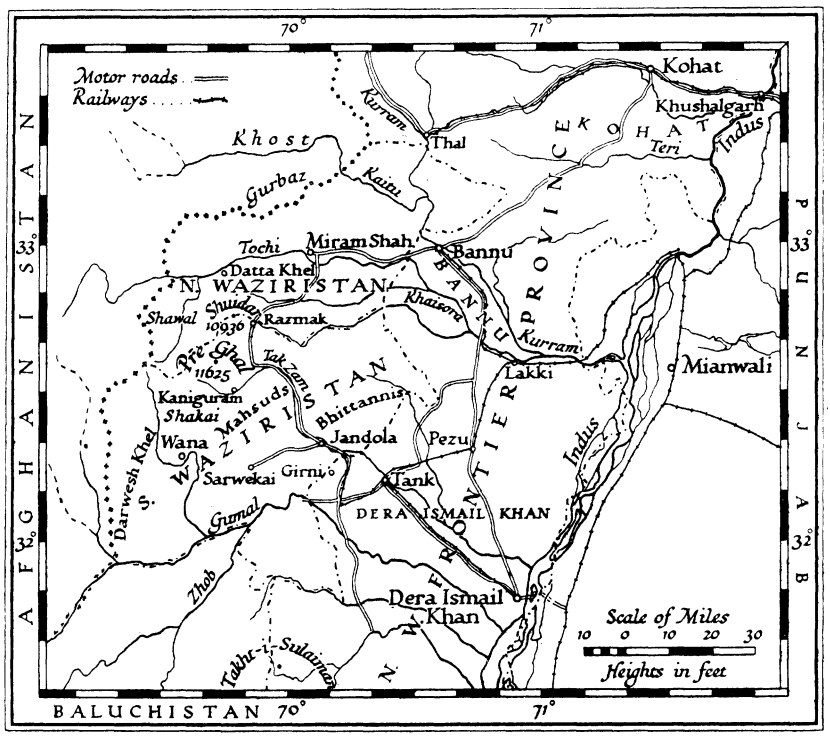
Roughly speaking the Districts comprise the fully administered country in the plains and foothills and the Agencies the unadministered tribal territory in the mountain ranges. There is a fixed line known as the administrative border on the eastern side of which revenue is collected and the law fully administered, and on the western side of which political control of varying intensity is exercised over the tribes.

Waziristan—that is the country comprising the North and South Waziristan Agencies—lies at the southern end of the North-west Frontier Province where it adjoins Baluchistan. It consists of a series of river valleys running from west to east and debouching into the plains, a mass of high mountains in the centre from which the rivers are chiefly fed, and a large plateau in the south. The rivers reading from north to south are the Tochi, the Khaisora, the Shaktu, the Tak Zam and the Gumal. The high mountains consist of a confused mass of ranges with two prominent peaks, Shuidar 10,936 feet and Pre-Ghal 11,556 feet, and the plateau bears the name of Wana.

The greater part of the country is barren in the extreme. In the Tochi

valley and on the Wana plain there are large stretches of fertile land, but otherwise cultivation is almost entirely limited to " Kaches " or the deposits of alluvial soil that collect in the bends and bays of the streams and river-valleys. The natural resources of the country are confined to rope and matting made from the " mazri " or dwarf palm, which grows on the lower hills, and timber and edible pine nuts from the vicinity of Pre-Ghal and Shuidar.

The lower ranges of hills are entirely bare—confused jagged ridges of many-coloured rock. At about 2500 feet the gurgura, a bush bearing an



Waziristan and its approaches

edible berry, the wild olive and other shrubs begin to appear. At about 4000 feet the holly-oak starts and continues up to nearly 8000 feet, getting bigger and thicker as the country rises. Above 8000 feet are fine forests of conifers.

The rainfall averages about 12 inches a year on the foothills and about 50 inches on the higher ranges. This falls half between December 15 and May 15 and half between July 1 and September 15. After good rain the hill-tops and sheltered slopes above 4000 feet often become beautifully green for a short period.

The Waziristan hills form part of what has been called the Sulaiman system, a term which appears to include all the Frontier ranges between the Hindu Kush and the sea. The system takes its name from the Takht-i-Sulaiman, one

of the points of a striking double-peaked mountain which lies just outside Waziristan between the Dera Ismail Khan District and Baluchistan. The Takht-i-Sulaiman, or Throne of Solomon, is so called from a shrine on its summit marking the place where Solomon is supposed to have halted to allow a bride newly brought from India to enjoy a last view of her native land. Pre-Ghal is the highest point in the system south of the Kurran valley with the one exception of Zarghun, near Quetta, which is about 200 feet higher.

Waziristan, as its name implies, is the country of the Wazirs, a large Pathan tribe of probably half a million souls. The Wazirs are divided into two main sections—the Darwesh-Khel or Wazirs proper, and the Mahsuds. The latter, who are about a quarter of the whole tribe, occupy the central and most hilly portion of the country. The Wazirs are all round them on three sides in the Khaisora and Tochi Valleys, in the uplands of Shawal and Shakai, and at Wana; while on the east a small tribe called the Bhittannis intervene between them and the plains. A virile race in a hard and barren country which cannot possibly support them, the Mahsuds have long subsisted at the expense of their neighbours—both by raids, which have often penetrated far into the settled districts of the Frontier Province, and by gradual encroachment of the lands of the less warlike Wazirs and Bhittannis on their borders.

Our relations with the tribes in Waziristan date from the visit of Sir Herbert Edwardes to Bannu and Tank in 1847 and 1848. In 1849, by the annexation of the Punjab we inherited from the Sikhs the onerous responsibility of protecting the settled population of the Bannu and Dera Ismail Khan Districts from their raids. The history of Waziristan in general and the Mahsuds in particular from that time onwards is a series of punitive expeditions culminating in extensive operations in 1919, due to the intolerable state of disorder which followed the Great War and the Third Afghan War.

From 1919, however, a new phase starts. The troops that went into Waziristan stayed there, until early in 1923 Razmak was occupied as a permanent measure and connected by good roads with both Bannu and Tank. Razmak lies beneath the slopes of Shuidar at an altitude of about 6300 feet on the boundary of Wazir and Mahsud country and completely dominates Makin, the home of the Abdullais, the section of the Mahsuds which offered the stoutest resistance during the fighting of 1919 and subsequent years. The effect of the occupation of Razmak and the construction of roads has been magical. The standard of living and general condition of the tribesmen has very much improved, and they have begun to realize that there is much more to be made out of co-operation with Government than by unceasing resistance. Whereas three or four years ago the Mahsud was intensely jealous of the privacy of his mountainous retreats and strongly objected to any attempt to penetrate them, he is now beginning to be quite anxious to show officers round his country and to clamour for roads in the most remote valleys. The motive is almost entirely economic. Raiding being now difficult, if not impossible, the tribesman has to seek other means of livelihood, and of these road-making is one of the most lucrative.

It was this change in spirit that rendered possible the visit to Pre-Ghal I am about to describe. Ever since September 1924, when I took over charge of

the South Waziristan Agency—which comprises the country of the Mahsuds and the Wazir tracts of Wana and Shakai—it had been one of my chief ambitions to climb Pre-Ghal, a point hitherto inaccessible to Europeans, not on account of any difficulties of the terrain but because of the hostile and intractable attitude of the Mashud tribesmen living round it. One Sunday in the hot weather of 1927, while rambling in the hills round Razmak with some Abdullai Maliks and Khassadars, they suggested to me a visit to the mountain. I took them at their word, and towards the end of August summoned some of the leading maliks of Makin and entrusted to them the necessary arrangements.

Before proceeding further it will be convenient to describe the constitution of the Mahsud tribe. The tribe is divided into three main sections —the Shaman Khel, the Bahlolzai, and the Alizai. These sections are again divided into numerous sub-sections. There is no chief or nawab of the Mahsuds as a whole. The big sections have their leading Khans, but their influence is usually only local, and it is with the chiefs or maliks of the sub-sections that Government mainly deals. Each sub-section has a number of maliks of more or less importance, but nearly every adult male has a voice in tribal affairs. The Mahsuds as a whole are extremely democratic. Every man thinks himself as good as his neighbour. The influence of the maliks depends almost entirely on their personality; the tribesmen in general are extremely jealous of them and expect to share in any benefits which Government may confer upon them. It is this spirit that renders the Mahsuds so difficult to deal with. On the visit to Pre-Ghal I was accompanied by nearly three hundred tribesmen, because practically every family in the surrounding villages insisted on being represented. If I had announced my intentions more publicly and given longer notice, it is probable that every Mahsud sub-section would have insisted on sending a contingent—as Pre-Ghal belongs to the Mahsud tribe as a whole—and the numbers would have swelled to over a thousand. As it was our escort was chiefly confined to those sub-sections of the Bahlolazis through whose country we passed, namely the Abdullais, the Band Khels, the Haibat Khels and the Jalal Khels.

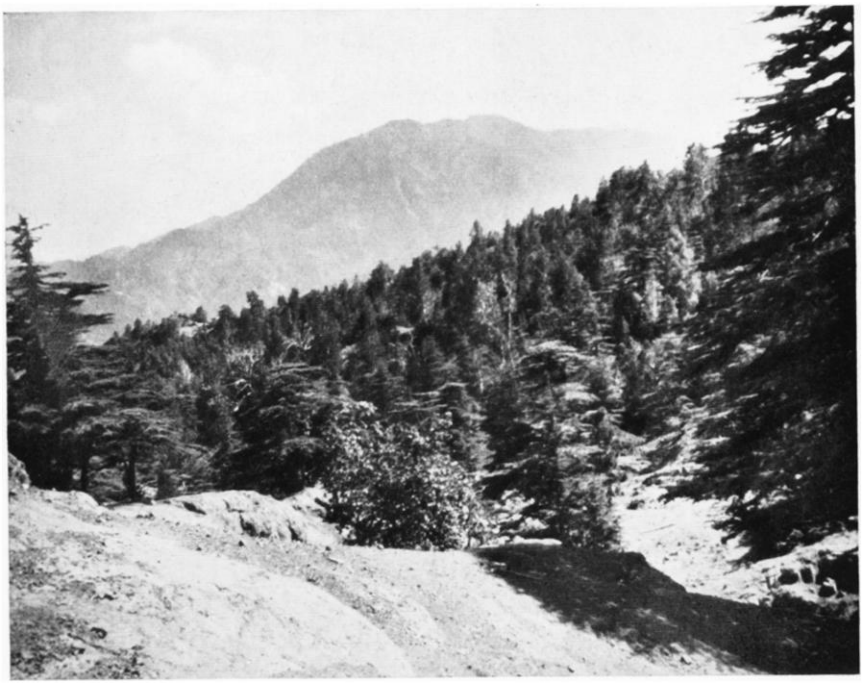
Government deals with the Mahsuds through their maliks and tribal jirgas or councils of elders. The maliks are paid allowances and held responsible for the good behaviour of their tribesmen, and every effort is made to uphold their authority. To assist them in their duties tribal levies or Khassadars are appointed from each section and paid a monthly wage. These Khassadars, besides assisting the maliks in the control of their sections, furnish picquets to keep the roads safe and provide escorts for officers touring.

The Mahsud as an individual is an attractive character. The youth is extraordinarily good-looking while the bearded elder is almost always handsome. He is normally cheerful and fond of a joke; he is capable of unlimited endurance, and generally speaking is straightforward and honest. He is not a good liar or flatterer and prefers to call a spade a spade. On the other hand, he is intensely jealous, vindictive and quick-tempered, and becomes a fiend when roused. The blood-feud and the struggle for existence in a land of such poverty lead to constant murders. Except on the Government

Looking over Shawal

Khar Sar and Spinkai Sar from Maisera Sar

Lowarai Punga and Pre-Ghal



Pre-Ghal from head of Sra Tizha Algad

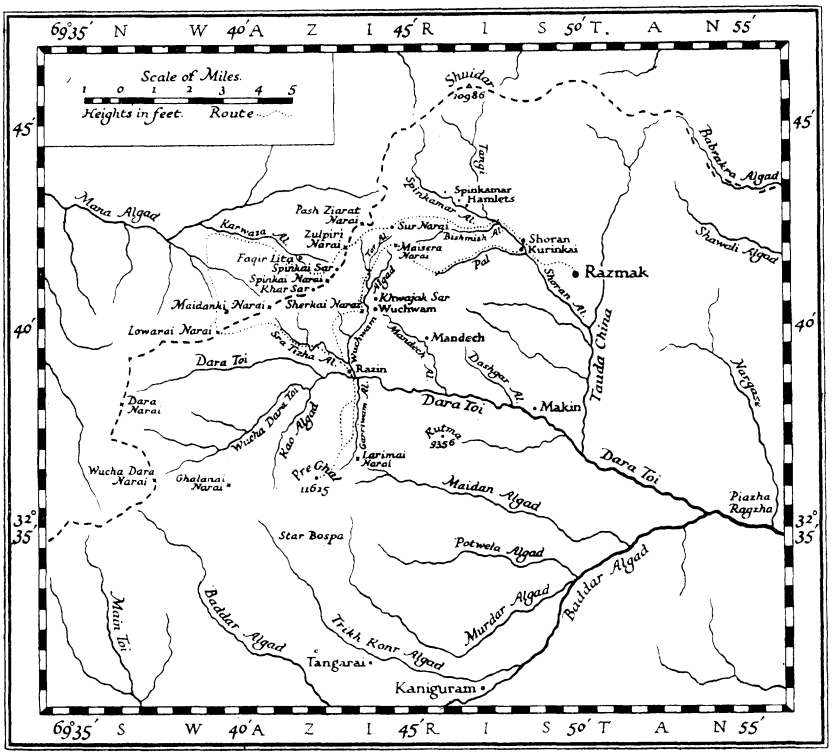
roads, which are more or less sacrosanct, every Mahsud carries a rifle and is constantly on the look-out for a possible enemy.

I arranged to leave Razmak on September 7. Though there were many who would willingly have come, I asked only one British officer to accompany me—Captain R. North, then of the King's Royal Rifles and now of the Indian Army. The success of the expedition was not a certainty, and in the event of any untoward incident occurring a larger number of companions might have proved an embarrassment. Nailo-Tahsildar Maulvi Abdul Manaan, a subordinate Indian official of the Agency, made all the arrangements for rations and transport. We took with us a considerable quantity of flour, rice, ghi, tea, sugar, tinned milk and biscuits for our escort, not to mention some Keating's Powder for ourselves, as Waziristan, though comparatively free from other vermin, is famous for its fleas. These abound in enormous numbers, especially in the spring, when they force the inhabitants to leave the caves in which in the lower altitudes they spend the winter months and live in tents or grass huts which can be moved about. Our camp kit consisted only of light beddings, as it was quite warm enough for us to sleep out if necessary.

We left camp about 7 a.m. and followed up the Shoran Algad to just below the main collection of Abdullai hamlets known as Spinkamar. Here we turned to our left and climbed very gradually up the pebbly bed of the Bishmish Algad. Algad is the local word for the course of a mountain torrent, dry, save for occasional springs, except after rain. We passed on our way the Bishmish village belonging to the Abdullais, a scattered collection of towers and houses amongst terraced maize fields, gay here and there with bright mauve patches of wild sage. Above this hamlet we left the bed of the Algad and climbed steeply up the hill-side, soon leaving the region of scrub oak and emerging on to grassy alps studded with clumps of blue pine and isolated oak trees. Here are the summer grazing grounds of the Spinkamar villagers. The road undulates over the crest of the ridge, and the highest point on it—about 8800 feet—is well to the west very close to the watershed separating the Dara Toi basin from Shawal. The pass by which we crossed over the top of the ridge from the Spinkamar basin into the Dara Toi basin is known as the Sur Narai, or Red Pass. From here we descended slowly down a beautifully green valley beside an intermittent stream, with a forest of spruce and blue pine on one side and on the other grassy slopes starred with gentian and edelweiss. Our direction was roughly south-south-west. After about 2 miles we reached the marshy source of a stream flowing towards Wuchwam village just below a small saddle in the Shawal watershed known as the Pash Ziarat Narai. From this point we climbed to the crest of the watershed and wandering along beautifully wooded slopes—still spruce and blue pine with some fine oaks—at 10.30 a.m. we reached the Zulpiri Narai (8950 feet) where our track crossed a rocky hill-top. Just above this Narai we had a magnificent view of Shawal—the whole of which was spread out like a map before us—a great basin all thickly wooded except for a bare patch in the middle where Wazir towers and cultivation could be seen.

We had with us at this time seventy or eighty maliks, including nearly all

the Abdullai maliks, with a few Band Khels, Haibat Khels, Shingis, Nazar Khels, Bibizais, Guri Khels and one Jalal Khel, Balikai, who was to be our host for the night. They had intended to take us by a direct route past Wuchwam to Razin in the Dara Toi, but when we reached the top of the Sur Narai, suggested going *viâ* the Lowarai Punga instead. I gladly accepted, knowing that we should see more of the country. The object of this manœuvre became clear when we arrived at the Zulpiri Narai and the maliks began to describe the points which they alleged marked the boundary between Mahsud and Wazir country. This boundary included a large portion of the southern rim of the Shawal basin. I promised the maliks to put on record



Capt. Hay's routes north of Pre-Ghal based on the Survey of India, with names added by the author

the names they had quoted without committing myself to any expression of opinion.

I would note here that there is bitter hostility between the Wazirs and Mahsuds on the subject of their boundaries, especially in the vicinity of Razmak, and there has been serious fighting between them on the subject. I have remarked before that the Mahsuds are always encroaching, and it is extremely difficult to lay down where the *de facto* boundary is at any given time. Each side claims much land to which it certainly has no title of any kind, but in between there is always a pretty big strip to the ownership of which both parties can put up a very specious case. In the present instance

the real boundary probably runs along the watershed, the whole of Shawal being Wazir and the Dara Toi basin Mahsud.

Shortly after leaving the Zulpiri Narai we descended sharply down the Shawal side of the watershed to the bottom of a narrow ravine leading down from the Spinkai Narai, which lies between Spinkai Sar—a hill surmounted by a sheer white cliff facing south-east and a regular landmark as seen from Mahsud country—and Khar Sar, a conical well-wooded height of a dull-brown colour. The track leading over the pass appears to be of little importance. It is at about this point that the nature of the forest entirely changes ; from here onwards for miles there are deodars, mostly of a small variety, and practically nothing else except occasionally a few blue pines. I noticed a great many young trees growing up.

Before descending from the watershed we passed a resin-pit where the deodar wood is burnt and the resin allowed to run out into a small basin. It is used medicinally for sheep, camels, etc., as a cure for skin diseases. The local word for it is " Ranzara " ; it sells at about a rupee a seer (2 lbs.).

We now descended the ravine, which soon widened into a small valley, for several miles in a west-south-westerly direction. At about 8100 feet we came to a spring just below a camping site called Faqir Lita. The spring and the valley are known as Karwaza. From here we followed a marshy stream thick with flowers between alternate forests, and grey fantastic cliffs with toy deodars growing out of their clefts and crannies. Farther down we passed a number of terraced fields which the Mahsuds claimed as theirs. Apparently they were made by Marwats, but since that tribe left the country, probably two centuries ago, they have not been cultivated except very occasionally by a Mahsud or Wazir whom necessity has compelled at the risk of his life to endeavour to raise a small crop on them.

From the Sur Narai to the Lowarai Punga not a sheep or goat was seen, although grazing was abundant. I am told that in the spring Mahsud or Wazir flocks do occasionally graze here surrounded by an armed guard with their rifles held ready to fire. Apart from our own party not a single human being was seen, except three grey-bearded unarmed Wazirs, who were crossing the Lowarai Punga to visit some Mahsud friends.

We must have gone some 3 or 4 miles down the valley, which descended very gradually. At a point at which the aneroid read 7850 feet we turned due south, and a short ascent brought us on to a broad undulating plateau covered with deodars. Other trees were entirely absent. There were many open places carpeted with brown grass and withered gentian plants, this portion of the country having obviously had much less rain than the vicinity of the Sur Narai. We found only one small spring. We passed a fairly large cemetery at which all our escort stopped and prayed, and a camping site which did not appear to have been recently used.

An hour's walk brought us to the Lowarai Punga, a huge clearing some 3 square miles in extent, which appeared at some very ancient date to have been terraced for cultivation. It was covered with beautiful turf somewhat greener than the country through which we had just been passing. It slopes up gradually from south to north to an altitude of about 8000 feet, and the country then falls away steep and well-wooded to the Shawal basin. At the

top of the Punga is the tomb of Bahlol, eponymous ancestor of the Bahlolzai section of the Mahsuds. The tomb lies close beside a deodar, and consists only of a rough heap of stones surmounted by a number of long poles bearing small white flags and enclosed by a low wall of loose stones. The main route from the Dara country to Shawal crosses the watershed close by. We halted near the shrine for an hour and a quarter, and it was only here that there appeared to be any likelihood of trouble occurring.

We had had a few alarms and excursions before. When we turned up the Bishmish Algad below Spinkamar a man was seen running excitedly towards us. He announced that the Turan Khels of Mandech had collected a lashkar or tribal gathering to block our way. We went on unconcernedly and very shortly met the leading Turan Khel Malik Kal Khan, who said that with great difficulty he had persuaded the lashkar to assist our passage instead of opposing it. A letter was also received from the Shamak Khels of Dara saying they would not allow us to visit their country, but of this, on the advice of the maliks with us, no notice was taken. It should be explained that these threats did not really denote any hostile intention. All the persons concerned wished to signify was that the expedition could not take place without their good-will, and that they expected a share in any of the rewards which might be given as a result of it. On the top of the Sur Narai a Bibizai rudely assaulted one of our sowars, claiming his pony. A few minutes' uproar arose until the Bibizai was almost literally sat on by the rest of our party. At the Spinkai Narai a shot was heard close at hand, and everybody stopped for a minute. We were relieved to learn that the bullet had found its billet in a pig.

The trouble on the Lowarai Punga was of a different kind. The trip had been arranged principally by the Abdullais of Makin ; our route lay largely through Nano Khel country. The Nano Khels—Haibat Khels with a few Umar Khels and Malik Balikai Jalal Khel—insisted that they and they alone should have the honour (with benefits to follow) of taking us up Pre-Ghal. This the Abdullai Maliks with Aziz Khan Shingi and Haiyat Khan Nazar Khel, who were mainly responsible for our safety, could not allow. A frightful din arose. With some difficulty I managed to persuade the disputants to go and shout at each other at some distance away, and we ate our lunch in peace. The Aimal Khel Maliks (Abdullais and Nazar Khels) then came and assured us that nothing on earth would make them abandon the trip. It had become a point of honour, and if necessary they would take us round by another route through their own country. Eventually the whole matter was settled amicably and all concerned made a self-denying ordinance not to mention the word " bărīd " (boundary), *i.e.* not to assert a claim of ownership to any of the country through which we might pass.

The question of boundaries between the various sections is a very delicate one and not to be broached lightly in Mahsud country. Except in the case of villages or cultivation it is never safe to ask to what section any piece of ground belongs. The fact is that the boundaries in uninhabited country are not really properly defined ; everybody thinks you have come to select a site for bungalows or a line for a road and is anxious to establish his claim to compensation at the earliest possible date. This leads to violent altercations and has been known to cause really serious trouble.

After leaving the Lowarai Punga we hardly heard a high word during the rest of the trip. We turned back at an acute angle from the route by which we had come and for two miles ascended in a north-easterly direction by a well-defined track over the same undulating deodar country. We then descended sharply down a nala bed. This route is known as the Sra Tizha route from a remarkable dome of red rock which is passed on the way. At about 7800 feet conifers ceased to predominate and the familiar oak scrub reappeared with an occasional edible pine or deodar. The descent was easy. About half-way down we made a long halt for prayers by a small spring. The nala soon changes to a broad Algad, called the Sra Tizha Algad. Shortly before it reaches the Dara Toi it is joined by the Wuchwam Algad, and at the point of junction there is cultivation and a tower belonging to Malik Bagh Gul Umar Khel. Here we left the Algad and climbing up a slope on the right bank crossed a ridge and descended to the village of Razin, where we were to spend the night. The distance traversed during the day was about 24 miles.

Razin is a village of some thirty families of Toji Khel Jalal Khels. The leading man is a minor malik called Balikai—a good fellow with a great sense of humour and a loud voice. The main village, which consists of a number of mud houses with a tower or two, is on the left bank of the Dara Toi with a fairly wide stretch of maize fields lying between it and the stream. I made its altitude about 7100 feet. The stream contains plentiful water. On the opposite bank are a number of sheds to which the people of the village retire in the hot weather, presumably to escape the fleas which have accumulated in their proper houses. The most remarkable feature of the Dara Valley at this point is the cliffs of snow-white rock which overlook it. On one of them, facing Razin, is a black streak like a huge snake with its head downwards as though it was descending towards the village. There is some old legend connected with this.

Balikai had sent his women and children to one of the sheds on the opposite bank and placed his house at our disposal. A room had been made ready for us in his tower, but as it was very small and had to be reached by a perfectly atrocious type of ladder, we preferred to take up our quarters in the house proper below the tower. This was full of an extraordinary assortment of bags, skins and other receptacles hanging from the roof or reposing in corners, and was by no means void of fleas; but it was entirely open on the side towards the Toi, so we had plenty of fresh air and a lovely view of Pre-Ghal towering up immediately above us, while later on we were able to watch the whole process of the cooking of a Mahsud meal.

Our party by the time it reached Razin numbered about two hundred, many Khassadars and others who had been out picqueting having joined us. We found tea ready, and having refreshed ourselves proceeded to settle down in our quarters. A succession of sheep and goats now began to arrive, escorted by local Maliks and " mutabars "—this being a common form of hospitality and a sign of respect. These were all accepted and, with the rations we had brought ourselves, were distributed amongst our lashkar.

Our host produced a huge goat which he wished to slaughter and put into the pot in our presence. We, however, insisted on its being slaughtered

outside. A large fire was now lit and on it were placed two huge earthenware vessels (Katau) full of water, two iron degchies (Deg), and a huge iron grilling utensil (Katorai). The ribs (Pashtai) of the goat were threaded on two sticks and stuck into the ground by the fire to roast. Pieces of liver and other dainty portions (Larmun) were dealt with by means of the grilling instrument. The rest of the meat was cut up and boiled in the earthenware pots, while the degchies were reserved for rice.

Our host, with his relations and friends, sat round the fire and did not finish their meal till nearly midnight. Ere this we had satisfied ourselves and retired to bed and such sleep as the fleas would allow us. A curious thing we found about the fleas was that though their passage over our bodies caused great annoyance their bites were practically innocuous.

A party had been sent out the previous night to occupy the summit of Pre-Ghal early in the morning and prevent any possible enemy reaching it before us. We ourselves set out at 6.20 a.m. and descending to the Toi, or stream, followed it down for a short way and then turned to our right up the Garriwam Algad. Conifers were plentiful at about 7600 feet, consisting at this point of spruce and blue pine. We did not see a single deodar on Pre-Ghal. Silver fir is abundant towards the top.

The Algad gradually became narrower and the sides more precipitous. We passed a huge fallen tree blazing hard ; our advance party had set it on fire to keep themselves warm during the night. Some 4 miles up the Algad at an altitude of about 8475 feet we came to plentiful water. Here we turned off up a side nala and were soon climbing up a very steep slope covered with grass and flowers and flanked on either side by sheer grey cliffs. A long and stiff pull, sometimes up grassy slopes sometimes over rocky outcrops, brought us to the crest of one of the main spurs of the mountain at about 9825 feet. From here we went straight up the spur with much clambering over rocks : it was hard work but the going was nowhere really difficult or dangerous. We reached the top at 10.5 a.m., three and three-quarter hours after leaving Razin ; the aneroid read 11,625 feet, showing little difference from the height recorded on the map, viz. 11,556 feet.

On the very summit is the shrine of Pre-Ghal—a grave enclosed by a rough wall of stones with the usual tall poles surmounted by little white flags; attached to the shrine is a small square building for the shelter of pilgrims.

The mountain is often incorrectly called Pir Gul or Pir Ghal. The correct name is Pre-Ghal. The Mahsuds say this name has nothing to do with the word " Ghal," meaning in Pashtu a thief. Pre-Ghal is a term denoting a very holy man, and they say that the tomb is that of a saintly Faqir who in very ancient times led a hermit's life in the forests of the mountain. An isolated height like this must have been a holy place from time immemorial, and it is possible that the real meaning of its name should be sought in the language of some people who possessed the country before the Pathan invasion. The Hindus have legends about the mountain which they say is sacred to Shiva.

There is no custodian of the shrine, which is chiefly frequented by sonless men and barren women, as prayers offered there are said to be efficacious for the production of offspring, especially male offspring.

The top of the mountain consists of three points. The most easterly, which is the highest, is treeless and covered with a squat and very thorny shrub like gorse; the central one, which is the lowest, is well wooded on its northern side; the most westerly one is bare like the highest point, and is known as Kam or lesser Pre-Ghal. Except for the summit and a few precipitous faces the whole mountain is well wooded, but on the upper slopes about two trees out of three are dead skeletons, and many of them by the force of wind or snow have been knocked sprawling down the slopes. This is everywhere noticeable where the forests consist of spruce and silver fir, and is due to the fires which resulted from the long drought of 1920–21. The deodar forests do not seem to have been affected. Besides the conifers there are some fine oaks on the mountain and also in places thick jungles of wild cherry.

The flora of the mountain appears to be very similar to that of the lower Himalayas, except that some of the varieties are smaller and paler. Some specimens were collected and sent to Mr. Ronald Good, of the British Museum, who has kindly identified them.

There were various herbs, which the tribesmen sought for eagerly. One was a flower like a small " everlasting " with a very sweet smell, called *Kasturai*. They collected large bunches of this, to be taken home to their families and used like lavender to perfume clothes or decorate the house. Another is called *Karaska*. It looks and smells like celery, and has a long tapering root containing a sort of white pith which is used as a flavouring for tea, and is also said to be an antidote for indigestion. Another has a heart-shaped leaf like a violet, and is called *Mirsalai;* its root is very sweet-smelling. Bits of it are dried and threaded as necklaces for small girls. A fourth is called *Miralam*. It is a tall reed-like plant with a long white root containing glutinous substance; this is eaten by mothers to improve the supply of milk. Another, which is a sort of small yellow vetch, is called *Momirai;* the stalk of it rubbed on the eye produces much inflammation but improves the sight.

Bears are said to be plentiful, and panthers are also found. Owing to our enormous escort it was very improbable that we should see any game, but a party who came up to meet us from Badar on the south side of Pre-Ghal had shot a female " Markhor," a kind of wild goat, on the way. Oorial, or wild sheep, are said to be abundant. Bird life was remarkable by its absence, and practically no butterflies were seen; but there was no lack of other insects, such as bumble-bees, wasps, flies, etc.

Of the geological composition of the mountain I am not competent to write. The cliffs were mostly of a uniform dull grey colour, and in the nala bottoms were many lumps of speckled rock, with the appearance of granite. The higher strata of rock were certainly igneous.

The view from the top was superb, and must be unspeakably magnificent on a clear day in the cold weather, when it is said the Indus can be seen. As it was the plains and Wana were obscured by haze, above which only the topmost peak of the Takht-i-Sulaiman appeared like some strange aerial islet. The range of the Safed Kok was hardly visible, but otherwise the country was spread out like a map, from the confines of Baluchistan to the Kurram, and

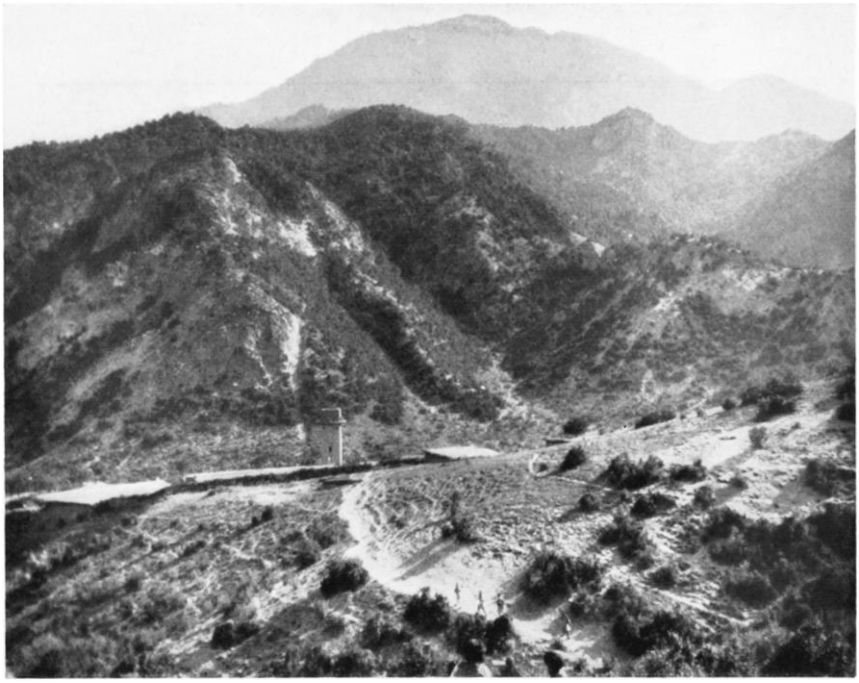
from Girni and Gabar to the hills of Gardez and Khost. The whole of the Dara Valley and Shawal were displayed in detail; the road could be seen winding up the upper half of the Razmak plateau; Piazha was visible, and the green maize fields of Maidan and the Badinzai Tangi could almost be counted. Kaniguram was hidden behind a ridge, but the whole of Badar with the Tangarai and Mishti Valleys laid bare its innermost secrets; beyond it Shakai stretched broad and yellow, and the Khaisora villages tried in vain to conceal themselves behind a curtain of haze. The Kotkum hills and Bobai stood sentinels over an invisible Wana. Westwards were great forest-clad slopes, backed by a series of long ridges stretching far into Afghanistan.

Immediately to the south of the summit and about 2000 feet below it is a beautifully green plateau known as Bospa. This, according to the Mahsuds who accompanied us, is the highest point on the mountain which any European has previously been allowed to reach, and that many years ago. The tribe regard the mountain as their "Takht" or throne, the sanctum of their country and the symbol of their inviolable independence. Their voluntary disclosure of its mysteries is a notable sign of their changed attitude towards the British Government.

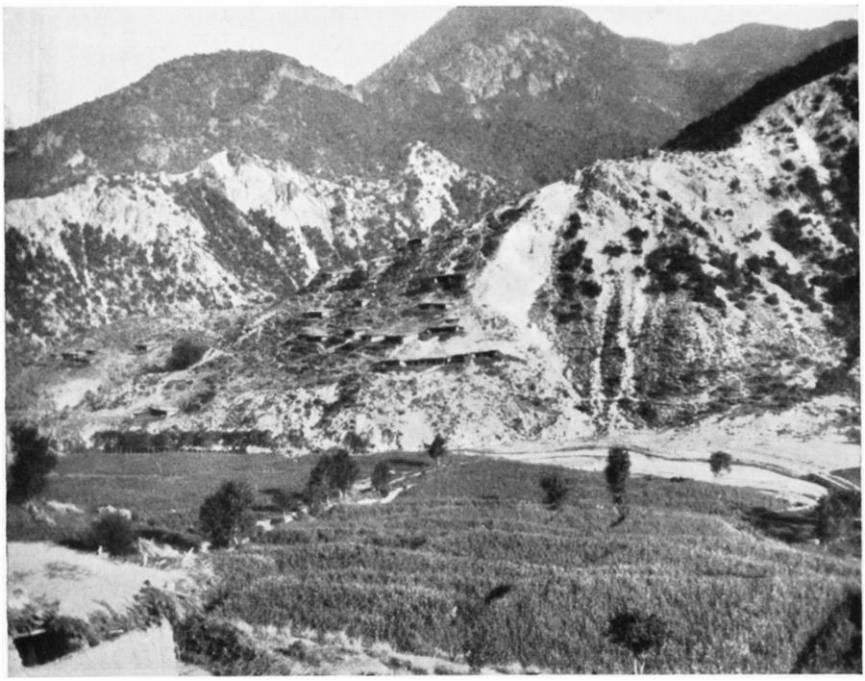
Many tribesmen were on the summit when we arrived, including a party of Malikshahis from Badar, who had spent the night there. For some months they had been adopting a threatening attitude over certain grievances, but they now presented an enormous goat and asked in a reasonable manner for redress. Naib Tahsildar Abdul Manaan, who very bravely undertook a climb for which he was fitted by neither build nor habit, reached the summit some time after us, and when we were all collected our party must have numbered between two and three hundred persons. A thorough picnic spirit prevailed, many of the Mahsuds with us never having climbed the mountain before.

We spent some two hours on the top and began our descent from the western extremity of Kam Pre-Ghal. From here the position of the Ghalanai and Bosh Narais could be seen, and also the actual track of the Machi Narai. Descending in a southerly direction we reached a small saddle connecting the central mass of the mountain with a subordinate ridge. Here we turned due east down a fairly open valley, which fell steeply away beneath the southern face of the mountain-top. Flanked by battalions of silver fir we waded waist-deep through a sea of flowers with occasional snags in the shape of stinging nettles. A thousand feet from the top we struck a plentiful spring of very cold water, and for the next 2 or 3 miles we walked beside a babbling stream with a disconcerting way of disappearing and coming up again. It was some time before we realized we were in the Garriwam nala by which we had begun our ascent in the morning; it starts at the western extremity of the mountain-top, runs all round the south and eastern sides of it, and finally flows into the Dara Toi on the north. When we had descended some 2000 feet the Badinzai Maliks from Tangi, who had joined us the previous evening, left us and climbed up to a small saddle on the spur a few hundred feet above us, which they called Larimai Sar. They were on their way to Larimai village, which lies at the head of the Maidan Algad.

Hitherto the valley had been fairly open and running in an easterly direction; it now turned northwards and dropping by a narrow defile

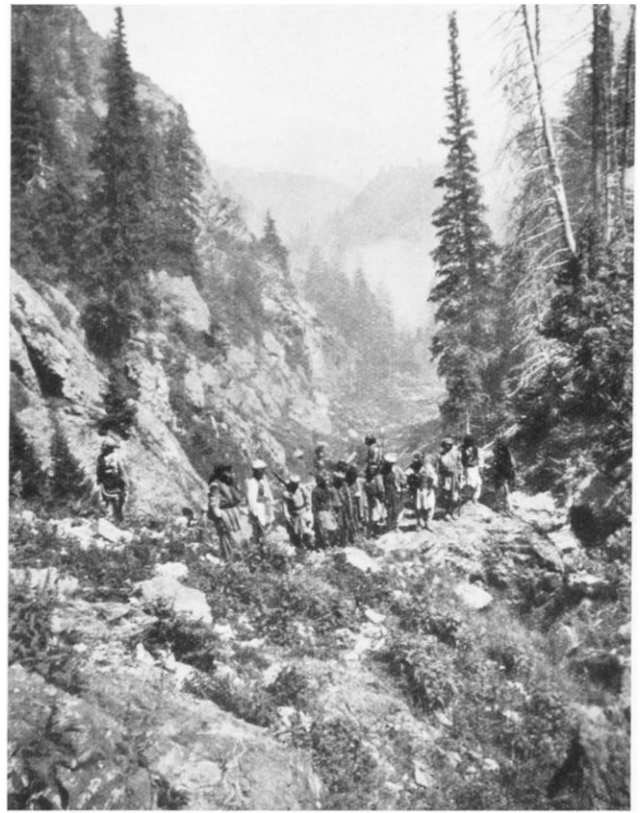


Razin village and Pre-Ghal



The Dara Toi valley at Razin

On the ascent of Pre-Ghal



In the Garriwam Algad

through a feature of solid rock emerged into the lower and darker slopes of the mountain. In the defile were a series of "Zowas" or sheer drops over closely-wedged irregular rocks, and the going was somewhat difficult. When the valley broadened out again it was full of rocks and boulders instead of grass and flowers, and the whole height of the slopes on either side was covered by thick forest.

It was here we passed the "Sarwai Gola" or "Tunnel Rock," a natural curiosity which, like some logan-stone in England, impressed the people much more than the scenic magnificence of the country. A torrent rushing down the mountain-side has encountered a rocky outcrop, and instead of cleaving it with a gorge has only pierced its lower portion, leaving a natural arch of stone. The tribesmen relate that this was a miracle performed by some holy man, possibly old Pre-Ghal himself, with a push of the hand, and treat the place with superstitious reverence, making little heaps of stones on the rocks in the valley below.

At 3.15 p.m. we reached the spot in the valley where we had turned off in the morning, and we arrived back in our quarters at Razin at 4.30 p.m. without further incident. After getting in I was pestered with a series of alternate deputations from the Nano Khels and Aimal Khels regarding the route to be followed on the return journey the next day. We had been brought to Razin by the Aimal Khel Abdullais and had caused a certain amount of inconvenience to the local Nano Khels. The Nano Khels now wished us to return the next day *viâ* Makin, in order that they might get their return in kind for the maize-cobs looted from their crops in the Dara Toi. The Abdullais had previously suggested taking us through Makin secretly by night when their women and children would not be on view; to this I objected that they had brought us to the Nano Khel villages by day and that it was only fair on the Nano Khels to take us through their own village by day. Finally they acknowledged that lower down in the valley there was a settlement of Hindustani Fanatics through which we would have to pass, and that their leading Mulla Shahbadan had begged them not to bring us that way and that this was their reason for avoiding the Makin route. Eventually it was amicably decided that we should return on the morrow *viâ* Wuchwam and the Sur Narai.

On September 9 we left Razin at 6.15 a.m. by the road by which we had come. A few hundred yards above the Wuchwam Khula we turned to our right up an opening called the Dalali Khula and struck a good track running up the hill-sides in a north-easterly direction and known as the Khanna Punga road. The ascent was very gradual, sometimes winding in and out of spurs and sometimes passing up nalas lined with thick oak forest. The holly-oaks here attain a great size—their trunks being often 10 feet or more in girth. Conifers there were none, except an occasional deodar. Great precipitous citadels of dark-grey rock were a feature of the country—one of them was said to have been chosen by wild bees as an impregnable store-house for their honey.

Passing the Khanna Punga somewhere on our left, after 5 miles we reached the Sherkai Narai at an altitude of about 8600 feet. Here the track crosses a subordinate ridge and drops by a steep but short descent to Wuchwam,

a straggling village of some thirty or forty mud houses and a few towers, lying amongst maize fields at the foot of a fantastically shaped eminence known as Khwajak Sar. Leaving the main village on our right we turned up the stream which waters it and made our way between maize crops with dwellings here and there, till we reached the junction of two streams—one the Sperka Algad, flowing down from Pash Ziarat, and the other, that on our right, the Tor Algad, which comes from the Sur Narai. We followed the latter, but soon left it, taking a steep and direct route to the top of Maisara Sar (9332 feet according to the map), from which we were able to survey the line of our travels during the last three days. The sowars and camels followed an easy path to the Sur Narai *viâ* the Tor Algad.

Razmak was now in sight and our expedition was drawing to its close. Proceeding down the ridge in a south-easterly direction we crossed a narrow saddle, from which the fields of Mandech were just visible, and then descended by the Pal towards the Shoran, which we joined just below the ruins of Kurinkai. The going during the descent was easy, and most of our path lay through thick oak scrub. We reached the camp at 11.30 a.m., and nothing remained except to reward those who had assisted us—a proceeding which occupied most of the afternoon.

Much of the country over which we passed probably had never before been trodden by a European. The nearest approach appears to have been during the third Mahsud expedition in 1894, when Mandech, Razin and the Bospa plateau were visited.

A great feature of the trip was the good temper of the Mahsuds with us and their eagerness to show us all the sights. On the way some of them inquired whether we had come to make a map or to find a site for a summer station, but it was not till a few days after our return that I learnt what many of the tribesmen thought was the real reason of the expedition. I was holding a jirga with the same Malikshahis who had met us on the top of the mountain. There was present amongst them the father of two boys who had been more or less accidentally killed a few months previously in a small skirmish in which some irregular forces of the Government had been concerned, and they were asking for compensation for their death. "Of course," they said, "having no sons you do not know what a father feels," and then added, smiling, "But we all know why you went up Pre-Ghal."

The following plants have been identified by Mr. Good and Mr. Norman:

Ranunculaceæ—
Thalictrum pauciflorum Royle
Aquilegia viscosa Gouan
Clematis sp.
Cimicifuga sp.

Caryophyllaceæ—
Melandrium cabulicum Boiss.
Dianthus crinitus Smith

Geraniaceæ—
Geranium aconitifolium L'Herit.
Impatiens sp.

Leguminosæ—
Medicago sativa L.

Rosaceæ—
Prunus Padus L.

Saxifragaceæ—
Parnassia nubicola Wall.

Crassulaceæ—
Sedum Ewersii Ledeb.

Onagraceæ—
Epilobium angustifolium L.
Epilobium minutiflorum Haussk.

Umbelliferæ—
Bupleurum falcatum L.
Vicatia coniifolium DC.
Two incomplete specimens.
Dipsaceæ—
Dipsacus inermis Wall.
Compositæ—
Conyza japonica Less.
Prenanthes Brunoniana Wall.
Lactuca hastata DC.
Anaphalis Royleana DC.
Cirsium arvense Scop. ?
Ligularia sp.
Gentianaceæ—
Gentiana nubigena Edgw.
Swertia cordata Wall.
Scrophulariaceæ—
Leptorhabdos Benthamiana Walp.
Euphrasia officinalis L.
Labiatæ—
Nepeta spicata Benth.
Leonurus sibiricus L.
Chenopodiaceæ—
Chenopodium Botrys L.
Thymeleaceæ—
Daphne oleoides L.
Euphorbiaceæ—
Euphorbia pilosa L.
Urticaceæ—
Urtica dioica L.
Cupuliferæ—
Quercus dilatata Lindl.
Quercus Ilex L.
Quercus semicarpifolia Smith.
Liliaceæ—
Allium rubellum Boiss.

Local Pashtu names of different kinds of trees are : Deodar : Almanza ; Blue pine : Nashtar ; Edible pine : Zanghozai ; Spruce : Sirup ; Silver fir : Sra Sirupa ; Wild cherry : Karlawa ; Walnut : Watak ; Willow : Wila. A large oak found at high altitudes : Qalandar Tsirai ; the Common Holly-oak : Sperka Tsirai ; a Holly-oak with larger leaves than the common one : Ghwara Tsirai.

The following is a glossary of Pashtu geographical terms used in the paper :

Algad	Torrent bed.
Kamar	Cliff.
Khar	Mud-coloured.
Khula	Mouth (of stream or torrent bed).
Lita	Earth (*i.e.* soil).
Narai	Saddle or pass.
Punga	Open level grazing-ground on top of ridge or hill.
Sar	Head or peak.
Spin	White.
Sur(m) Sra(f)	Red.
Tangi	Defile.
Tizha	Rock.
Toi	Running stream.
Wam	Field.
Ziarat	Shrine.
Zowa	Steep fall in a defile.

DISCUSSION

Before the paper the PRESIDENT (Col. Sir CHARLES CLOSE) said: Captain Hay, who is to address us this evening, was in charge for three or four years of the South Waziristan Agency, a region to the west of Dera Ismail Khan on the North-West Frontier of India. Whilst there he had the opportunity—or rather, made it—of visiting the Mahsud country, and in the course of his journeys he visited many places which have not previously been seen by a European, and had the great luck to be able to climb the mountain of Pre-Ghal the highest

Phot. C. H Stockley

Upper Dara Toi from the east

Phot. C. H. Stockley

Razmak plateau from the north

peak in that neighbourhood, being between 11,000 and 12,000 feet. Captain Hay is one of the first Europeans to have climbed that mountain, and he was accompanied by Major R. North and by several hundred natives. I ask him now to give his lecture.

Captain Hay then read the paper printed above, and a discussion followed.

Major-General LE GRAND JACOB: I must congratulate Captain Hay, who has given us a very interesting lecture, not so much for the actual feat of climbing Pre-Ghal, which after all is not a great mountaineering feat, but on the political state of the country which enabled him to do it. That is the most important part of his lecture. I had a good deal of experience of Waziristan during my eight years' service there at different times. It is about thirty years since I first came into contact with that country. I left it about eighteen months ago when I was commanding in the Waziristan district. Ever since we annexed the Punjab and first come into contact with the Wazirs and Mahsuds there had been a succession of punitive expeditions which go into the country and do a lot of damage and clear out. The effect of that was very small. It cannot be permanent. After a few years the people forget and start raiding again. Since 1919, instead of leaving the country after such an expedition, we have remained.

I was commanding the Field Force which occupied Razmak in 1923, and the effect of our occupation is extraordinary. It has completely changed the whole situation, as also has our policy of constructing good metalled roads, fit for motor transport, all through the country. This policy was advocated years ago, but was never carried out until now.

As some indication of the change, I remember when I was first up in those parts I was one of the officers told off to raise one of the frontier regiments now called the South Waziristan Scouts, with headquarters at Wana. The price of a Mahsud in those days was 600 rupees; now, as the lecturer has said, it is about 3000 rupees. The value of everything has gone up tremendously. The making of good roads and communications through the country has increased the standard of living. I do not know whether any of those present have read a novel which came out about fifteen years ago under the title of 'The New Road,' by Neil Munro. It deals with the road which General Wade drove through the Highlands about 1750, which had the effect of taming the Highlanders. That is exactly what we are doing in Waziristan—and incidentally putting a lot of money into the pockets of the Mahsuds.

I was talking to an old friend of mine, an ex-Mahsud officer who used to be in my regiment, and asking him about his pension. He told me that it was about 75 rupees a month. I said, "You must be very comfortably off." "No, not so well off as you think. Things are quite different from what they used to be. When you first came up into these parts the Mahsud was content to eat bread made from Indian corn, and you know what his clothes were—not much. And as for tea, well, he did not even get a sniff of it. Further, if he wanted to go down into Tank it took him three or four days on his flat feet. Now the Mahsuds drink tea and won't look at Indian corn bread unless obliged to. They like the best white flour which they get from Tank. And look at their clothes, very different from what they used to be. And when they come into Tank to see relations or shop in the bazaar they do not come on their flat feet; they get into a motor. That all costs money." That gives you an idea of how the standard of living has gone up. There is no doubt that in providing communication and making good roads you raise the wants of the natives, civilize them, and bring money into the country.

As the lecturer remarked, things are so quiet now that you will not see any

Mahsuds going about with rifles, and I am convinced that in five or ten years' time you will find the country will disarm itself if we continue the present policy, as I hope we shall. The next step—and we are commencing now—is to continue the road from Sarwakai to Wana and occupy the latter place with Regulars, connecting up Wana with Razmak. Then you will have the country in your hands. It is a most beautiful country. I took Lord Kitchener through there for the first time up from Wana, and next time I went through a year or two later with Sir John Donald from the opposite side.

Captain Hay mentioned the trouble with fleas, and so on. Well, the Mahsuds are not very clean, and always sleep without any clothes on on account of the vermin. I remember in an irregular corps which had a number of Mahsuds in it, we had one night a practice alarm to see how quickly they could turn out. We noticed that the Mahsuds were a very long time, and found the reason was that they were all hunting for their clothes in the dark !

Brigadier WILSON-JOHNSTON: I would like to thank the Royal Geographical Society for giving me this opportunity of being present to hear my friend Captain Hay recount his deeds and misdeeds. The President told us that Captain Hay had been in charge of the Mahsud territory for some three or four years, and there is no doubt that the rapidity with which the people are settling down and accepting British rule is due in no small measure to the tact and ability of Captain Hay. He is typical of the political officer on the North-West Frontier of India. Whenever there is trouble it is the Political Officer who pushes out to see what it is all about, and if there is no trouble, off he goes to Pre-Ghal or elsewhere to see whether there is any coming.

I think you will agree that Captain Hay's expedition to Pre-Ghal proves entirely to our satisfaction the soundness of the methods we have adopted on this part of the North-West Frontier of India.

Mr. RONALD GOOD (Natural History Museum): The small collection of plants which Captain Hay was able to make and send home during his trip proved of very considerable interest, not only because it came from a region very poorly represented in the collections in this country, but also because the region is very interesting from the point of view of plant geography.

A considerable distance to the north-east of Pre-Ghal, where the Indus comes out of the main Himalaya mountains, three of the most important floral zones of the Northern Hemisphere meet. The main Himalayan chain and the line joining its western extremity to the Caspian forms the southern limit of what is called the Central Asiatic flora. A line drawn from Kashmir almost due south to Baroda forms the line of junction between the Mediterranean–Oriental region on the west and the Indo–Malayan region on the east. That is, of course, a very broad view; and all these regions can be divided and subdivided, with the result that within a comparatively few hundred miles of Pre-Ghal quite a number of different floras are represented, and it becomes interesting to see how far these various floras are represented on Pre-Ghal itself.

Although the mountain lies actually within the Mediterranean–Oriental region its elevation means, of course, that it bears some sort of vegetation different to the general vegetation at its base, and one would expect that vegetation to be largely or entirely Himalayan. Of the thirty-two species which Captain Hay collected, about half a dozen belong to floras so widely distributed in the Northern Hemisphere that their occurrence on Pre-Ghal is not significant; that is to say, one would expect to get them anywhere within northern temperate regions or at high altitudes farther south. But of the remainder, about five wete definitely western species, and the rest all Himalayan. Of these five western species no less than four occur on the Himalayas. The one species that does

not occur there is an Afghan endemic species, so that the flora of Pre-Ghal is almost entirely Himalayan.

I endeavoured, by worrying geological friends, to ascertain their opinion as to the time Pre-Ghal was uplifted, but without much success. Apparently, one is justified in thinking that its uplift dates subsequently, or at any rate not prior, to the main uplift of the Himalayan chain, and that main uplift appears to have begun in the eastern end and travelled towards the western end. Thus perhaps Pre-Ghal became a mountain after the main bulk of the Himalayan mountains, and that, of course, is important from the botanical point of view because, as is now well known, the Western Chinese mountains support what is the richest Alpine and temperate flora in the world, and I think there is very little doubt that the Himalayan flora, which is also very rich, has largely originated from the Western Chinese mountains. The Himalayan mountains were uplifted subsequently to these latter and formed new country along which the Chinese plants migrated, and it appears that Pre-Ghal in turn received its flora from the Western Himalayas.

Lord RONALDSHAY: It is a good many years since I was in Mahsud country, in fact, it was in 1900 that I travelled from Dera Ismail Khan up to Tank and thence up the Gumal river to Kajuri Katch and to a little outpost known as Kashmir Kar. In those days the country between our administrative frontier and the Afghan border was indeed a veritable Alsatia, where every man did that which was right in his own eyes. I was anxious to study the zoology of the neighbourhood and to shoot a straight-horned markhor. The little escort of Border Police which insisted upon accompanying me when I went up into the mountains from Kashmir Kar took a great interest in the game up to a point; that is to say, they looked anxiously for tracks of bear or markhor, but their interest in the game suddenly vanished. When I inquired why, I discovered it was because they had found the track not of a markhor or a bear but of a Mahsud! They hurried me incontinently back into the safety of Kashmir Kar fort. As a matter of fact, I did get a shot at a bear on the way, though not a successful one.

The Petty Officer in command of the outpost had apparently received instructions from the nearest British authority to send in a report upon my visit. I heard him in the evening in animated conversation with my English-speaking bearer and inquired what he was talking about. It appeared that he was consulting my bearer as to what he should put in his report, and asking that my bearer, in his turn, should consult me. Well, I asked him what he proposed to put in the report, and the latter, as he had prepared it, read as follows: "The Sahib went out after shikar. The Sahib had a shot at a bear and the Sahib missed the bear." I said there was no necessity to lay too much stress on the last part of the report! I have no doubt that that report is still to be found on the files of some frontier outpost.

What I admired most in Captain Hay's lecture was the success with which he skated over the very thin ice of politics. I am not quite sure that General Jacob was so successful. It seemed to me now and then that his skates were in danger of going through the ice. But, after all, that is not surprising, for there is no part of the world in which geography and politics are so inextricably interwoven as they are on the North-West Frontier of India, and for the reasons which Captain Hay in his lecture indicated, though he did not lay undue stress upon them. I think I can indicate them in a sentence. A man who knew China very well once said that the problem of China was the filling of three bellies with one bowlful of rice. The problem of the North-West Frontier is very similar. It is the problem of filling three bellies with one bowlful of maize or wheat; in other

words, the problem is an economic one. The country is not capable of sustaining more than a very small population, and when the population increases beyond that limit what do the people do? Naturally they raid down into the plains and seize the food which they are not able to provide in their own country. How is that state of affairs to be brought to an end? Obviously—I am afraid my skates may go through the ice for a moment—in the way in which General Jacob suggested: by bringing money into the country which will enable the people to buy the food which they cannot themselves produce. Money can be brought into the country by the building of roads and other such measures. I have not the smallest doubt in my own mind that the change which has been brought about in the conditions of Waziristan since I visited the country in 1900 is, in the main, due to the fact that since the British have been in occupation of part of the Wazir country, they have provided remunerative employment for the people. Not only has the result of that been to raise the standard of living, as General Jacob pointed out, but to provide the people of the country with means of obtaining food without the necessity of raiding and seizing it by force.

I should like, in conclusion, to express to Captain Hay the tremendous pleasure which I have derived from what he has told us this evening and from looking at his excellent photographs. Though it is many years since I was in that part of the world, the photographs of those dry, rugged yet fascinating mountains brought back the country to me as if it was only yesterday that I had visited it. I can assure Captain Hay that to me at least, and I am sure to most other people in this audience, he has given a very real pleasure.

The PRESIDENT: Captain Hay has given us a full and admirable account of a region that most of us know very little about. I think, as he said, and as Lord Ronaldshay has indicated, it is a country which has always suffered from perennial over-population. We must not pat ourselves on the back and think we are free from that. We have several million too many in this country already, and they are increasing every year; in particular the sister isle is sending us over a large number of people who might preferably emigrate to the Dominions. The situation all over the world is exemplified not merely by Waziristan. The world-population is growing at a frightful rate. Some say it is only increasing at the rate of 10,000,000 a year; others say 20,000,000; at any rate you have only to multiply either figure by one hundred years to see what it means. It is certain that the various measures that are being taken on the North-West Frontier are all to the good, and we are very lucky indeed to have officers who can deal with the tribesmen in the way that Captain Hay managed the people that he was in charge of. In thanking him I think you will wish me to say that we all hope that his visit to Pre-Ghal will meet with the success it deserves.

Lieut.-Colonel C. H. Stockley sends the following note as a contribution to the discussion on Captain Hay's paper:

I have read Captain W. R. Hay's paper on "Pre-Ghal in Waziristan" with the greatest interest. In February 1923 I was employed in air reconnaissance over the area traversed by Captain Hay, and had to make sketch-maps of the country from the air, and then, later, in combination with aerial photographs.

The existing map, at the end of 1922, was so inaccurate in the region of the upper Dara Toi as to be not only useless but misleading. The Dashka Algad had been united with the Mandech Algad and the streams to the north-west of Wuchwam, so as to form one main valley. Not a single village east of the Dara Toi–Shawal water-parting was shown in its correct position or by its correct name, so that aircraft when flying west of Makin and north of Pre-Ghal were hopelessly at sea.

The "Map of Upper Dara Toi" was made first by sketching from the air the course of each large nullah (Algad), noting its general bearing carefully, and marking in villages as A, B, C, D, etc. A reproduction of the sketch was dropped on the Intelligence Officer, Waziristan, who filled in the names as best he could with the assistance of local intelligence agents. He then sent the sketch to the air headquarters. Strips of vertical photographs were then taken along the nullahs and a large mosaic made. A tracing was then made from the mosaic, and reproduced (by carbon) on to another large sheet. The names were filled in, the whole sheet given a slight tilt to allow for the general rise of ground from east to west, and it was photographed, a calculation being made to obtain average scale of 1 inch to a mile.

This was a very rough-and-ready method, and allowed nothing for distortion, but it was very quick (an essential at the time) and served the practical purposes for which it was made. Flying conditions were very bad, the weather being stormy, very cold, and the bumps dreadful. Heights of passes were obtained by flying the machine low over the pass two or three times, and noting the results on the altimeter. These results seem to have been relatively good, though consistently slightly in excess. Passes were detected by the tracks of men who had crossed them showing in the snow.

The Lowarai Punga in Shawal was covered with snow on the two days on which I flew over it, and, from the air, looked ideal for winter sports. There were two or three slightly smaller but similar clearings (they would be called "margs" in Kashmir) to the south of the Lowarai Punga.

The photograph of Razin and the Dara Toi shows a big ridge in front of Razin on the south. This is probably that by which Captain Hay made his descent from Pre-Ghal. I had picked it in my mind's eye as a good route up the mountain. Wuchwam village was a remarkable sight from the air. Facing south and walled in at the back by Kwajak Sar and subsidiary ridges, it was a veritable sun-trap and held much less snow than the villages several hundred feet lower down, while the sheer-sided gorges on either side made its site appear very strong in natural defence. The water-parting on the west was difficult to detect from the air, and at first it appeared as if the Garai Algad joined the Mandech Algad immediately south of the village, but this was not so.

Wuchwam was noted in 1923 as being the temporary resting-place of the bones of the Mullah Powrindah: his son having removed them from the grave at Marobi lower down the Dara Toi in fear of violation by our troops. One of the first signs of returning confidence after the occupation of Razmak was the return of the bones to Marobi.

The last mile of the Mandech Algad immediately above its junction with the Dara Toi runs through a deep gorge so narrow that it is said only one camel can pass through it at a time. Consequently nearly all traffic from Mandech goes over the Mandech Narai and down the Dashka Algad.

Colonel Stockley's note contained also certain criticisms of Captain Hay's geography in the neighbourhood of Wuchwam: these have been submitted to Captain Hay, who writes: "I think that what has given rise to the misunderstanding is probably the fact that Wuchwam—a large and scattered village—straggles across the watershed between the Mandech Algad and the Sra Tizha Algad. He has ignored the portion on the Sra Tizha side, and I have ignored that on the Mandech side, because I never saw it." *The Survey of India sheets, on which Captain Hay was working, had been revised recently from Colonel Stockley's air reconnaissance, a photograph of which, with the complete text of his arguments and Captain Hay's notes thereon, have been placed in the Map Collection.*

NOTE ON THE HEADWATERS OF THE YARKAND RIVER

MARGARET GREGSON

DURING the summer of 1927 my husband (Lieut.-Colonel G. K. Gregson, R.A.) and I made a deviation from the main trade route in the course of a journey from Srinagar to Yarkand. Following in the tracks of Colonel Wood, Major Kenneth Mason, and other explorers, we left the Karakoram Pass on our right and branched off to the north-west over an easy watershed to the valley called in earlier reports "Valley A," reaching thereby the country at the headwaters of the Yarkand River, usually known as the Amphitheatre. We were neither trained nor equipped to attempt any exploration of value, but possibly one or two of our observations may be of interest.

Leaving Chajos Jilga camping ground on the main trade route early in the morning of 14 July 1927, we reached a point at the upper or southern end of the Amphitheatre, near the confluence of stream A with the Yarkand River, on the same afternoon. The weather was warm and fine, and the stream rose considerably in the course of the afternoon, but presented no serious difficulty to our ponies. My husband shot some Imperial sand-grouse for our larder near the watershed, but we saw no other animal life except one female Tibetan antelope and her calf. The crows, vultures, and other birds of ill omen which haunt the trade route were left behind us, along with the corpses of pack-animals which decorate that "Via Dolorosa."

We rested for a day in our first Amphitheatre Camp, going for an easy morning walk up over the slopes of the hills overlooking the Yarkand River (valley B) towards its source. We took nine butterflies, eight closely resembling the *Baltia Butlerii* (which was taken by the Mount Everest Expedition) and one *Colias*. My husband, during the afternoon, saw many Tibetan antelope in the neighbourhood of Hayward's Lake—mostly females and young ones. Ibrahim, our Karakash, a young Argon from Shushot, who had been to this country with Major Mason's Expedition in 1926, said that the male antelope would be found lower down the Yarkand River. We found that he was right.

Travelling by easy marches down the Yarkand River we eventually reached the junction of the Lungmo Che (stream I of Colonel Wood's report of 1914) on July 19. We went up this valley about 6 or 7 miles to a camp on its left bank, in a small side valley where there was excellent grazing and plenty of burtsi for fuel. My husband and his Kashmiri Shikari, Muhammad Rattar, searched the hills for the herds of large bharal mentioned by Dr. Clifford in Major Mason's report, but without any success. Only one herd of nineteen ewes and lambs was seen, about 10 miles up the Lungmo Che valley. They continued the search with telescope and glasses to a distance of about 17 or 18 miles from the junction of this valley with that of Yarkand River. No other bharal were seen. It is a problem where they may hide themselves, as the southern side of the Lungmo Che is steep, stony, and interspersed with glaciers, and valley J adjoining is reported to be entirely barren. The Lungmo Che valley however affords good grazing in many places, and attracts many antelope, mostly wandering in pairs.

My husband obtained the photograph given of one of the glaciers coming

down into the Lungmo Che on the right bank of the stream. Many of the seracs are seen to be isolated, standing on earth and stones. This may be a sign that the glacier is receding. If it once blocked the valley this might account for the fact that traces of human passage were found in valley J adjoining while none have been found in the Lungmo Che, in spite of its better grazing and similar direction.

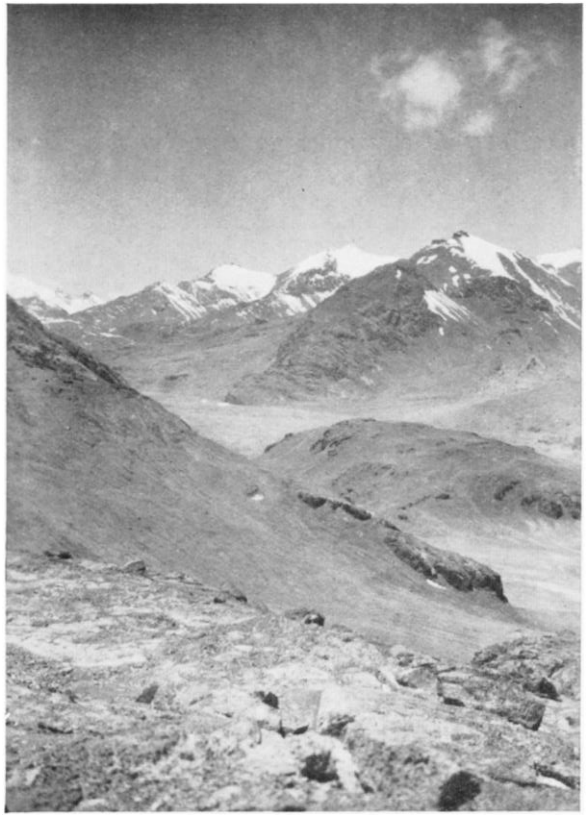
Up to July 20 our weather had been on the whole good, though we had suffered from some sleet showers, and one night of snow (on July 16) with an east wind. Winds were generally high after midday until towards midnight, and the sky a good deal overcast, except during the early hours. Our minimum temperature since leaving the trade route had been 15° F. on July 17; maximum 62° F. Although we had not hitherto had any serious difficulties with rivers, after reading Major Mason's report for 1926 we expected that we should have to retrace our steps and get back to the trade route north of the Karakoram Pass. Ibrahim, the Karakash, who had been with Major Mason, did not know of any way across the hills from the Yarkand River valley to the trade route north of the Karakoram Pass, until the Khuffelang–Aktagh track was reached. This was two days' march northwards, down the river, below the Lungmo Che junction. He did not think we should be able to make Khuffelang, owing to the difficulty of fording the stream in summer-time and the enclosed nature of the gorge above Khuffelang. However, as we had had a good deal of cold sunless weather and the snows were late in melting everywhere that year, we thought there could be no harm in sending two men down to have a look. Ibrahim and another young Argon pony-man named Ghulam Hassan undertook to go downstream and see what our chances were of getting a caravan through. We struck our Lungmo Che camp on July 21 and marched downstream to the junction in the afternoon. On the way we met Ibrahim and Ghulam Hassan returning from their reconnaissance, and to our surprise they reported favourably on the state of the river.

The march down to Khuffelang took us two days from the Lungmo Che junction. On the first day we forded the Yarkand River near the junction, from the left bank to the right, at about 9 a.m., without difficulty. We found it best, however, to carry over our goats and sheep on pony-back. We continued down the right bank and camped at the first good grazing-place, about 9 or 10 miles down—a pleasant sheltered camp under the cliffs and near good grass and water. Some small wild duck were seen, also some Brahmini geese.

On the second day we forded the river three times, all between about 8 a.m. and midday, when the water is at its lowest. It begins to rise after midday. One ford was rather deep, but not too swift, and the ponies all kept their feet and brought their loads safely over, including sheep and goats on the saddle animals. In the gorge just above Khuffelang, between the second and third fordings, we met a caravan of Yarkandis pitched for grazing. To avoid the gorge *below* Khuffelang they had made their way over the hills from Kulan Uldi, and we gathered, through Ibrahim interpreting, that they had had a bad time and were glad of the rest and grazing for their beasts on the brushwood flats just above Khuffelang before going on.

We reached Khuffelang on July 23 about midday, and camped a few miles

Seracs of a glacier on south side of Lungmo Che (Valley I), tributary of Yarkand River from the west



Looking up Valley B towards source of Yarkand river

In the gorge above Khuffelang, Yarkand river

beyond it on the road to Ak-Tagh, which we followed the next day to its junction with the trade route. In Colonel Wood's report of his expedition he writes that on July 20 the water in the Yarkand River was so great that he did not think it advisable to try and follow it down farther than the junction of I and J valleys. (I valley is now called the Lungmo Che since Major Mason's expedition of 1926.) Colonel Wood succeeded in traversing this piece of the river valley in September 1914, however. Major Mason and those with him did not take that way. Our Ladakhis and the Yarkand pony-men told us that it was not a route used by traders, and that the water in the Yarkand River was always expected to be a difficult proposition in the summer months, especially in the gorge just above Khuffelang, where, should a sudden flood occur, it might be hard to extricate a caravan without loss. It may therefore be of interest to travellers in these parts to know that we were able in 1927 (considered a late year) to get down the Yarkand River from the junction of stream A to Khuffelang without difficulty during the month of July. The length of the journey from Chajos Jilga on the trade route to Chibra, again on the trade route, is approximately 114 miles, going this way by the Yarkand River to Khuffelang and through Ak-Tagh. By the ordinary trade route it is about 61 miles, scarcely more than half the distance. Yet the longer route has some advantages, provided the water conditions allow it. Our ponies kept notably fat and fit during the whole time of our deviation from the trade route. In spite of the longer time taken they seemed to be the gainers in condition, owing to the good grazing to be had in the Yarkand River valley. We also enjoyed having plenty of fuel, and were able to replenish our larder with antelope and wild duck easily enough.

One other point of interest is that we found many traces of yak droppings in the Yarkand River valley far above Khuffelang, and my husband also saw a bovine skull up in the hills. Colonel Wood tells me that he had a mixed transport of coolies, camels, and ponies in this region in 1914, but does not include yaks on the list. We were told that Major Mason's expedition in 1926 took ponies and not yaks. Traders are said never to pass that way. Were these traces (quite unmistakably bovine) left by wild yaks at any time, or by some yak caravan which has visited the place and left no other trace ?

THE ARIDITY OF THE TURFAN AREA

LIEUT.-COL. R. C. F. SCHOMBERG

IN recent years much has been written about the desiccation of Chinese Turkistan, that vast region, largely desert, that lies between the Tien Shan in the north and the Kun Lun in the south. Learned explorers have been at pains to prove that the climate of this area has changed, and is changing, and that a process of drying up, in recent times, has taken place. Whether a change in the climate has taken place in the Tarim basin proper, within say the last fifteen hundred, or even a thousand years, is a very attractive subject for research. A recent visit to what may be called a subsidiary part of the Tarim basin showed certain signs that climatic changes of recent years—once again be it understood in historical times—could not with certainty be ascribed to diminished rainfall and atmospheric aridity.

The argument for desiccation is, it appears, that less snow, less water, and so less vegetation has been the sequence in Chinese Turkistan. The area under review is the Turfan district, a depression much below sea-level in certain parts. It has been argued that this tract of country supported a much greater population than it does now, and that the whole depression is much drier, and consequently less fertile, than it used to be : and that these changes are attributable to an altering climate.

Explorations in Turfan have brought to light many evidences of its former prosperity. Documents in many languages show that it was much frequented, and that its population was much larger than could now be supported. But did it in those days feed this population ? Lying as it then did, at the meeting-place of the chief routes in this part of Asia, it collected a large and mongrel mass of inhabitants whom the facilities for trade attracted. But it is doubtful if for that reason the town fed itself. A large population was no more a proof of agricultural fertility a thousand years ago than it is to-day. Transport in Central Asia, at any rate Chinese Central Asia, remains the same as it was ten centuries ago; and the towns of Qara Shahr, Kurla, and Urumchi can no more feed themselves to-day than Turfan could in the past.

Indeed, observation of the Turfan depression points to the fact that it probably supports now a larger population than it ever did—although it grows cotton, which has to be bartered for cereals—and that the water is as abundant as ever it was. There are numerous beds of dry reeds, reeds which have perished many years ago, but what killed them was the deviation of the water for agricultural purposes. Near Turfan City several Karez, full of water, flowed beneath these buried stretches of dead reed; and at Murtukh the peasants were in February digging up the reeds to plant with maize the recovered ground.

Old ruins, abandoned houses, and the like, which abound throughout the depression are no index in Asia of an erst-while fertility. War, pestilence, and famine have rather been their downfall than any act of Nature. When a city has been destroyed by war, it is much easier for the timid peasants who creep back after the conquerors have gone, to start tilling new ground than to begin to clear away the heavy débris of ruined mud walls and fallen rafters.

Indeed, the ruined sites of Turfan appeared to bear no evidence of a

slowly drying and perishing land. At Qarakhoja the large walled city was side by side with the prosperous settlement of to-day, and inside its crumbling walls every clear or level space had been ploughed for the spring sowing. The large mass of ruins, 5 miles from Turfan city, stand on a high and crumbling promontory of loess. On both sides are abundant streams, and the valleys are thick with trees, and the houses and fields are eloquent of flourishing civilization. The city was doubtless supplied with water by a conduit in the days of its prosperity. But no sensible man would endeavour to cultivate it to-day, for the removal of the maze of mud and rubbish is well-nigh impossible.

On the south of the depression are the old remains of Chong Hassar and Kichik Hassar. One would appear to have been a fortress. The latter was a Buddhist stupa. When visited, the weather was perfect. It was a brilliant day in late winter. Chong Hassar was tenanted by a shepherd whose flocks were grazing on the surrounding herbage. There was abundant water about, and from the general aspect of the landscape, there was no evidence of either former cultivation or present desiccation. The fortress was built for protection: the monastery or stupa for seclusion. Indeed, it was remarkable in the district how old sites and new ones were intermingled—an indication that the water of one thousand years ago is still present.

Some of the finest trees in the plains of Turkistan were the willows along the Sengim road. They were as fine as well-grown English oaks, and the only ones that can compare with them are those at Bugur, between Kucha and Kurla. At Sengim, too, were old reeds, dead and desiccated. The same old reeds that are dug for fuel; but it was noteworthy that a new and vigorous growth of reeds was springing up side by side with their predecessors of bygone days.

It seems that a changing climate has been blamed for desiccation. But the alteration in the distribution of water seems a reasonable and equally plausible cause—always excepting political consequences, and the destruction and spoliation of the land by the victors, which has ever been the cause of ruined cities and ruined land in most parts of Asia.

It may be recalled that in India, particularly in the Southern Punjab and in Sind-Rajputana, whole rivers have vanished or have changed their course, yet this cannot be ascribed to alterations of climate.

Mr. Douglas Carruthers in his admirable work, 'Unknown Mongolia'—a book whose fault is that it is far too brief—describes (vol 2, pp.458 *et seq.*) the desiccation in actual progress at the small settlement of Chi Ku Ching on the Hami–Urumchi road, immediately south of the eastern ranges of the Tien-Shan.

Since he visited this place a large Karez has been built. It flowed well for seven years, but then the lower or Chi Ku Ching end subsided. Consequently the water only flows at the farther extremity, where it is no use. Karez want to be regularly cleaned out. As the inhabitants of this miserable dusty little hamlet are not agriculturalists but live by swindling travellers, they were not interested in the success of the Karez. It was built by forced labour; and as there was no corvée to keep it in repair, it collapsed.

Chi Ku Ching is now three times the size it was when Mr. Carruthers

visited it. There is, however, abundant water 12 to 15 feet below the surface. Whatever desiccation is in progress, the cause must be a defect in the water, not the climate. The tamarisk mounds, cut away by æolian action and showing their dead layers of brittle root, are much in evidence, but it was interesting to note that by the side of these dead mounds there were also, in some cases but by no means in all, mounds covered with a vigorous growth of the living plant.

Undoubtedly in the Turfan depression, in the Tarim basin, and elsewhere areas are drying up, but it is suggested that the causes of this desiccation may perhaps be due to the failure of—not, be it noted, a lack in—the water supply. Subsidence below the surface, the blocking of some spring by rock, the tapping of the source elsewhere appear to be reasonable explanations. A change of climate in historical times would surely show itself more widely and more convincingly.

The great feature of Turfan to-day is the Karez. The whole district is dotted with the mounds that mark these subterranean watercourses. It is to these Karez, of comparatively modern introduction—say two centuries old—that Turfan owes its present prosperity. And their presence is proof that there is abundant water, now more skilfully used than before, in the area. What is more, tracts of land never before cultivated are being brought under the plough. All this points to no diminution in the water supply; and hardly supports the theory of a change, in modern times, in the climate.

Unquestionably Turfan is a hard land compared with the easy agricultural conditions of the southern parts of the province, where the water comes of its own free will wherever the cultivator wishes.

Here, in the Turfan district, the water has to be won with labour from under the earth, and the aspect of the country generally, as well as the conditions of tillage, crops, trees, etc., remind one of parts of the Punjab or North-West Frontier. The comparison is heightened by the range of rugged mountains to the north, glistening with snow, precisely as the Himalayas appear on a late winter's day from many parts of Northern India.

It does seem, however, that the theory of recent climatic changes in this depression should be regarded as open to some modification and amendment.

THE PANJAB: A REVIEW

THE LAND OF THE FIVE RIVERS: An economic history of the Punjab from the earliest times to 1890. By HUGH KENNEDY TREVASKIS, I.C.S. *Oxford: University Press* 1928. 8 × 5 *inches*; xx + 372 *pages; maps and diagrams.* 15*s*

IT is difficult to review a work like this, which is in effect a digest of the latest authorities on the great race movements which have formed the present racial distribution in Southern and Western Asia and all Europe, of the growth and spread of religions, of the genesis of customs and laws, and of the gradual development of administrative and financial systems. Mr. Trevaskis' bibliography is an index of his industry and widespread reading, and, as he says himself, his work represents the thoughts and theories formed by him during 20 years in India. All of this is compressed into some 380 pages from preface and introduction to index. The work only carries us up to 1890, which he thinks marks the end of a period of quiescence rather than of great deeds in the history of the Administration of the Panjab, his land of five rivers, and the kernel about which he has accumulated this mass of information, and he promises a second volume dealing with the brighter and more active new era after that year. It is possible to question his selection of the date, as according to his own showing the revenue system of the Province had after long and acute discussions been remodelled and reformed before that date and steps taken to secure the interests of the actual cultivators. In fact, the first Panjab Tenancy Act, which established the great principle of fixity of tenure at a fair rent and which, according to the late Lord Morley, gave Mr. Gladstone his main ideas on the subject of Irish Land Reform, was passed as far back as 1868. The Acts regulating the modern system of administration of the Land Revenue, Forests, District Boards and Municipalities were all passed in the 'eighties, and they have only required minor amendments and no great revisions since.

It is also hardly the case that the great irrigation schemes which have made the Panjab what it is all date subsequent to 1890. Leaving out of sight the remodelling of Feroz Shah Tughlak's canal to Hissar as the Western Jumna canal, and the re-creation of Ali Mardan Khan's cut for supplying Lahore as the Bari Doab Canal (both of which were in full operation in the 'seventies), the great Sirhind Canal, still one of the largest in the Punjab, was started in the same period and opened in about 1884.

The Swat River Canal in the Peshawar District was also started in 1880 and opened in 1885, so also the Sidhnai Canal from the Ravi in Multan, which was the first serious attempt at State colonization of the southern Punjab wastes. The old-established network of inundation as opposed to perennial canals was also, of course, in full flow, and the great Lower Chenab Canal had been surveyed and resurveyed and was under construction for some time before 1890.

From very early ages irrigation has been a necessity of cultivation in the Panjab with its generally scanty rainfall and intense summer heat, and canals existed before historic times. The climate, too, has not apparently changed much. A Buddhist shrine in the foothills north of Peshawar was, as masonry remains show, dependent for its water supply on the same small spring that now exists, and that must have been built 2000 years ago. As we have found in Iraq, canal banks in a country of light rainfall are wonderfully permanent, and such canals existed probably before historical times parallel to but above the Swat Canal in Peshawar and parallel to the great Lower Chenab Canal. The latter, as the width of the old channel indicates, was a very great work. It was probably due to these canals that the plain of Yusafzai in Peshawar was studded with old villages, and that Sangla and other considerable cities existed in the waste of the Rechna Doab. Whether the destruction of the canals was due to the cutting

down of the intersecting streams, which made it impossible to carry the canal across them by banks, or to the numerous raids and invasions to which these tracts were liable, it is now impossible to say, but probably both causes operated. Certainly to the last was due the throwing waste of the heavily irrigated tract in Peshawar between the Swat and Kabul rivers, which lies very low, and is intersected by cuts. This in a few years of want of settled government would soon relapse into swamp, which would explain Baber's rhinoceros hunts. These circumstances must be remembered in dealing with the alleged gradual desiccation of the Panjab, though no doubt the destruction of forests in the lower foothills and in the Siwaliks must have caused damage. Happily this has been stopped, and in the Himalaya proper thanks to the Forest Department there has been a great increase in forest growth during the last fifty years.

Space does not admit of following our author through his interesting speculations on the great race movements into India. He follows most modern writers in thinking that the Dravidians preceded the Aryans, and that Scythians, who came from Eastern Europe and Western Asia, also entered India from the north-west through the Panjab, which forms the natural roadway some 200 miles broad between the Himalaya on the north and the deserts on the south. The striking similarity of the archæological remains found at Harappa and Mohendjo Daru in Sind and the Sumerian remains found at Ur of the Chaldees seems to suggest that the people concerned were of the same race or origin. Did they go from Mesopotamia to India or from India to southern Iraq? In view of the fact that the tract in India where these old cities are found is one of the oldest geologically, whereas Southern Iraq is a recent formation of the great rivers, it seems not unlikely that they went from India, and if so India can claim to be the earliest home of old-world civilization.

The labours of Sir John Marshall and his Department of Archæology have helped history in other areas. Taxila, the great watch-city built and rebuilt by successive waves of invaders on the main road from the Western passes to the Panjab about 44 miles north-west of Rawalpindi (which has taken its place and is in an even stronger position), has recently been explored and excavated by the Department, the work having been undertaken by the Panjab Government in 1910. This has shed much light on moot historical problems, such as the Kushâns. Our author has benefited and his account of all these race-movements is terse and interesting, and embodies the latest theories, but as he is careful to point out, these are only as yet theories.

It was these three waves of Dravidians, Aryans, and Scythians that stamped their character on the present peoples of the Panjab. The Mongols who followed the last were temporary though grievous pests, and were probably responsible for the wrecking of the old irrigation systems and general civilization of the area affected by their raids, just as they gave Buddhism its death-blow, and revived the present poorer form of Hinduism. It is worth noting that the author accepts the old theory, which has always been held by the Afghans themselves, and which holds the field, that the Afghans who conquered the Aryan Pathans in Afghanistan before 1000 A.D. and subsequently overran the Trans-Indus and western Panjab, were descendants of the lost 10 tribes of Israel, whom Sargon of Nineveh settled in the mountains of the Medes. For long our linguists said this was impossible as their language had an Aryan basis, but science also is still not certain, and theories change, and the language test of origin is one of the discredited theories. It is not impossible that the Baluchis who conquered the country south of Afghanistan were of similar origin. In addition to the Vesh, or periodical distribution, the Afghans brought with them the Jewish custom of dividing the land in strips, of which the result was that in the course of time

fields resembled the definition of a line—length without breadth. It was not always the case that the approach of the Vesh voided all efforts at improvement. In Buner, for instance, every one did his best to furbish up houses, etc., before the Vesh, partly for honour's sake and partly because he hoped to derive similar benefits in his new holding and home.

The author traces the rise of early Vedic Hinduism and of Buddhism, and the cause of the fall of the latter and the birth of modern Tantric Hinduism and Brahminism, and the reaction of these on the early social and economical history of northern India, with which and not only with the Panjab his account largely deals. The Panjab, lying across the road of all invasions from the North-West, suffered and benefited most from such incursions; and owing to them no doubt, aided by its fine but rigorous climate, it has become the breeding-ground of the finest Indian races. Already known as most fitted for war, the Panjabis have been declared by the Labour Committee of the early 'nineties to be by far the best mill hands and craftsmen in India, and with the present spread of education they have produced excellent medical and veterinary officers and agricultural experts, and will no doubt soon develop a race of practical scientists. After all race and climate must tell.

In dealing with these movements Mr. Trevaskis naturally lays stress on the geographical features, which here as so often elsewhere have determined history, and especially on the rivers which have given their name to the Province, and his sketch-map facing page 4 is clear. He might for the uninitiated have explained that the Doábas or tracts between each pair of rivers had got their names also from their streams. Thus the western-most doába between the Jhelum and the Chenab is the Chaj, that between the Chenab and Ravi the Rechna, that between the Bias and Ravi the Bari, and that between the Bias and Satlaj the Bist or Doáb *par excellence*. The motto of the Panjab coat-of-arms is *Crescat e fluviis*, and seeing that in the past fifty years the area irrigated by these rivers, mainly from desert wastes, has risen to 11,000,000 acres and is still increasing by leaps and bounds, there never was a more warranted motto.

Mr. Trevaskis is rather inclined to undervalue the agricultural work done by Government in the past and to vaunt the labours of the new agricultural department. No one would decry these, now that they have learnt to study native practice and the reasons for this. It was not always so. In the early days the Department proposed to stop sugar-cane cultivation in the Panjab on *à priori* grounds of inadequate rainfall, etc. Fortunately their proposal, which might well have started a rebellion, was nipped in the bud, and they have now found that in parts of the Panjab the soil and climate are most suitable for cane of excellent quality and high out-turn. The much-vaunted American system of dry cultivation has been practised by Panjab peasants for countless centuries, and they also sow pulses with wheat as well as in rotation on dry lands, as this secures one crop at any rate and improves the land, though they did not know that this was due to fixation of nitrogen in the soil by the pulses. In agriculture an ounce of practice is worth a ton of theory, but this has been realized, and the present efforts of the Department are hopeful and fruitful. Still, he is the benefactor who makes two blades of grass to grow where only one grew before, and the State canals are agricultural improvements of national and even universal importance with which no Departmental improvements can hope to compete.

Coming down to historical times our author relegates dates to an appendix and tries to view "the life of the immense mixed multitudes of a country which is a museum of economics and sociology." He shows how the village communities, which are still such a prominent feature of Northern India, came into existence, and how they held on despite the legions of foreign invaders thundering past

and the even more deadly attacks of chaotic internal disorder. The lover of the picturesque will miss the personal tales and touches of old-fashioned history, but with the appendix he can from this book form a clearer idea of how modern India came into existence. Even the Moslem invasions and conquests did not uproot these sturdy villages, though some sought protection by an outward change of faith, and it is not uncommon in the Central Panjab to find adjacent villages held by men of the same stock and parentage, who in some are Muhammadans, in others Hindus, and in others again Sikhs, but creed apparently tells and the relative prosperity of the owners usually rises in the same order of creeds. The author's views on ordinary history since Nadir Shah's invasion in 1739 are more open to question, especially in their severe animadversions on British Policy in the Sikh and Afghan wars. There is a good case for the government in each of these, but it is not possible in a short review such as this to state it adequately.

In chapter v an account is given of the formation of the British administration in the Panjab and its gradual consolidation and development. The great deeds of the early officers are duly applauded, but the author might have mentioned that it was another Ulster man, Sir Robert Montgomery, who disarmed the garrison at Mian Mir and so saved the Province. It is worth noting that for all his more robust methods Sir John Lawrence created fewer foes amongst the Panjabis than Sir Henry, who was regarded by some as of uncertain temper. The Panjab Sikhs and Moslims both rather appreciate robust administration, and it is perhaps fortunate that Sir John was the Chief Commissioner in 1857 and not his brother with all his pleasanter qualities, though both were great men.

The account of the gradual formation of the present system of administration is good, but the author is open to the charge of undue denunciation of the Courts and lawyers and all their works. It is no doubt true that in this matter as in many others, and as we are now doing in the matter of representative self-government, we did try to introduce too suddenly our own ideas of what was good practice amongst a people and in a state of social conditions quite unsuited for such radical reforms. But the fact remains that our Courts with all the defects of their legal chains and trappings were infinitely superior to anything that had ever been seen in the Panjab, and on the whole were well accepted, except of course by disappointed litigants. The people would no doubt have been better off and happier if the old patriarchal order under which officers were to be guided by justice, equity, and good conscience, if no other law appeared applicable, could have been indefinitely continued, but this was a counsel of perfection in view of the measures taken in the rest of India and of the general feeling of the Panjabis themselves. As it was, thanks to the knowledge and tact of the old Panjab officers, safeguards of the interests of the people, and especially of the cultivators, were inserted as statutes were applied, and the resultant troubles were minimized.

This was especially the case in the matter of the assessment of revenue. The author gives the modern view of the growth of Hindu nations in India from patriarchal groups of nomads, through the formation of clans under chiefs first pastoral and then settling down to rude agriculture with chiefs holding a special extra share of the land of the clan, to the agglomeration of these under kings, who eventually asserted their claim to a quarter share of the produce of all lands. This condition of affairs was upset by the Muhammadan invasions bringing with them a general idea of equality of status of all and of tithes for the head of the state, which was modified by previous Hindu practice into that of a Supreme Ruler and practical state ownership or overlordship of all lands. This eventuated under Todar Mal and the other expert advisers of Akbar, mainly Hindus, who

have always led in matters of revenue arrangements, into a land-revenue system on which our present organization is based, though Akbar's arrangements were from time to time disorganized by anarchy and disorder. Our own system also, though it works so smoothly now, would only be possible under a strong, settled, and peaceful government. If such is weakened and distracted by popular clamours and fanciful experiments, the system cannot be maintained, and India will lose its most stable source of revenue, though the doctrine of ultimate state overlordship on which it is based should appeal strongly to all Socialists. In the Panjab the village communities were strengthened by us, and the settlement contracts were generally made with them. The early settlements based on Sikh demands and the practice of the North-Western Provinces were naturally heavy, but the rapid advance of the province under them showed that they could be paid, and the settlement officers found ways of making the system more suitable to the province. It is quite true that the old assessment statistical guides were perhaps subconsciously cooked, and rates of out-turn per acre and prices were adjusted to bring out a rates-demand more or less agreeing to the actual demand which on a careful inspection of the estates the Settlement Officer felt that he could properly make. Yet it was one of these officers dealing with one of Mr. Princep's Settlements who pointed out the fallacious system adopted, and how dangerous it was for the real interests of the State to make it appear that government was taking approximately the full one-sixth of the gross produce to which as ultimate owner it was entitled by tradition and statute, when it was notorious that it was only taking about one-twelfth. Such a policy of self-deceit could only afford an excellent opportunity to those who, as in the present Bardoli case in Gujrat, challenge the Government revenue system as tyrannical and exorbitant. It was this representation which led to the issue of the order by Sir J. Lyall mentioned on page 277 that a preliminary report on rates based on facts should be submitted before and independently of any suggestions of actual rates to be used in assessment. These reports soon showed how much the actual revenue was below the legal demand, and explained the great rush from 1870 to 1898 by moneylenders and capitalists to acquire agricultural land. It is however hard to protect a peasant against himself, and peasants turned moneylenders, as is common now in the prosperous Central Panjab, are often the worst blood-suckers. Even the great colonization schemes might have failed, as the Sindhi colony partly failed, if the colonists had been given proprietary rights straight off. Had this been done, their holdings would have passed into the hands of the larger owners and capitalists, and the Panjab would not have shown an import of £4,000,000 in gold a year mainly absorbed by the cultivators as it did before the Great War. It was their status as occupancy tenants of Government that saved them from themselves, and this should be borne in mind in the case of all new colonies.

The final chapter "Conclusion" is a good summary of the author's thesis. Even if his generous enthusiasm for one of the finest bodies of peasants in the world has led him to denounce somewhat unmercifully whatever seems to him to have militated against their interests in our administration, he has done a great service to all students of Northern Indian sociology and economics by compiling this very valuable guide, as he himself puts it, to the study of the leading authorities on these subjects. In his arguments he follows his hero Mr. Thorburn, of 'Mussulmans and Moneylenders,' who undoubtedly did so much for the peasants of the Province, though his methods of advocacy nearly wrecked the cause that he had at heart.

There are mistakes mainly typographical in several of the vernacular terms in the notes and appendix, which should be corrected in a new edition. Thus the

poll tax is sometimes written jaziya and sometimes jiziya; a grant for subsistence is Madad Maash without a comma. Theh, an old village site, is written Thekh, Bahowalpurum instead of Bahawalpur; Kharkhanda instead of Kharkhauda; Sukarcharia for Sukarchakia. There are other oversights; thus the page references on page xiii are incorrect, and on page 354 the annual rainfall of Gurdaspur is given as 75·80; on page 140, by an obvious misprint Ahmad Shah Abdali is said to have finally invaded India only two years after Nadir Shah instead of over thirty years. On page 74 in the Appendix *dhaya* is said to mean the low valley of a river—it is really the old high bank of this; and on page 14, in the inscription on the Dewan-i-Khas of Delhi the word for paradise is *fardús* and not *bihisht*, and the inscription runs: *Agar fardus ba rui zamin ast, hamin ast wa hamin ast, wa hamin ast.* As a matter of fact, too, present Delhi or Shah Jahánábad, though founded by Shahjahán, took, like New Imperial Delhi, many years in the building and was not used much by him. *Absit omen* / LOUIS DANE.

THE POPULATION CAPACITY OF AUSTRALIA

DIE WIRTHSCHAFTS- UND LEBENSRAÜME DES FESTLANDES AUSTRALIEN. Von WALTER GEISLER. (Koloniale Studien; Hans Meyer Festschrift. *pages* 199–222; *pls.* 4, 5.) *Berlin: Reimer & Vohsen* 1928

THE number of inhabitants which Australia, if suitably developed, could support is of interest in connection with the problems of European migration besides being the determining factor of the future of the continent. The interior of Australia has such a low relief and is so far from the sea that the rainfall is small and the land has a low stock and population capacity. Australia, on the other hand, enjoys many great natural advantages. Gradients in the interior are gentle, so that transport is easy; and as Australia is the only large land area in the South-Western Pacific it should in time find rich markets for foodstuffs and manufactures in the South Sea Islands, which, owing to their fertility in tropical products, should ultimately have populations as dense as those of Barbados and Malta.

Some authorities, impressed by the aridity of the interior, consider that the growth of the Australian population will be slow and the maximum less than 50 millions. Such are the estimates of Prof. Griffith Taylor, Prof. E. M. East, and Sir Charles Close. On the other hand, a calculation I made some years ago gave the future population as 100 millions; that figure has been often adopted, but it was rejected as a ridiculous underestimate by the late Admiral Sir Edmond Slade, who was confident that Australia would reach a population of 200 millions.

The latest detailed estimate is by Prof. Walter Geisler, of Halle: it was prepared after a long tour in Australia, especially devoted to this problem. He divides Australia (exclusive of Tasmania) into 43 divisions and has estimated the population capacity of each. He calculates that Australia and Tasmania could together maintain a population of from 150 to 200 millions. His conclusions may best be illustrated by the accompanying sketch-map, which shows Geisler's 43 divisions and his estimate of the density of population per square mile which each of them could support. The rates vary from a maximum of 130 per square mile for the eastern and part of the southern coasts and the wheat area of the south-western corner, down to 3 per square mile for the two great desert areas on the western interior. Probably no two students of the subject would agree even as to the relative capacities of these divisions. The estimates of 5·2 per square mile for the Blue Mountains of New South Wales and for the Australian

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CARAVAN ROUTES OF INNER ASIA: *The third "Asia Lecture," read at the Evening Meeting of the Society on 5 November 1928 by*

OWEN LATTIMORE

ALTHOUGH my subject concerns the geography of Mongolia and Chinese Turkistan I shall deal with it as it appears to a man who is not a scientific geographer. In 1926 and 1927 I travelled overland from Peking to India. The journey took me through Mongolia by camel caravan for a distance of some 1600 miles, along a route which, as a whole, has never been explored. Later, in Chinese Turkistan, I was joined by my wife, who made a very enterprising journey by rail and sleigh through Siberia to meet me, and together we finally reached Kashmir. The subject in which I was chiefly interested throughout the journey was the courses and movement of trade. I wanted also to get, on the ground itself, material for a comparative study of the trade routes of the present day, in relation to what we know of ancient routes in Inner Asia. I had then been in China for seven years, during which I had gained some knowledge of the workings of inland trade and, which was even more valuable, a thorough knowledge of vernacular Chinese.

I will spend most of my time on Mongolia, because the way I travelled there and the things I saw were more unusual than anything that can be told about the comparatively well-known routes of Chinese Turkistan. Also, since I am no learned geographer, I may be allowed to drag in topics which, though not strictly geographical, are allied to geography—the life of primitive people, the courses of tribal migration, and the origins and movements of trade.

The two "Asia Lectures" already delivered have been by two of the leaders of Central Asian discovery. Sir Aurel Stein has given us the benefit of his extraordinary learning and the massive industry which has enabled him to light up more than any other man the dark places of Central Asian geography and history. Mr. Roy Chapman Andrews has shown what can be done by taking a large corps of men, all of them experts in widely different fields, and transporting them about Mongolia in motor-cars, covering an enormous amount of ground in reconnaissance, as well as working intensively at chosen sites.

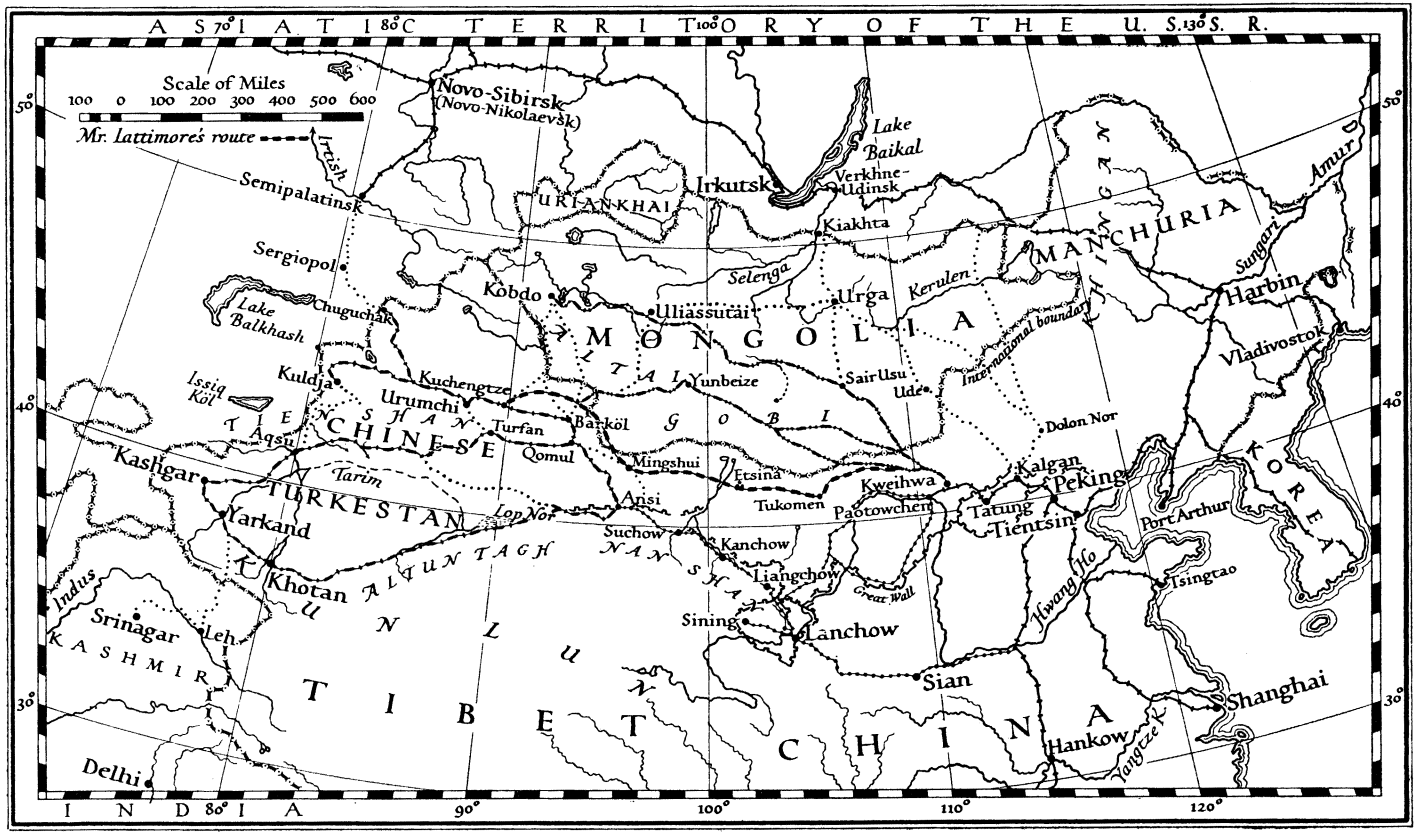
In comparison, my own work is inconsiderable. I know that I am out of date, like a survivor from earlier generations, when the traveller was perhaps more of a wanderer than an explorer. But something remains, for all that,

which can be studied best by the man who travels, so to speak, close to the ground. If you are accompanied by a number of assistants, it is difficult to remain in close, sympathetic touch with the people of the country. The mere fact that you are constantly talking in an unknown language excites curiosity and suspicion. If you do a lot of digging and surveying, if you deal much in mechanical devices—let alone such roaring monsters as motor-cars—these difficulties become almost insurmountable. You must remember that in those countries you must be prepared to deal with people who think that field-glasses are filled with human eyes. They think that only the strength of a large number of eyes put into that instrument could make it see so far. They also think that a foreigner, with his glasses, can look into the ground and discover gold and jewels.

If there is any value in the work I was able to do, it is chiefly because what I learned was learned while travelling the ancient routes of Inner Asia with caravans practically the same as those which tramped the same routes hundreds, in fact thousands, of years ago. The conditions were the same. The dangers of thirst, cold, sand-storm, snow-blizzard and attack by robbers were the same. The caravan men and traders were not different in any important respect. Everything that I saw, felt and heard would have been seen, felt and heard, with little exception, by a stranger travelling two hundred or two thousand years ago. I had not even any maps that were of any use in illustrating the daily march.* The problems of direction and distance over which I puzzled every day would have appeared in the same light to Marco Polo, say, or William of Rubruck. I had only one advantage over them—in knowing the language of the people with whom I lived. There was no need to attempt anything so elaborate as travelling in disguise, but I did pass familiarly among these people. Not only my language, but all my routine, my food, and a large part of my clothing were the same as theirs.

Perhaps the best way to approach our subject of the caravan routes of Inner Asia is to describe first some of the daily experiences of caravan life, the men to be met and the difficulties to be encountered. In that way we can see the routes as nearly as possible from the point of view of the men who earn their living tramping up and down these obscure highways of the desert. Then, after the stage has been set, and we have seen something of the characters, we can go on to discuss the origin and development of these caravan routes which are, after all, nothing less than a magnificent historical spectacle, set in and dominated by geographical conditions of a peculiar fascination.

Of the two great routes from China into Central Asia, the only practicable land routes in ancient times between China and the West, one goes up from Central China to the edge of the desert and then crosses into Chinese Turkistan without touching Mongolia at all; the other goes from North China through the central, northern and western territories of Mongolia. As it goes west it offers a choice of directions. One lies through Uliassutai and Kobdo, with approaches to Siberia at Chuguchak or Altaiski. One goes to Kuchengtze, entering Dzungaria, or northern Chinese Turkistan. This latter version of the route is known as the Great Mongolian Road. From Kuchengtze, access



The principal caravan routes of Inner Asia

can be had to the inner basin of Chinese Turkistan, or trade and the traveller can continue to the north of the Tien Shan, entering Siberia either at Chuguchak or Kuldja.

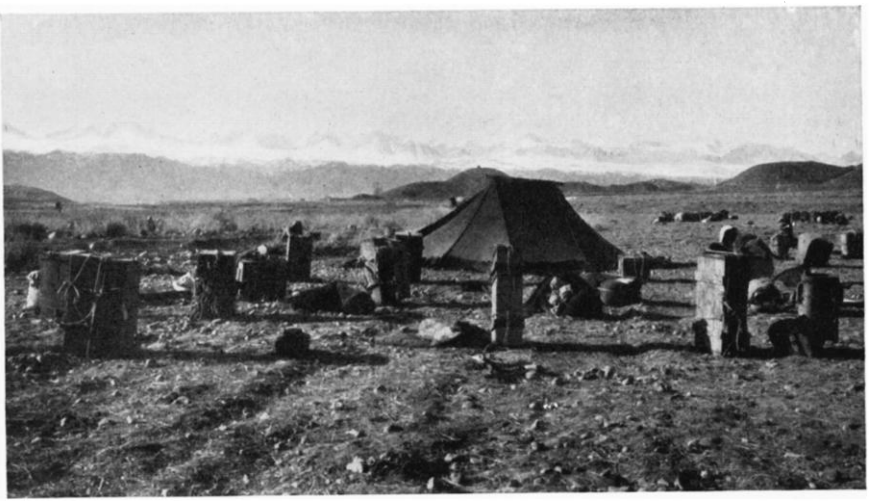
When I came to set out on my travels I could not follow the first route because of civil wars, banditry and anti-foreign feeling. I could not take the second because of late years the tribes of Outer Mongolia, largely under Russian influence, have declared their independence of China and will not allow caravans or travellers from China to enter their country. These abnormal conditions throughout the hinterland made travelling more dangerous than it has been for many years. On the other hand, they had an unexpected and fortunate result, in making it possible for me to hit off an east-to-west route through Mongolia that is, taken as a whole, entirely new on our maps. Moreover it has, I think, a good deal of significance in the comparative study of ancient and modern caravan routes. It traverses country so desert that, except for this lucky pressure of circumstances, guides would have been hard to find, caravan men would have denied the existence of a practicable route, and the cost of establishing it would have been prohibitive.

This route has been worked out by the caravans trading between North China and Chinese Turkistan. It has come into use because it is less open to interference from either Outer Mongolia or the border country between Mongolia and China; but even so it is vulnerable to raids at several points from either north or south, and caravans travel in almost constant danger either of attack by robbers or extortion by soldiery. The eastern half of the route is determined by series of wells which, in my opinion, prove it to have been in all probability much used in ancient times, but neglected for centuries owing to changes in the relations between the Chinese and the peoples of the Mongolian plateau. The western half offers a traverse through the least-known country in all Mongolia, a no-man's-land of remarkable interest which, from its physical characteristics, has probably been a debateable ground throughout history.

Leaving Peking by the railway which skirts a part of the Mongolian border country, I started by camel caravan from Kweihwa, which is known to the Mongols, and is described in several books of travel, as Kuku-khoto. The start was not accomplished until I had been delayed at Kweihwa for nearly six months, by a series of difficulties which I need not describe here. I had a caravan of nine camels—several more than were necessary—which I had secured by complicated negotiations after the first camels I hired had been seized for use in a Chinese civil war. The camels were in charge of one man, their owner. The only other man in the party was "Moses," my Chinese servant.

Moses was a stout-hearted Chinese of the fine northern stock. He had been in my service a number of years, and had served my father before me. He not only volunteered to go into Mongolia, but insisted on going. His fidelity can only be appreciated by a foreigner who knows what the interior of China was like at that time, with sporadic outbreaks of anti-foreign feeling, in addition to the banditry rampant in many places. It was a time when it would have been hard to bribe a trustworthy man to accompany a foreigner on a long journey through unknown country. Moses put the matter plainly, as one of

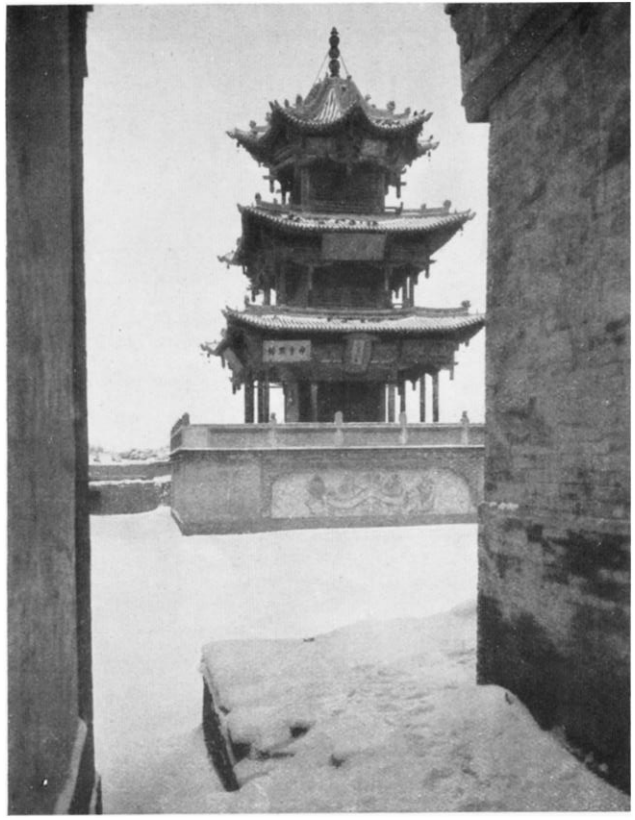
Watering camels at Shih-pau Chiang (Stone-slab wells), after 100-mile crossing of Khara Gobi



Camp near Tuhulu in northern valley of main range of Qarliq Tagh

Camp at Morhgujing, where Winding Road diverges from Small Road

City of Maralbashi, Chinese Turkistan



Pagoda, Shansi Guild (chief caravan traders' guild), Kuchengtze

his final arguments, when I was hesitating about taking him. He said that it was absolutely necessary for me to have a safe man behind my back. He was quite right. Had it not been for his Ulysses-like qualities of courage tempered by wily counsel, I might half a dozen times have fallen into worse trouble than I did.

As the route we followed has so recently come into regular use, it is unknown to numbers of men who have been bred up in the caravan trade. My camel man did not know the way, and thus for a great part of the time we travelled by attaching ourselves to trading caravans. In this way I came to live among the caravan men exactly like one of them. We travelled mostly at night. Had we travelled by day and turned the camels loose at night to graze, there would have been a danger of their straying and getting lost; whereas by grazing them during the day we were able to keep an eye on them.

We began the day at dawn, by making tea. We had with us only brick-tea, made of the coarsest grades of leaves, twigs and tea-sweepings from the warehouses compressed into solid blocks, from which we would chop off as much as we needed for each brew. In this tea we used to mix either roasted oaten flour or roasted millet—looking like canary seed, which in fact it was—stirring it into a thin slush and drinking it down. About noon we had the one real feed of the day. This would be made of half-cooked dough. We carried the white flour along with us, and would make the same sort of dough every day. We would moisten the flour, roll it and thump it, and then either tear it up in little blobs or cut it into a rough kind of spaghetti.

The reason we drank so much tea was because of the bad water. Water alone, unboiled, is never drunk. There is a superstition that it causes blisters on the feet. Our water everywhere was from wells, all of them more or less heavily tainted with salt, soda and I suppose a number of mineral salts. At times it was almost too salt to drink, at other times very bitter. The worst water was in tamarisk regions. The tamarisk is a desert tree, or rather shrub, sending down its roots to a great depth to reach water. When the water is near the surface the roots, rotting in the moist earth, turn the water a yellow colour. It is thick, almost sticky, and incredibly bitter and nasty.

Sometimes we had water every day; usually we came to a well every two or three days, carrying a supply with us in flat-sided, wooden butts, which could be loaded two on a camel. Our longest distance between wells was in the crossing of the Black Gobi, where we had one stretch of nearly 100 miles between wells. Our average march was 15 or 16 miles, but in forced desert crossings we could push the distance up to 30 miles.

The men of the caravans belong as unmistakeably to their calling as seamen belong to the sea. Perhaps 10 per cent. of them are Mongols. The rest are Chinese of different northern and western stocks, from Shansi and Kansu and the communities of Chinese settled in Turkistan. Almost all of these Chinese have strains, more or less remote, of Central Asian blood—whether Mongol or pre-Mongol, Turkish or Tangut, or some other of the migrating peoples that in the course of centuries have alternately invaded or been thrown back from the border country. Whatever their origin may be, they are first and last men of a calling. They belong to the Gobi routes. When they set out on a journey they put behind them every association binding them to cities and

tilled fields. They even hold lightly associations which have almost a sacred force among the Chinese, such as their responsibilities as householders or heads of families.

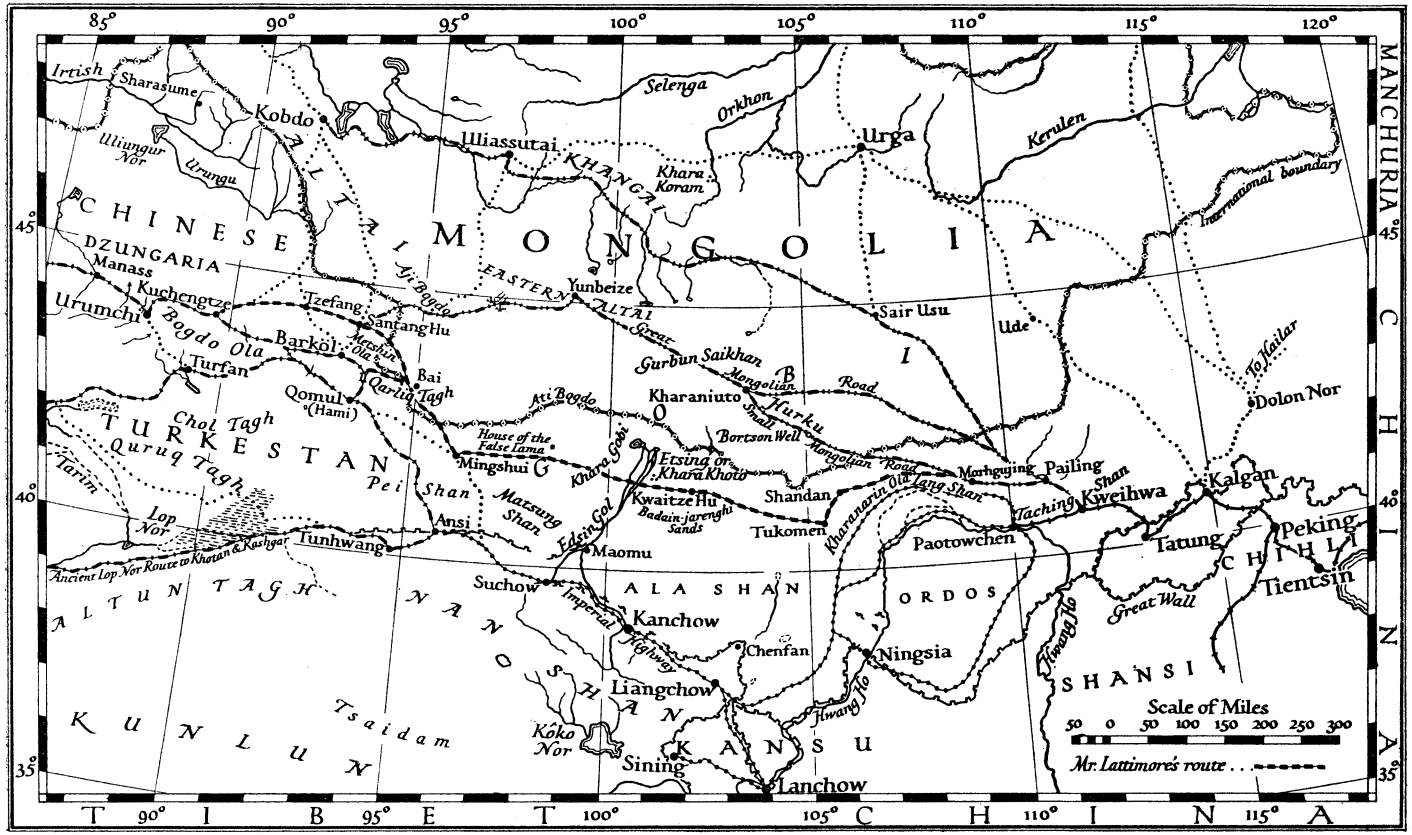
It is perhaps too definite to say that they leave behind their gods and the creed of their ancestors, because at best their gods and creeds are vague and unformulated. Yet the departure has all the effect of such a renunciation. They discard one set of customs, observances and tabus, and submit themselves to another. *Tso hou-ti, sui hou li*, they say: "Travelling in the Back Country (the Mongolian plateau, that is), follow the observances of the Back Country." They feel that in the desert human actions are subject to the attention of a different array of powers. In fact, they become nomads. Many of their propitiatory rites and self-defensive tabus are not only taken over from the Mongols, but are inheritances, among the Mongols, from the most primitive instincts of nomadic people. They strive to propitiate the powers and spirits that follow at the heels and lurk about the tents of savage, wandering people at grips day and night with the harsh menace and niggardly resources of a raw, unmastered country.

From the moment that the tent is pitched at the first camp, the "Custom of the Caravan" prevails.* Fire and water assume a different importance. Each time that the tent has been set up in a new place, a little of the first water boiled and the first food cooked must be thrown on the fire, and a little out at the door. The offering to the fire is evidently to honour it for its services, and the offering thrown out at the door is to honour the *genius loci*, lest it be dismayed or angered at the intrusion of men. The caravan men themselves naturally, have no such explicit theory of their behaviour. They say simply that they are observing the *li*, the custom or ritual.

Other observances are in the nature of tabus. A caravan man may not slaughter a camel, nor eat camel flesh, nor sell the hide of a camel. If a camel becomes too weak to follow the caravan, it is left by the trail to die. The owner will not kill it, for fear that its soul might follow the caravan, haunting the other camels. The tabus on camels apply especially to the caravan men. Other tabus are part of the Mongol life reflected in the caravan life. In eating mutton, a caravan man is almost as scrupulous as a Mongol in stripping the bones of every particle of flesh, gristle and sinew. The Mongols regard sheep as their staple of life. A sheep may be deprived of life only to prolong the life of man. It is not only the flesh of the sheep, but the vigour of its life that enters into the body of man. Therefore to waste any of the flesh would be to treat the loss of its life as a matter of no account, and for this the disturbed soul of the sheep might well haunt either the taker of its life, or his flocks. The soul of the sheep is only honoured if its flesh is eaten scrupulously without waste.

The souls of animals and men, in other words, are distinct from their lives. The life of the sheep enters into the man: the soul survives. To make doubly sure that the soul of a sheep will not work mischief, it is both honoured and injured. Certain of the major bones, preferably the shoulder blades, ought to

* Except among Muhammadan caravan men, who think themselves above all these propitiations. Islam is like Christianity; in going abroad it asserts itself against all the gods it finds in the way.



Caravan routes from China to Central Asia, showing Mr. Lattimore's route from Kweihwa to Kuchengtze

be broken. As long as the bones are uninjured, the soul has a vehicle which it may use in haunting the man that slaughtered it; but if the bones are broken the soul is lamed and powerless.

I hope that with this talk of ungeographical things, ghosts and superstitions and the practices of more than half barbaric men, I have been able to raise up something like a real background of living men and living traditions for the more technical discussion of these caravan routes of Inner Asia. It is important to remember that along these routes are preserved, in our time, the traditions of the past. We are dealing with trade routes in modern use, but they are routes that can be used to advantage only by a special class of trader, and this class must have been essentially the same in the past as it is now. The men who take caravans out and back through Mongolia are migrants. They are a mixed race, without true nationality, one might say, forming a link between the nomadic and the settled races. They are not business men, able to calculate in advance their yearly turnover, maintenance charges, and percentages of profit. Like the nomads, their wealth is tied up largely in living animals, whose capital value is subject to great variation. They take up a cargo on the edge of China, migrate with it for hundreds of miles into Mongolia, or across Mongolia to Chinese Turkistan. There they pick up the most advantageous freight they can find and make a return migration toward China.

There may be a fortune in the business. There may be only privation and suffering. There may even be robbery or captivity, or death by storm or violence. The men travel between known destinations, it is true, but they must be prepared on the way to open new passes across mountains, or undertake new detours through deserts. They represent an adaptation of nomadic society to the uses of civilized trade. They are, in fact, commercialized nomads, and it is this perpetuation of the nomadic tradition that I wish to bring out in discussing the geographic distribution of caravan routes. It is not only a clue to the right appreciation of routes in Central Asia, but it distinguishes the two main classes of trade routes. One class comprises the routes which lie in channels created by migration, by the movement of whole peoples. The other includes the routes of what we may call a normal kind; routes, that is, for which the normal use, throughout history, has been the transportation of goods from point to point for commercial advantage, routes by which individuals or parties of men have always travelled as we travel now, for political, personal, commercial or even religious reasons.

A rapid survey of my own route will show some of the geographical factors which have been important in the past, and many of which have an undiminished importance in the present. A reference in brief to the map will show the most important correspondences between this route and areas traversed by other travellers. Up to Morhgujing it corresponds roughly to the Younghusband route of 1887. At Shandan Miao and Tukomen (Bain-tuhum) it crosses different routes of Prjevalski. In the region of Kuai-tze Hu important work has been done by Kozlov. The Edsin Gol has been visited by Kozlov, Stein, and Warner. West of the Edsin Gol the only known route appears to be that of Ladighin (one of Kozlov's assistants) from north to south. At Ming Shui the route probably touches again that of Younghusband; at any rate

from then on it approaches country worked in by Obruchev, Holderer and Futterer, and their successors.

Kweihwa stands in a wide depression. On the south are the hills that in time past were the frontiers of Shansi province. On the north are the hills rising to the Mongolian plateau. The region is by nature a debateable ground, and has been disputed between the Chinese and different Tatar races. A legend survives of the ruse by which a Chinese general established the tradition that the northern rather than the southern range should be the perpetual boundary between Mongols and Chinese. The resources of the country about Kweihwa, especially in grain and other supplies, make it a natural centre of Mongol trade and a nodal point of caravan traffic.

The range to the north, called by the Chinese the Taching Shan, looks from Kweihwa to be a true mountain chain, but on ascending through it a plateau is found on the northern side, instead of a descent, and it is seen to be an escarpment of the Mongolian plateau. On the southern face of the Taching Shan a few patches of coniferous forest survive, by virtue of being temple sanctuary. Larger forests must have survived until comparatively modern times, as the deforestation is attributed by local legend to the building of the Mongol temple-community which is the core of Kweihwa town. The minor hills which break the surface of the plateau on the north can hardly have been forested in historical times, but air currents from the Pacific, caught by the Taching Shan, extend their influence well into the plateau, ensuring a precipitation of rain and snow enough not only to nourish excellent pasture, but to make possible the cultivation of the hardier cereals, such as oats. This frontal part of the plateau is being rapidly penetrated by Chinese colonists, but vast reserves of pasture are left. These ideal grazing grounds for the annual "conditioning" of camels during the period when they shed their hair, in proximity to cheap food-supplies for men, explain the natural importance of Kweihwa as a caravan centre.

The transition from the pasture country to desert conditions is marked in a general way both by a gradual rise in altitude and by the diminishing effect of the Pacific moisture. The main Gobi trends roughly from south-west to north-east. In the extreme west it abuts on the Quruq Tagh, on the far side of which is the Taklamakan desert. It is apparently at its widest, from north to south, from long. 100° to 105° E., diminishing gradually toward the east and at last "running out" in Eastern Inner Mongolia as it approaches the Khingan Mountains. On the northerly side of the main Gobi it would appear that moisture is again condensed by such important ranges as the eastern Altai and the Khangai. In the belt of country under the climatic influence of the eastern Altai, good pasture is found, supported by springs and subsoil drainage, where wells can be dug to tap underground watercourses at no great depth. Still farther north the Khangai Mountains determine a region of great plenty, with forests, arable country as well as pasture, and lakes and rivers draining toward, or flowing into, Siberia.

Directly north of Kweihwa the Gobi is nothing like so formidable as it is farther to the west. Caravan routes toward the west and north-west therefore make very little westing until the arid country has been crossed, and lines of water and grazing can again be picked up. These lines lie parallel with the

governing orographical features of the country, which are formed of chains of hills with a general south-east to north-west tendency—departing at a widening angle, that is, from the axis of the Gobi, as they go west. As these hills decline into plains the subsoil drainage which they conserve approaches the surface, grazing is found, and wells can be dug even if no springs break forth.

The caravan men distinguish the various alternative routes according as they take the northerly or southerly side of the hills. All of these routes, however, have at present the political disadvantage of entering Outer Mongolia; for the Gobi itself distinguishes Inner Mongolia (the sphere of Chinese activity) from Outer Mongolia (the sphere of Russian activity). Thus the political boundary is not a handy and absolute demarcation but (except in the extreme east, where Inner and Outer Mongolia blend into Manchuria, and an according political confusion prevails) an arid waste of variable width.

The route which I followed goes only far enough north to find a practicable line to the west, without trespassing on the northerly side of the Gobi, where the wells are watched by patrols of the independent Mongols. Then it strikes right away west, holding almost straight on through what appears, by a comparison of available accounts and on the testimony of the caravan men themselves, to be by long odds the most extensive and the most arid desert country in all Mongolia; the heart of the main Gobi. This is the route that always ranked in my own thoughts as distinctly the "desert road" to Turkistan.

The broad structure of the main Gobi is so simple, and so lacking in salient local details, that it is hard for an uninstructed traveller like myself to apprehend minor details of formation, though they may be of great importance. I had to acquire the "feel" of the desert gradually, while travelling for hundreds of miles, and storing my mind with hints from the talk of veteran caravan men; for these men themselves, though they have an admirable geographical sense, go almost entirely by the feel of the country. They can hit off an excellent line of march, conforming to the general features of the country, but they cannot analyse, they cannot give you a rational explanation of the particular topography of a piece of country immediately under their noses.

Fortunately, my general impression of physical characteristics along the route I followed is borne out by the particular observations of such explorers as Prjevalski and Kozlov. These have established that there is a series of depressions in an east-to-west line, roughly following the long axis of the Gobi and about in the middle of its expanse from north to south. The Gobi itself is a plateau, tilted toward the south, but this series of depressions forms a shallow trough down the middle of it. Toward this trough there seeps a scanty subsoil drainage. It is as if the Gobi had a sunken spinal channel, instead of a raised spinal ridge of mountains, and the caravan route simply feels its way along the line of depressions, keeping as far as possible to the lowest country.

The Winding Road or Desert Road does not immediately strike into this line of depressions. For a travelling distance of about 240 miles it accompanies what the caravan men call the Small Road, a southern branch of the Great Road or chief route to the West, which it later joins. This first stage lies through the pasture country under the climatic influence of the Taching Shan and its westerly extensions. Then for some 40 miles an increasing aridity

is apparent. This may be because the mountains on the south, forming the rim of the plateau, are not so high as the Taching Shan.

After entering the arid country the Small Road diverges to the north-west, at a point called Morhgujing, while the Winding Road holds on more to the west. The Small Road, as I understand it, coincides with the route followed by Younghusband in 1887. It goes far enough north to reach the southerly flanks of the Hurku hills, and continues along them until a line of wells is picked up tapping the drainage to the south from the eastern Altai. The Winding Road, after the divergence, crosses a range called by the caravan men the Laohu Shan or Tiger Mountains. These hills, I infer, decline on the north to a gap, on the far side of which rise the Hurku, which in turn come more or less into touch with the Gurbun Saikhan, the most easterly spurs of the Altai.

West of the Laohu Shan the Winding Road, after crossing a shallow depression of desert country, skirts on their northern edge the foothills of the Khara-narin-ula of Prjevalski, which are a western projection of the Lang Shan. Then it descends again to low country at the temple of Shandan (marked by Prjevalski) at which point there is a cross-route toward the north, and takes a long southerly cast to avoid very sandy country and large dunes. The sandy country evidently fills one of the hollows in the east-to-west series through the central Gobi.

The detour finishes at the temple of Tukomen (evidently the Bain-tukhum of Prjevalski) and the westerly direction is resumed. There is an important salt marsh near Tukomen. Dunes encroach on the meres in places, and I assume that the whole basin was formerly a lake. That the recent tendency is toward increased aridity rather than a recovery of the lake is indicated by a line of fine old elms following an underground watercourse that flows toward the marsh. All the trees are old and big, evidently with roots that go deep enough to nourish them though the supply of moisture has decreased; but there is not a sign of new growth.

Minor depressions are evident to the west of Tukomen, until Kwaitze Hu, the biggest of them all, is entered. I am not sure that the depression at Shandan is in the main line of these depressions, but I think so, and I am sure that from Tukomen on, the route follows what may be called the spinal trough of the Gobi. Evidently there is a tendency for the successive depressions to be deeper toward the west and shallower toward the east.

The landscape is desolate, with a certain monotony, owing to the lack of strongly defined hill ranges, but the sense of vast space is exhilarating. The soil generally is a sandy clay, from which is derived by wind erosion the sand found in the dune area. I remember passing only one place where clay terraces had been cut up by wind erosion into "witnesses," or truncated, flat-topped pinnacles. In these pinnacles, as in the banks of clay cut vertically by vanished streams, the clay lay in horizontal strata. Many old stream-beds could be seen; but they were on the whole almost easier to detect from a distance than when one was close upon them, for ages of weathering and wind-action had gone far toward obliterating local features.

Small, irregular lines of hills, usually with an east-to-west direction, lay along our line of march for much of the way; but at other times the topography

would be confused by immense basins, bordered by low, steep-faced bluffs, or by the vague courses of dry "washouts." Occasionally, when there was no dust haze, we could see as we got farther west distant blue ranges of higher hills lying on our south. I got the general impression that the country is, if anything, getting dryer. I have mentioned the old elms, unaccompanied by new growth. Farther to the west we entered the first large area of tamarisk growth; the region is called the Black Tamarisks, for all the growth is dead. It is found on comparatively hard, flat clay, and there is little evidence of "tamarisk cones."

In the country through which we travelled Mongols were rare, and their life obviously affected by the desert conditions, for sheep were largely replaced by goats and ponies by donkeys. The population was thicker near the edges of the sandier districts, which permit the growth of coarse tufted grass. Along most of our march grew nothing but low, gnarled, sapless, woody plants.

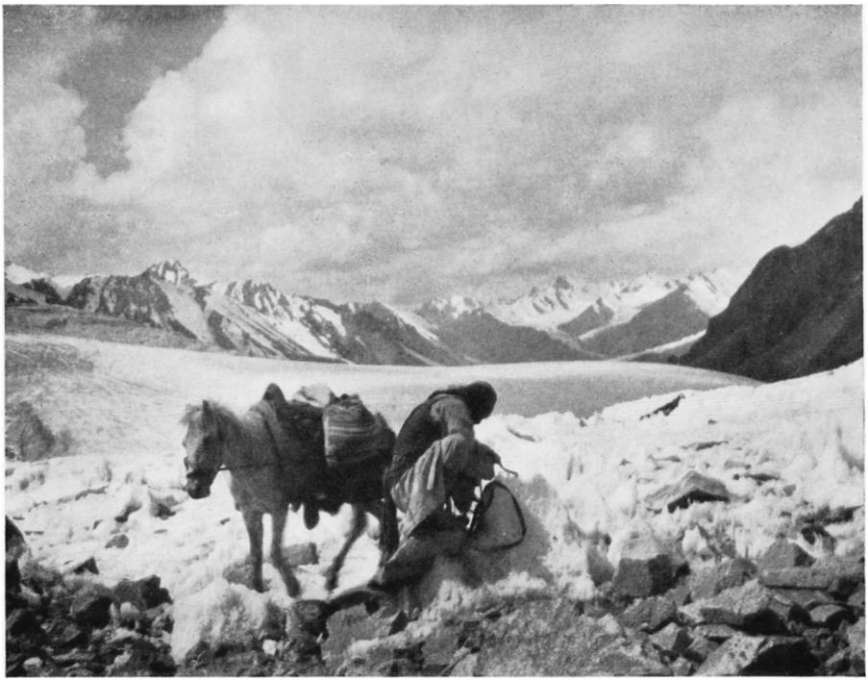
The people are a division of the Olöt (Eleuths), commonly called the Ala Shan Mongols. Their centre of population and trade is based on the Ala Shan, which lay to the south of our route, where far better conditions are found.

From what I have said, it can be seen that this country is as desolate and inhospitable as any in Mongolia. Sir Francis Younghusband has described some of the lonely stretches of wilderness through which he passed on his journey, which followed in great part the Small Road. I can assure him that, on the testimony of the caravan men, that road is by comparison full of joy and amenity. They remember with grief the days in which they were free to travel by it, and revile what they call the "bitterness" of the Winding Road. They had, however, one thing good to say about the Winding Road, which brings out an important physical contrast between it and the other routes. On the Winding Road, because it follows a linked series of depressions, the water is always found close to the trail. Owing to the scantiness of the water, and the fact that it drains at a shallow depth from hills of inconsiderable height, it is full of the salts which impregnate the superficial clays. It is never very palatable, and often vile, but at least it is easier to find, a matter of some importance, seeing that the end of the march always comes in the night, and the position of the well must be determined in the dark. On the greater roads, the wells often lie as much as a mile off the track; for the tendency is to take the line of march along lower levels, both to get better going and because what drainage there is comes to the surface at the foot of the slope from the mountains, and the best grazing is to be found there; while the wells, in order to make sure of an adequate supply of water, must tap the drainage higher up, nearer its sources in the ranges which guide the alignment of the routes.

At a travelling distance of over 200 miles from Shandan Miao, where we had entered the Ala Shan deserts, we reached the most easterly of the depressions, which is at once the largest and the most remarkable. It is called by Kozlov "Goitso," I believe from a Mongol word meaning "pleasant," but the caravan men call it Kwaitze Hu. I travelled some 75 miles along the edge of it, and found it a series of reedy marshes, apparently deepest at the southern edge, which I skirted. To the north stretched great expanses of reeds, while the south and west were closed in by dunes. These dunes range in height—I take Kozlov's figures rather than my own judgement—from 10 to 30 metres,

Caravan in valley descending to open desert, north of Metshin-ola

Above the gorge of Kök-su, Tien Shan



On the Sasser Pass

Devil dance at lamasery of Chao Ho, north of Kweihwa

with a short northerly and a long southerly pitch. They themselves mark the northern edge of a region that he calls the Badain-jarenghi sands, in which he notes a lake called Kuku-burdon, in the position occupied on an old Chinese map by an "enormous lake" called Yü Hai.

The sands themselves were pivoted, so far as I could see, on a core of irregular hills. If the Chinese had, at some date in the past, knowledge of a large lake, or even a great marsh somewhere in this region, then we have good evidence of a change of climate toward more arid conditions within historical times. The depression of Kwaitze Hu itself could obviously be converted by a slight rise in the water-level to a great shallow lake. Springs break out everywhere, and along my line of march were several big pools; but it was impossible to judge the real amount of surface-water, because of the huge reed-beds.

We entered a great belt of dunes at the point where the sands curve round the western edge of the depression, and traversed large dunes for a marching distance of over 30 miles, and sandy country for another 14 miles, as the dunes dwindled away. The dunes were held down in parts by belts of strong tamarisk growth; the largest tamarisks that I ever saw, without a sign of being killed off by the sands. In other parts the dunes were quite clear of all growth, and were probably shifting formations under the influence of wind action. Everywhere they were based on hard clay, which in places was exposed; and wherever the clay was exposed, small beds of dry reeds could be seen. The caravan men said that in such places water could be found at a depth of not more than 3 or 4 feet. This dune region, and that which we had skirted in turning to the south from Shandan to Tukomen, were the only large expanses of loose sand encountered on the journey.

Immediately west of these dunes the east-to-west series of depressions is cut across by a much more obvious trough from south to north, the valley of the Edsin Gol. This valley itself is really very shallow, and in its northern course it fans out. The water which flows in it is carried to two connecting lakes, but a number of dry channels which must once have been flood-beds diverge toward the north-east. The Edsin Gol itself flows here in two channels, about 20 miles apart. It derives from the snows of the distant Nan Shan, in Kansu province, and in a distance of hundreds of miles from east to west its valley forms the only corridor practicable for large bodies of men or transport from north to south across the Gobi, from Outer Mongolia toward China. It is known that this corridor was used by Jenghis Khan in his invasions of Kansu (then ruled not by the Chinese but by the Tanguts) in 1227.

This corridor was marked by the walled city of Etsina, which was occupied at least until the time of Marco Polo, at the end of the thirteenth century, though it has been completely uninhabited now for centuries. The site of Etsina or Khara-khoto is, to my mind, very significant for the reconstruction of early trade routes. I must have passed within a few miles of it, though unfortunately I did not see it; but we know from the descriptions of General Kozlov, Sir Aurel Stein, and Mr. Langdon Warner that it as a city of some size and prosperity, far more than a mere garrisoned stronghold. The existence of such a city at such a site presupposes an important trade. It may well be that the snows in time past lay deeper on the Nan Shan, and that at their

seasonal melting the volume of water carried by the Edsin Gol toward the desert may have been greater. Even so, and even if it had been possible to divert water from the river for irrigation, the nature of the country shows clearly that the city can never have been the centre of a large or flourishing agricultural district, or even an administrative centre for numerous nomadic tribes.

I think that the importance of Etsina must have been based on its convenience as a point from which trade radiated both to the north, into Outer Mongolia, and toward the east, to the Kweihwa region. A slightly greater amount of moisture in the past may not have meant more favourable conditions for habitation in the Gobi, but it may well have meant a much more practicable caravan route down the trough-line that I have indicated through northern Ala Shan. At the time that Etsina was flourishing as an outpost of the Tangut power, Kweihwa was the capital of another minor kingdom, that which Marco Polo calls Tenduc. It is obvious that at a time when such minor kingdoms existed, trade between them would be much more likely to use a caravan route sheltered by deserts than one farther south, through inhabited country, where other local chieftains probably existed who would have been prone to levy all kinds of caravan tolls.

At present, the route which I have been describing with a good deal of detail is not physically suited to caravan traffic; not nearly so well suited as the routes farther north. If even two large caravans are travelling in company, they have often to space out the watering of their camels at alternate wells, as many of the wells would not suffice for, say, three hundred camels in one day. In addition to this, the grazing is not sufficient for caravan camels. Even in such unfavourable country, nomadic existence is possible if people live widely scattered, and rely on such frugal animals as camels, goats, and donkeys, rather than horned cattle, sheep, and ponies, because their baggage animals are worked only spasmodically. For a caravan camel, however, travelling day after day with a heavy load, feed must be carried. On an average, 30 per cent. of caravan camels on this route are laden with feed. As this is used, loads are divided and redistributed, so that at the end of the journey the average load is much decreased. In addition to feed carried, however, feed must be bought on the way, especially in a hard, cold season. This feed is supplied by traders who come up from the borders of China and camp along the middle section of the route, in the Ala Shan deserts. The cost of caravan travel is therefore greatly increased, while its earning capacity is decreased by the number of camels used for carrying feed. In spite of the extra cost, the loss in camels abandoned on the road through weakness is far greater than along routes with better grazing. In other words, the route could not stand competition, were it not for the political factor. In my book "The Desert road to Turkestan," I have given some account of differences in methods of camel-mastery and caravan handling, between the trading caravans of the great routes and the local caravans of the Ala Shan.

Yet I think it fair to believe that the route may have been more favourable within the historical period. The evidence of the depressions or trough country that I have described shows it to be possible that within the past few centuries moisture was more plentiful along the route. The evidence of dead

tamarisks and old trees that are being succeeded by no posterity of new growth adds confirmation. Finally, there is a class of evidence which has little to do, directly, with change of climate, but which I myself think to be of considerable importance as bearing on possible changes of trade routes. That evidence is in the temples, or rather the lama monasteries, to be found along the route. Lamaism did not gain a strong hold in Mongolia until the reign of Kublai Khan, in the thirteenth century, so that no lama monastery can of itself boast an age of more than six hundred years or so. The sites of monasteries, however, may well have a much longer history as holy places. Any one acquainted with holy places in Central Asia knows that there is a tendency in a supplanting religion (as in the case of Islam in Chinese Turkistan) to occupy sites that were already recognized as holy under the earlier religion. A site may gain a reputation for sanctity for any one of a number of reasons; but the sites which tend to become centres of popular resort, and thence by a natural process of evolution the centres of important religious establishments, are those which lie on lines of travel.

There are two important lamaseries, Shandan and Tukomen, on the line of the Winding Road through the deserts of Ala Shan, and each of them appears to have enjoyed in the past the same sort of advantages that contributed to the past importance of Etsina, in occupying points where north and south routes crossed the line from east to west. Prjevalski went to the north from Tukomen, and he notes that the line from the north through Shandan was used by a convoy from Urga in 1873, which was bound for Tibet to seek a new Living Buddha, but did not dare follow the better-established route farther to the west, because of the troubles consequent on the Muhammadan rebellion against the Chinese.

A lama monastery is generally founded at a point which makes a good centre at which the nomads can gather for seasonal festivals. These festivals tend to become the scenes of fairs, and if the site is on a convenient crossing of lines of trade, permanent trading communities gather about the temple. Urga, Uliassutai, and Kobdo, the rudimentary towns of Mongolia, appear to have grown from such origins. Shandan and Tukomen appear to be sites which were once in a good way to acquire a similar importance (though of course in a less degree) and to have justified the building of large temples, housing several hundred monks or lamas; though at present the poverty of the surrounding country, and until very recent years the poverty of traffic, would in no way justify such large establishments. There are strong grounds for supposing that they were built on sites which had originally a much greater importance, and that this importance had not wholly vanished at the time they were built. Such an importance can only, I think, have depended on a comparatively flourishing trade route; for, though changes of climate may have occurred sufficient to account for the difference between a good caravan route and a bad one, conditions are not likely ever to have favoured large resident or even nomadic populations. Some minor support is lent to this theory by legends that I heard which implied the existence of stone monuments near the routes; monuments which would hardly have been executed except in a period of comparative prosperity.

West of the Edsin Gol the character of the route changes decidedly. It is

not likely ever to have been an important trade route in the past, for it does not lie on a natural line of communication that would in any historical period have linked important centres of trade. It appears to have been always an infrequent line of passage used by Mongols; perhaps in small parties on migration, but more likely only when hunting or raiding. It rises slowly to a bleak plateau, broken by small hills, which are often irregularly grouped but have a prevailing east and west tendency. The depth of bad desert country from north to south is here vastly increased, and communication must always have been difficult. The plateau is composed of hard, sandy clay, overlaid with black gravel in flat pieces. The hills are of the same formation and are covered with the same gravel, while occasional large pieces of fissile black rock show the origin of the gravel. Rainfall is practically unknown, and very little snow falls in winter. The hills are marked only by faint channels down which drains the moisture of the scanty snows or of rare summer cloudbursts, and in these are found the scant vegetation of tiny stunted tamarisks and a few dessicated shrub-like plants which are even smaller. Farther to the north the nearest animal life is in the Kuku-tumurten Ola, reported by Ladighin, a member of one of Kozlov's expeditions. To the south there is no route for many days' journey; at least no route that is practicable for trading caravans.

Leaving a well some 40 miles west of the West Edsin Gol, in what is already forbidding desert country, the route crosses a dry stretch of nearly 100 miles before the next well is reached. The swell of the plateau leaves no depression where it would obviously be possible to dig a well, though the caravan men believe that water could be struck, were a party to come out well enough supplied with water and prepared to dig long enough and deep enough. There is no grazing for camels except stunted, brittle tamarisks, and shrubs in which there is not a particle of sap. This is the Black Gobi, the Khara Gobi, in its full desolation. Farther to the north there is another practicable line of march, on which wild camels are reported, and where the grazing is said to be slightly better.

The crossing of this most forbidding part of the Black Gobi ends at a well in a pocket among hills. The plateau then breaks down a bit, and rises again to a lesser plateau, one slightly less sterile. In between the plateaus is a well called the Wild Horse Well, near which a few antelope range, and where wild horses are reported. We were accompanied from the Edsin Gol to the edge of the Black Gobi by small birds like crows, with grey hoods. In the desert itself I saw no bird life, but in the second stretch of desert, travelling for about 50 miles from the Wild Horse Well to the next well, I saw a small bird something like a woodpecker, called the tamarisk bird. The gravel in this minor stretch of the Black Gobi thins out; the flat black fragments are interspersed with quartz-like fragments.

This plateau again breaks down, this time into depressions filled with dried-out marshes, and the prospect is varied by the sight of hills, especially on the south and south-west, where they rise to a fair height, looking like a definite range, which is evidently the main range of the Matsung Shan. In this depression region I saw antelope, and sand-grouse (in migration); while wild ass and wild camel were reported. I saw also a large wild sheep, which had possibly been forced down by drought from the higher hills in the south, to

drink at the marsh. The region is accessible with comparative ease from Outer Mongolia. Somewhere through it passes the route of Ladighin from north to south; the only explorer's route of which I know in all the country through which I had travelled for more than 200 miles from the Edsin Gol.

This country is dangerous for caravans. It is known as a sort of no-man's-land, all the inhabitants being renegades, either desperate characters or men who have fled from different Mongol communities to escape tribal taxation. It is naturally adapted to be a refuge for lawless men, for it can support herds and flocks, yet it is not so attractive to peaceful nomads as the country more to the north and north-west. I think it quite probable, however, that it was strongly held by the Huns, as an outlying territory, during the long period when their power was centred on the Bar Köl range. We know the Huns to have raided in some force against the western marches of Kansu, and from this region the caravan men report a feasible line of march southward to Suchow.

The region rose to a position notorious for several years in Central Asian politics, but obscure to the outer world, during the period after the War when first White and then Red Russian partisans were carrying on a savage guerilla warfare in Mongolia, involving not only Russians but Chinese and Mongols. During this period a man who appears to have been a Mongolized Chinese, but who is remembered only by the name of "The False Lama," gained some measure of power in Outer Mongolia. Apparently when Soviet Russia began to assert a positive control over the affairs of Outer Mongolia, he thought it wise to flee, carrying with him a considerable following, some of them his own fighting men and others Mongols that he gathered up to form a population about him.

He established himself in this no-man's-land, built a stronghold of which the ruins can still be seen, and set to with great energy to open a caravan route and found, if possible, a trading city. He was the first to see the possibility of working out the Winding Road to replace the roads closed to Chinese caravans in Outer Mongolia, and thus maintaining the trade between Kweihwa and Chinese Turkistan. He brought up supplies from Suchow, gave safe-conduct to caravans free of charge, sold provisions at a low rate and took charge of any worn-out camels which the caravans were willing to leave in his protection. It is related that he first established the crossing of the Black Gobi now in use, and that he intended to dig a well to relieve the hardship of the worst stages.

Unfortunately, he was not popular among his own people, many of whom he had forced to accompany him and over whom he ruled with a strong hand. The prospect of his rise to power gave no little concern to the rulers of Outer Mongolia, and in the end he was murdered. The murder is said to have been carried out by a small band of raiders despatched from Urga, and it is also said that it could not have been accomplished without the passive acquiescence of some at least among his own subjects.

From the House of the False Lama, as the stronghold of the adventurer is called, we worked in and out among the foothills of the Matsung Shan. The name of these hills is said by the caravan men to mean "horse-hoof-print hills"—the Horseshoe Hills, as we should say. The prevailing formation is one of crescent-like bays among low hills. This brought us to a camping-

place of some importance, called Mingshui. I take it, tentatively, to be the Mingshui marked on many maps. It appears to derive from a map of the Germans, Holderer and Futterer, which includes a route of the Russian Obruchev; but it may not be the same place, as Mingshui simply means "clear water," and can be applied to any spring-fed well. It is a place where routes from Kansu and Outer Mongolia converge on the Winding Road; toward the west, two main lines of march diverge. One goes round the northern side of the Qarliq Tagh; this is the line of the Winding Road. The other goes round by the southern side of the Qarliq Tagh and reaches Qomul or Hami.

I take Mingshui to be the point, approximately, where Sir Francis Younghusband's route of 1887 crosses that which I followed, for he finished his camel-caravan journey at Hami.* It is remarkable that his route, striking enough in all conscience at the time it was made, has never apparently been followed by another traveller. It seems to have coincided for the most part, as I have indicated, with the Small Road, until the junction of the Small Road with the Great Road; then to have followed the Great Road until it had overshot the no-man's-land of which I have just been speaking, and finally to have made a traverse to the south and west, striking across country more or less, to round the end of the Qarliq Tagh and make for Hami. The final stages of this interesting route are, to my mind, the most remarkable; for they illustrate what I should like to point out as the essential feature of the true Mongolia-going caravan routes—they do not follow absolutely a fixed itinerary, but are really nothing more than a *direction of march*, governed by water and grazing and by nothing else except tribal hostilities or coalitions, or the shelter offered to raiders.

It may be that Sir Francis Younghusband made his Mongolian journey much as I did; that he simply consigned himself into the hands of his caravan men, demanding to be delivered right side up in Chinese Turkistan, but fussing very little about the exact route taken. If that is so, then I think I must be right in my guess that his men chose their route for reasons that correspond in an interesting way to those which led to my hitting on the Winding Road; the same reasons that led the Mongols to travel by an unusual route from Urga to Tibet in 1873 as noted by Prjevalski. This great journey of the first white man to travel through Mongolia and Chinese Turkistan to India was made just after the savage wars of the Muhammadan Rebellion, which led to a great deal of freebooting in Western Mongolia, owing to the presence in the Altai of a Muhammadan tribe, the Kirei clan of the Qazaqs. These men are always prone to exchange raids with the Mongols and to harry the caravan trade. During the Muhammadan rebellion they sacked Kobdo, and according to the tales current among the caravan men, made travel impossible in Western Mongolia. It is probable that they had not entirely quieted down after the suppression of the rebellion in Chinese Turkistan itself, and that for that reason Sir Francis Younghusband's caravan men led him into such an interesting route, rather than continue along the Great Road until they

*Since writing the above, Sir Francis Younghusband has been kind enough to show me his own route-survey. From this it is plain that my route converged again on his a good deal farther west than Mingshui; in fact on the outer skirts of the Metshin Ola, near the small oasis of Adak.

approached the Baitik Bogdo, a well-known haunt to this day of Qazaq raiders.

Shortly after leaving Mingshui we picked up sight, across an enormous hollow in the desert, of the everlasting snow on the peaks of the Qarliq Tagh: a stupendous vision, like the sight of a promised land. There is little else to record of the journey itself. I tried unsuccessfully to cross a snow-filled pass from Tur Köl, on the northern side of the Qarliq Tagh, to the Bar Köl basin. Failing this, I turned out along the outer flanks of the Metshin Ola, a buttress of the Qarliq Tagh, and eventually reached Kuchengtze. This was not accomplished, however, until I had undergone a detention of some fourteen days at a border post, a delay which entailed very difficult travelling with my small caravan through appalling winter weather. The entry into Kuchengtze was made just over four months after I had left Kweihwa.

In thus giving a fairly close survey of the physical characteristics of a particular caravan route, I have touched on two geographical features, the Gobi and the Altai, which play a great part in orienting the trade routes throughout Mongolia. In appreciating these trade routes, however, the geographical factor must be supplemented by two others, the social and the historical. The social factor is the prevalence throughout this geographical region of the nomadic culture or social order. It is responsible for the fact that the oldest trade routes in Mongolia appear to have originated not in trade but in the migrations of peoples. The historical factor is the contact between the tribes of nomadic culture and their neighbours of a different social order; of whom the most important appear always to have been the Chinese, not only as the nearest, but as the most solidly attached to their own civilization and the most widely distributed, along a strategic frontier which throughout history must have been of vital importance to the nomadic tribes.

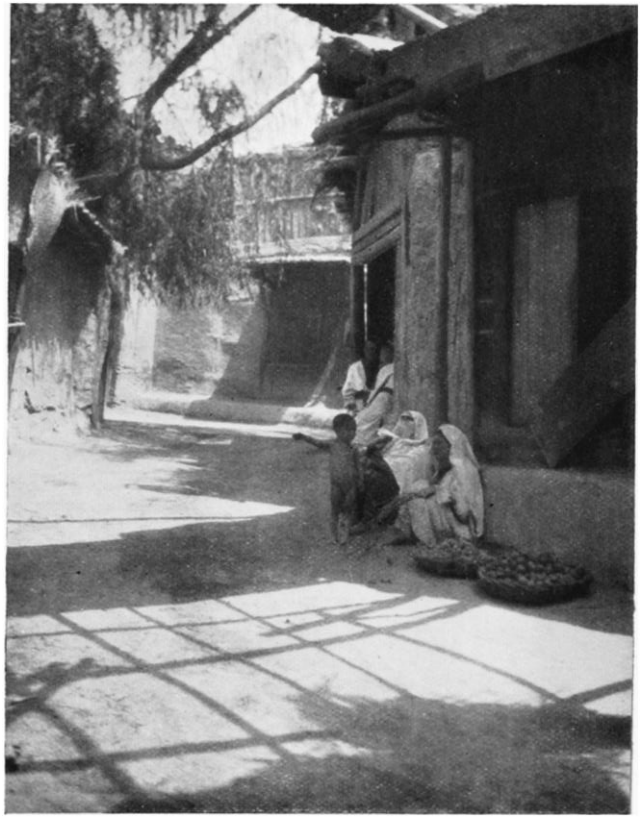
This type of caravan route, originating in the passage of nomadic peoples, has been, I think, studied less and less fully understood than the other avenues of commercial, cultural, and military movement through Central Asia. In the first place, because of the social order of nomadic tribes, the sites of permanent occupation are rare, and archæological evidences comparatively scanty. In the second place, modern exploration has been devoted more to the cartography of mountain ranges and deserts than to the elucidation of routes, so that the routes of the explorers themselves have tended to cut across country to striking points of vantage. In the third place, the trend of exploration has largely followed the direction given by the early Russian travellers, who were concerned with traversing Mongolia in north-to-south lines, to elucidate its topography in relation to the political frontiers of Russia and China; thus cutting across rather than following the natural lines of communication. Lastly, the vagueness of even the most frequented routes in a country where travel follows the customs of the nomad rather than of the trader has made them less obvious to comparative study.

In some ways the historical approach to the study of these routes is even more illuminating than the geographical. Above everything else there stands out the historical phenomenon of the Great Wall of China, itself based on a sound geographical line of cleavage, and reinforced in part by the valley of the Yellow River. The bias which it gave to all the lines of communication in

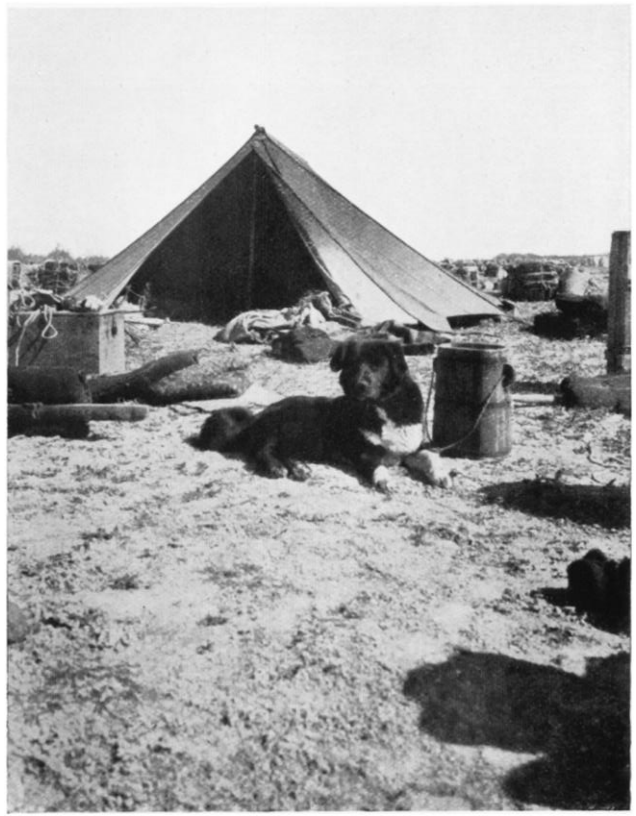
Central Asia more than two thousand years ago has endured ever since. It was designed originally, we are told, to turn back the inroads of different Hun tribes which at that time threatened China from Mongolia; a threat which must evidently have been developing for an appreciable period, and have constituted a menace of the first order. It might give a clearer idea of the truth to say that the Great Wall was an attempt to establish a permanent cultural demarcation between the lands of the nomad tribes and the lands held by settled people. I need not attempt to enlarge on the relations between the Chinese and the nomad tribes, Hun, Turkish and Mongol, which broke in successive waves against them. I should like merely to stress the function of the Great Wall, during some two thousand years, in determining, however roughly, the frontier between two types of civilization. It has often been pointed out, sometimes with a good deal of contempt, that the Great Wall was awkward to defend, easily penetrated by invaders with any real instinct for warfare, and easily turned when once penetrated. We should not, however, allow such criticism to obscure the true worth in history of this colossal achievement in defensive engineering. To begin with, its construction dates the rise of a power of resistance in the unwarlike civilization of China; and it was this power of resistance, deflecting the aggression of the Huns, which gave a westward trend to the whole period of the Great Migrations, throwing against the Near East and Europe the destructive weight of the barbarian hordes.

Later, the Great Wall formed a *point d'appui* in the frontier policy of the Chinese. The actual frontier varied according to the amount of pressure bearing on it, alternately from the Chinese on the south or the barbarians on the north and north-west. At different times invaders established non-Chinese kingdoms in Kansu, Shensi, Shansi and Chihli. Some of the waves of conquest swept into China with sufficient momentum to penetrate even farther, and resulted in the founding of dynasties that controlled the whole, or practically the whole, of the country. These fluctuations, however, are overborne by the fact that nomadic peoples overpassing the military barrier of the Wall have in practice always recognized it as a frontier of civilization. They have always faced about to defend it, and they have tended to become merged in the civilization they found within it, adapting their own social order to the possession of tilled fields and walled cities. They have all become Chinese, and the lands they mastered have never been considered anything but Chinese, in spite of differences of dialect and racial type.

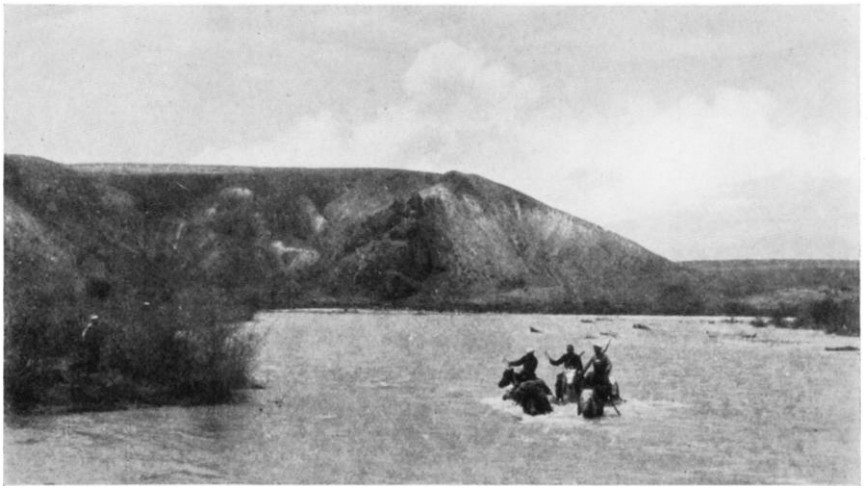
The only open land frontier in China is the Central Asian frontier. On the Chinese side of the Great Wall there have always been roads radiating from the centre of the country and approaching that frontier. The most celebrated of all these roads is the cardinal route commonly known as the Imperial Highroad. From classical and pre-classical times it led from Central China through Shensi and Kansu and ultimately toward Turkistan and the countries known vaguely to the Chinese, from the most ancient times, as the Western Regions. Other roads led northward toward Mongolia; by the approach of Wutaishan and Tatung through Shansi; by the Kweihwa approach north of the great bend in the Yellow River; by the Jehol approach through northern Chihli; and by the Shanhaikwan entry into Manchuria.



Fruitsellers in small town of Chinese Turkistan



Camp and caravan dog, western Edsin Gol



Qazaqs fording Tekes river, Tien Shan

Camels on iris-grown prairie by salt pool of Ulan nor, north of Kweihwa

Ssu Ta-tze Liang (Dead Mongol Pass) between Tur Köl and Basin of Bar Köl

All these roads have the character of what we may call true roads. They are as normal as Roman roads. They are adapted, wherever possible, to wheeled traffic, and to the orderly supervision of officials and tax-collectors. They follow lines of least physical resistance. Shelter for travellers is not limited to tents, but is provided at inns, at regular stages. Food for travellers does not have to be carried, nor do transport animals have to depend on grazing, but provisions and fodder are gathered from agricultural communities situated along or near the road and made available at the regular halting-places.

It is this character of the normal roads which distinguishes them from the caravan routes of Inner Asia. North of the Great Wall routes are determined by two classes of desert conditions, which may conveniently be distinguished as the oasis-desert, where people are settled in fixed communities, and the pastoral desert, where people live as nomads. The first is utter, irredeemable desert, what Sir Aurel Stein calls "true desert," and the Old Testament a "howling wilderness," but broken by oases. Each oasis is isolated, and its population relies in the first place on the resources of the oasis itself, and in a lesser degree on trade with other oases. In such conditions the trade route retains a strong resemblance to the normal road. Transport is concerned with the special difficulties of bridging gaps of desert and of providing food and other necessaries between the oases. Trade, however, continues to move between fixed points, and because these points are fixed, the lines of communication tend to become fixed channels. Roads adapted to the type of desert broken by oases prevail throughout southern Chinese Turkistan, and in comparatively modern times have been extended into northern Chinese Turkistan. The roads evolved under the conditions of the pastoral desert must conform to totally different requirements. These are the roads that have prevailed throughout the historical period in Mongolia, and until the recent past must have been typical also of what we call Dzungaria and of northern Chinese Turkistan.

In these regions we depart altogether from the canons of the normal road. Routes, in fact, are no longer roads designed to communicate between fixed centres of population. They become, rather, general directions of march. Each direction of march is determined by the needs of a migrant population, moving not from one oasis to another but between vaguely defined areas. The areas themselves are determined by prevailing geographical conditions. They are not selected in the first place with regard to the potential development of trade, but because they meet the needs of flocks and herds. Men go where their cattle and sheep must go, and such trade as later develops must be able to follow the wandering men.

Throughout Mongolia and Dzungaria, over territories larger than all Western Europe, it is the lack of oases that has controlled the activities of human society, inevitably requiring the evolution of nomadic tribes. There are no mountain ranges (except a portion of the Altai) with large glaciers and large beds of perpetual snow, sending down into the desert streams from which oases can be formed. The prevailing climatic condition is one of sub-aridity, producing enough grass to support flocks, but requiring migration if the flocks are to enjoy the best available pasture throughout the year.

It has been roughly estimated that about a fourth of Mongolia is either

utter desert, or so arid as to invite the occupation of only the poorest nomads. Not all of the remaining three-fourths are arid enough to compel nomadic pastoral life, without the alternative of settled occupation. Every important mountain range appears to be a centre of good climatic conditions, including a regular water supply, from which the climatic lines radiate outward and downward, through arable land and steppe country to sterile desert. This, however, is a physical structure which makes the mountains centres on which nomadic life converges, rather than barriers separating one climatic region from another. The tendency to a nomadic life, therefore, has always dominated the tendency of society to attach itself to particular localities and develop the culture of fixed communities. Well-favoured regions exist in Mongolia where agriculture is quite possible. Still more favoured regions are to be found, with abundant forests, good arable land, and easily worked mineral deposits, where it might be expected that men would readily turn from the nomadic life to one of permanent occupation. Historically, however, it has always been difficult for a minority to settle in such regions, because they lie open to regions in which a conversion from the nomadic to the agricultural life is not likely, and the accumulated wealth of settled inhabitants would provoke raids from the wandering tribes.

It is evident that there have been attempts in Mongolia to break away from the nomadic tradition. In the fertile part of northern Mongolia, where numerous lakes and rivers drain toward Siberia, many tumuli and stone monuments indicate that the country was once held by the Uighurs, who appear to have been the central stock of all the Turkish tribes, and the first of the Turks to adapt themselves to agriculture and permanent habitations. The Uighurs, apparently, first showed a tendency to settle down while in this region, but they were dislodged by the tribes whose modern representatives are the Qazaqs, and after migrations which took them first westward, in the direction of Chuguchak or perhaps farther, they pitched at last on the northern flanks of the Tien Shan, which form the southern rim of Dzungaria. There they speedily adopted agriculture and rose to a high degree of culture. Their capital is supposed to have been near the modern Urumchi, and they even spread beyond the Tien Shan to Turfan, which is in the true zone of oasis-culture.

An analogous and much more complete example of the conflict between the nomadic and settled cultures can be seen at the present time in the Ili region, which lies, like Urumchi, on the northern side of the Tien Shan, but is more accessible from countries that have always been peopled by nomads, and is much nearer the central corridor of passage used in the great historic migrations. The valleys of the Ili river and its affluents offer every advantage for the development of agriculture and town life. It is even apparent that settled communities flourished there during the past; but only at intervals. At the present time, it is evident that the whole country has been overwhelmingly dominated by the nomadic culture for a number of centuries. It lies too much open to the inroads of nomadic tribes, and all the great westward migrations in sweeping by it on the way toward the steppe country of southern Siberia and Russian Central Asia, overthrew the successive efforts at the establishment of permanent communities.

In the zone of oases, on the southern side of the same mountains, the permanent communities were never uprooted. They were open to raids from the nomadic tribes, but they did not invite nomadic occupation because the absolute desert intervening between oases did not favour the passage of nomads with all their cattle and transport. Different phases of indigenous civilization were damaged by these raids, but the communities persisted. In this they offer an historical contrast with the Ili country, where after the gradual subsidence of the great migrations, agriculture and city-building may still be seen in the initial stages of development. Indeed, what development there is may be ascribed entirely to the peaceful immigration of Chinese colonists and settlers from the oases across the mountains. The people of the country, the Qazaqs, who represent the long succession of nomadic invaders, are only beginning to modify the nomadic traditions which were necessary to their survival during such a prolonged period, and to cultivate a few catch crops. Many of them are farmers and flockmasters by turns, with only the poorest tending to attach themselves permanently to the land, thus representing the actual process of transition between two social orders.

In order to understand the Mongolian caravan routes, which I have classified as "directions of march," it is essential to arrive at some idea of the migrations which first worked out their geographical possibilities. It is well enough established that most Mongols are only semi-nomadic, moving ordinarily to high pastures in the summer and to low, sheltered regions in the winter. They derive obvious advantages from restricting as far as possible the orbit of migration, husbanding their flocks and herds by moving them only to obtain shelter or a change of pasture. The essential thing about them, in fact, is not that they *do* move, but that they *can* move. The structure of their habitations, the quality and quantity of all their belongings, are conditioned more by the necessities of the short seasonal migrations than by the conveniences they might otherwise elaborate during the comparatively long periods when they do not move their camps. Given a sufficient impulse, there is no limit except the presence of grass and water to the possible range of their migrations.

The Mongols, in the past, very probably did not wander to any greater distances than they do at present. There is no reason to suppose that their habitual migrations covered enormous distances even in the periods immediately antecedent to the wholesale migrations which affected so profoundly the history of both Europe and Asia. It can hardly be doubted that the cause of these huge displacements of whole populations must be sought in climatic changes. The geological evidence, I understand, points to a steady desiccation of Mongolia and the adjacent regions of Central Asia. The researches of Professor Ellsworth Huntington have, I think, gone a long way toward establishing the theory that this prevailing tendency has not been absolutely uniform within the last 2000 years. In other words, the graph of desiccation is not an unbroken curve, but is broken by relapses toward moister climatic conditions, if I may so phrase his theory of "climatic pulsation."

Among the most interesting findings of Professor Huntington are the figures he quotes from Australia to illustrate the effect on pasturage, and consequently on sheep and population, of rainfall in semi-arid regions. "According

to Hann," he says, "a rainfall of twenty inches a year in New South Wales makes it possible to keep over six hundred sheep on a square mile of land; with a rainfall of thirteen inches only about a hundred can be kept; and with ten inches only ten sheep." A decrease of 35 per cent. (from 20 inches to 13) in the rainfall, that is, means a decrease of over 80 per cent. in the number of sheep that can be kept in the territory affected.

It would not take nearly so great a fluctuation of climatic conditions to start a people like the Mongols on migrations far more extensive than their normal spring and autumn orbit. They would either have to resign themselves to the loss of a great part of their stock, and to hardships that would severely diminish the population, or strike out to extend their grazing grounds. In such a search for new pastures each tribe would naturally find itself brought up short by the neighbouring tribes until, the pressure becoming more insistent, a movement of cohesion set in, and the united tribes pressed forward in common hordes.

Naturally, no such period of drought would set in abruptly; the pressure would increase gradually until an impulse toward general migration gathered way. After the pressure of population had been relieved, a period of repopulation would naturally set in; and during such a period, especially if the climate underwent for a period of several generations a slow reaction toward better conditions, it is easy to see how a great reserve of nomadic tribes could again be gathered in Mongolia. These in turn would be set in motion when the next "pulsatory" period of increasing drought recurred.

The cyclical process of migration and recuperation seems to have been terminated finally by an artificial measure; and that measure, curiously enough, was first applied under Kublai Khan, one of the greatest Mongol emperors. It was he who first encouraged the spread of Tibetan lamaism in Mongolia, hoping that it would act as a civilizing agent. The ultimate effect of this debasing religion was to withdraw an enormous percentage of the able-bodied men from active, productive life, and both to check the reproduction and drain the wealth of the race. The degenerative action of lamaism, however, did not take effect until much later; the period when the Manchus conquered China was the last period in which a general migration nearly came to a head. The campaigns of the Zungars or Western Mongols in the seventeenth century, almost rivalled the conquests of the Manchus, and had they not been checked by the Manchus might well have drawn all the Mongol tribes after them in a last assault on civilization. The Manchus, however, were the last conquerors to lodge themselves within the Great Wall, and they defended their conquests to such purpose that no general invasion has since threatened the Great Wall. After breaking the power of the Zungars or Ölöt Mongols in the west, and the Chahars in Central Mongolia, they continued the policy of favouring the lama church, until it had gained a hold on the Mongols from which they are never likely to recover. At the present time, whatever the progress of desiccation in Mongolia may be, it is not likely to impel the tribes to migrations of conquest. Saturated with lamaism, the Mongols are not increasing in numbers; indeed, many observers believe that they are actually decreasing. The population of the country is far below the number that even the arid territories might support.

The first migration from Mongolia of tidal proportions, that of the Hun tribes, appears to have taken place about the dawn of our own era, at a period when the power of the Chinese was also in the ascendant, and the Great Wall frontier was being asserted. The power of resistance which it represented gave the migration a set that took it to the north-west, away from China and the settled country and into the Russian steppes. There is ample evidence in history to show that this initial westward drift, though confirmed by subsequent migrations, was concurrent with periodic backwashes that affected China and northern Chinese Turkistan. Strong Hun tribes were established for a long time in the Bar Köl Tagh, dominating the obvious trade-route approach from Kansu province to Qomul (Hami) Turfan and Urumchi, and forcing the Chinese to work out the more difficult "silk road," the classical route through the wastes of Lop Nor into southern Chinese Turkistan.

A survey of the Great Wall frontier and of the mountains and deserts of Mongolia shows convincingly why the nomadic tribes, whenever Chinese resistance was at all formidable, found it more satisfactory to carry out the prodigious migrations which carried them to the north-west, into the Russia steppes and thence into the nearer east and Russia. Northward from the Great Wall a system of zones appears. First, following roughly the Wall itself, there is the zone of the marches, an area of fusion between settled Chinese and nomadic Hun-Turkish-Mongol culture. In the west this zone is wide and vague, fortified by outer desert buffers. In Ala Shan the Chinese influence reaches far to the north. In the Ordos region, which is like an elbow of Mongolia thrust into the ribs of China, the Mongol influence penetrates far to the south. Farther east, between Ala Shan and Manchuria, we have what is now known as Inner Mongolia proper. Here again the Great Wall frontier, though standing in the main, has frequently been overpassed. Nomadic tribes at different times have seized large parts of North China, tending to merge themselves in the Chinese culture, but leaving strong traces of their blood and probably modifying also the dialects of spoken Chinese. At the present time the Chinese in their turn are encroaching to the north, occupying belts of arable land formerly held by the Mongols.

North of the marches and Inner Mongolia is the Gobi, a zone in itself and the only frontier in Mongolia that is of itself a barrier. North of the Gobi there is the zone of Central Mongolia, geographically contained in the basins of the lakes and rivers flowing into, or trending toward Siberia. In the west there is the zone of the Altai, and lastly the zone of northern Turkistan and southern Dzungaria, lying between the Altai and the Tien Shan and forming the zone of transition between the true nomad country and the oasis-country of southern Turkistan. The geographical relation between these zones is one in which they do not cleave apart on lines of strict division, but merge into one another. Most important of all, the mountain ranges in general are at the centres of their zones, so that historically they have served not as dividing barriers but as strongholds and rallying points. The zones, taken all together, have such a geographical unity that historical causes felt in one zone have had immediate repercussions throughout the others.

The tribes inhabiting these zones are controlled in their lines of communication by an axis of deficient water and grazing up and down the length of the

Gobi, and two axes of water and grazing, one along the Altai and one farther north. The great sweep of the main Gobi, from south-west to north-east, must always have served as a secondary outwork to the defensive system of the Great Wall. The terrain itself was too difficult for either Chinese posts or nomadic tribes ever to occupy it in strength. At the same time, it created a gulf between the marches, or Great Wall front, and the steppes of Outer Mongolia which were naturally the most favourable assembly-ground for great nomadic hordes.

On the hither side of the gulf, in what is now Ala Shan and Inner Mongolia, there is not room for nomadic tribes in formidable numbers. There must, in consequence, have been a tendency among the minor tribes between China and the Gobi to distinguish their particular interests from the general interests of the major hordes to the north of the Gobi. That such an attitude would be a natural one is proved by the way that the Inner Mongolian tribes threw in their lot with the Manchus at the time of the Manchu conquest of China.

The Manchu irruption was itself only the most easterly phenomenon of a phase of universal unrest throughout Inner Asia. Had they not been forestalled by the success of the Manchus, the Mongol campaigns, which were being headed by the Ölöt Khans in the west and Likdan Khan of the Chahars in Central Mongolia, might have eventuated in irruption: a series of attacks on the Chinese from the north, and simultaneously a migration of conquest from western Mongolia into the Russian steppes. The first wave of migration, the last migration of the Mongols on a large scale, had already been launched. The Torguts of the Tarbagatai, Ölöts themselves, but at odds with the Zungars and the main body of the Ölöt tribes, had set forth for the Volga, from which they were to return seventy years later after the pacification of Inner Asia by the Manchus; and the way was clear at Chuguchak, which has always been the nomads' gate, for further migrations in the direction of Russia and western Central Asia. The tribes of Inner Mongolia, however, threw in their lot with the power that approached them from Manchuria and China rather than the powers at work in the steppes of the greater hordes, in Outer Mongolia, and the Manchus were thus able to buttress the Great Wall frontier and consolidate their conquests.

Along the Altai range there is an axis of water-supply, running from north-west to south-east and fading, beyond the Gurbun Saikhan and Hurku, into the waterless axis of the Gobi. The Altai do not have such a commanding relation to the arid country of Mongolia as the Kunlun and Tien Shan have to the inner basin of Chinese Turkistan. Except in the limited high crests of the range, far to the west, they do not hold sufficient reserves of ice and snow to nourish outward-flowing streams that gain in volume as the heat of summer increases. Nevertheless, they provide a climatic range. As the snow melts on them in summer, flocks can be sent up towards their crests in search of summer pasture. More important still, along their flanks are to be found unfailing lines of wells. The streams originating in the Altai, the eastern Altai especially, do not have sufficient volume to flow far above ground. They sink into the piedmont gravel glacis that buries a great part of the lower flanks of the range; but, protected thus from evaporation, they continue to flow underground. Below the gravel glacis the water, tending toward the surface again, supports

pasturage, and, by detecting the channels of underground flow, wells may be sunk that furnish a good supply of water. Thus it is possible either for nomads or for trading caravans travelling in the nomadic manner to follow directions of march parallel to the Altai, sure of water and sure of grazing, and at the same time avoiding passes and difficult marching country.

These corridors north and south of the Altai are fair examples of the evolution of the caravan route from nomadic "directions of march." By continuing on the southerly and westerly side of the Altai, the direction of march can be carried all the way to the Tarbagatai country and the verge of the Russian steppes. On the northerly and easterly side a similar line can be followed, if anything even more favourable to the passage of large bodies of transport animals, flocks and herds, except for final passes over the Altai rising to about 8000 feet.

Yet another direction of march, offered by the Khangai ranges, links the central steppes of Mongolia with the Altai. Beyond that, passage to the north, into Siberia, is barred by the dense forests of the Yenisei basin and the Syansk range. Even tribes migrating from north-eastern Mongolia into Siberia would find their passage westward barred by lake Baikal, and, in fact, the only important Mongol tribe that ever established itself in that part of Siberia appears to be the Buryats, whose lands are east and south-east of lake Baikal.

In the east of Mongolia the Khingan range appears to be less a barrier between Mongolia and Manchuria than the backbone of an extreme eastern zone of Mongolia, which is roughly the last district in that direction inhabited by nomads of the Mongol or pastoral type. Beyond them there appear to have been, throughout the past, nomads of a different type, the Tungus tribes, among them the ancestors of the Manchus. They belonged to the hunting, fishing, and forest-roving order of primitive people, whose territory, by reason especially of the forests, is necessarily less open to the passage of shepherd nomads than either steppe country or such civilized country as North China.

Thus the natural directions of march in Mongolia appear to be predominantly from east to west and from south-east to north-west. All of them converge on the Tarbagatai range and the valley of the Emil, in which stands at the present the town of Chuguchak. The Tarbagatai, linked with the Barlik and Ala Tau ranges, offer a traverse to the northern Tien Shan and the rich steppes about Issiq Köl. On the route south of the Altai a similar traverse is offered from the Baitik Bogdo range across an easily negotiable trough of desert to the eastern Tien Shan in the neighbourhood of Kuchengtze. The route still farther south, that which I followed through the heart of the Gobi, is quite evidently exceptional. Even if, as I myself suppose, water and grazing were in time past more plentiful, it can have served only to communicate between the Edsin Gol and the northern bend of the Yellow River. West of the Edsin Gol no nomadic direction of march can ever have been practicable. The importance of the route must have depended in the main on its junction at the Edsin Gol with a corridor to the north, into Outer Mongolia.

Granted the alignment of these directions of march, it is obvious that any effective resistance from the Chinese on the front of the Great Wall must have diverted the nomad tribes, at the periods when increasing drought impelled them to migration in search of new lands, toward the west. Converging by all

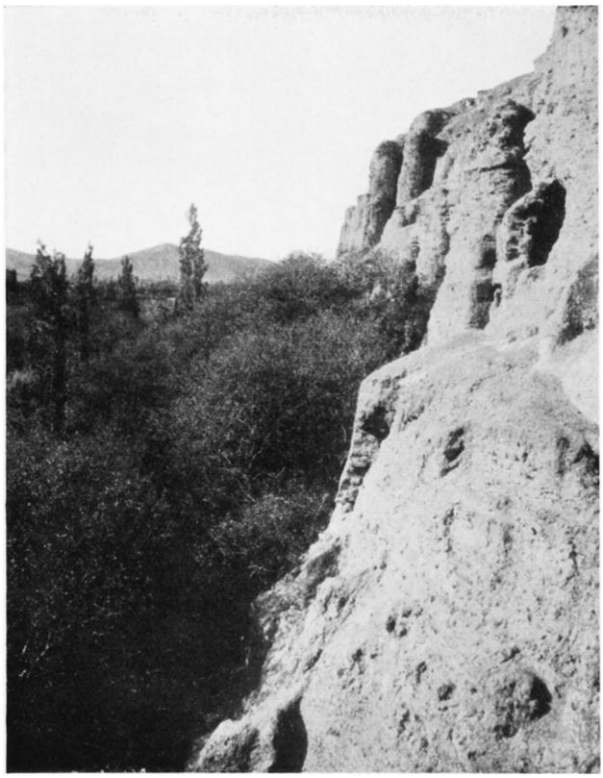
the routes on the nomads' gate in the valley of the Emil, they swept into the Russian steppes and thence diverged all over western Central Asia, the Near and Middle East, Russia and Europe. Only at such periods of prodigious expansion as the upheaval under Jenghis Khan and his grandson Kublai did the Mongols make wide conquests in China; and even then the number of Mongols diverted to the subjection of China must have been small compared to the hordes that under such a leader as Batu Khan alone poured out to the overthrowing of Russia.

The development of trade routes along such avenues of nomadic passage must have been slow in the remote past, when the tribes were unsubdued and the hazard was increased by outbreaks of tribal warfare. Caravan trade can only have existed as an adventurous kind of barter, carried on by men leading their convoys tentatively along the routes of migration, passing at their own risk from the restricted orbit of migration of one tribe into that of the next. For evidences of trade of a more organized kind, at the earlier periods of which we have knowledge, we must cast farther to the west, to the regions that centre on the basin of the Tarim river. These routes have been discussed in such a masterly way by Sir Aurel Stein that I should hesitate to make more than a running comment on them; enough only to bring them into relation with the routes of nomadic origin.

I take for granted an acquaintance with the physical conditions: the central desert, the enclosing mountain ranges, the streams breaking down through gorges from the mountains and permitting the irrigation of land in such limited zones as can be fed with water from canals and ditches. The human factor can be summed up as one of oasis-culture. The routes connecting oases are, primarily, trade routes. Owing to the absolute desert so frequently intervening between one oasis and the next, the lines of communication are not naturally adapted to the movement of peoples in migration. Even military conflict must be abnormal. The human tendency toward expansion is, among the people of such an oasis-culture, sufficiently gratified by developing the transport of goods. They are not easily impelled to abandon one set of farms in one oasis merely to sally across a desert and occupy similar farms in another oasis.

One point, however, which appears to me of great significance, has never been touched on by the authorities who have worked over the routes of the oasis country. That is the tendency toward what I should like to call tentatively a perpendicular as against a horizontal development of civilization. The normal tendency of all settled peoples is to expand laterally into touch with their neighbours, to provide an exchange of commodities. The peculiar geography of the inner basin of Chinese Turkistan encourages a different tendency.

The typical oasis of southern Chinese Turkistan is placed near the end of a river flowing from the mountains into the desert, at a point where the flow of water retains impetus enough to be carried out fan-wise in irrigation ditches. The typical river, if traced upward, is found to break down through an outer, desert barrier range, beyond which it can be followed up into more fertile mountains. This vertical construction, of fertile mountains, barrier range, desert and oasis, is more pronounced along the flanks of the Tien Shan than



Irrigable valley at foot of desert barrier-range, Turfan depression

Ruined fortress of the False Lama, Matsung Shan, W. Mongolia

Qazaq moving camp, with yurt framework packed on bullocks

Felt yurt of Qazaqs, at mouth of Köksu gorge, Tien Shan

along the Kunlun, but it is characteristic of both. The high mountains may produce timber. They always produce gold and other minerals, and offer a certain amount of pasture. There is, consequently, an incentive to trade between the mountains and the oasis. The people of the mountains bring down wool, hides, and metals to exchange with the people of the oasis for grain, cloth, and such rude manufactures as can be better developed in a town than in the mountains.

Thus each oasis tends to develop a self-contained trade and civilization, passing vertically up into the mountains and back. Vertical communication is, it is true, more difficult than lateral. The passage of the mountain gorges is commonly so difficult that the peoples of the plains and of the mountains do not merge into one polity. Those in the mountains remain pastoral and even semi-nomadic, while those in the oasis remain farmers, town-dwellers, and artisans. Yet the diversity of the products that can thus be exchanged is much greater, and therefore more stimulating to trade, than the diversity of products to be exchanged laterally, between oases. Lateral communication is likely to thrive only with the development of a through traffic, as opposed to local traffic: such a traffic as is, in fact, known to us from the great historical periods, as when, for instance, the Chinese built up the trade of the Silk Road.

Indeed, nothing is more obvious than that the people who turned the local routes of the oasis zone into important channels of communication between different races and different civilizations were not the oasis people but the Chinese. In periods like the Han and T'ang dynasties, when China was a great power, the Chinese thrust westward, throwing their weight into Inner Asia. I think it fair to assume, on the evidence from a number of sources, that the Chinese were not primarily concerned with conquest in the inner basin of Chinese Turkistan.

No single fact is of more significance than that the first organized effort of the Chinese to penetrate the Lop Nor deserts, reach the zone of oases and open communication with the Western Regions should have been the celebrated mission of Chang Ch'ien. This mission was despatched toward the end of the second century B.C., to seek an alliance with the Yueh-chih or Indo-Scythians, against the Huns. The Great Wall had been completed during the hundred years preceding the mission. The Chinese had not only been establishing a front along the Mongolian border against the Hsiung-nu, or early Huns, but had reasserted themselves in what is now Kansu province, and that part of Kansu especially which appears on the map as a corridor running past the foot of the Nan Shan toward the Western Gobi. The Hsiung-nu, or Huns, had not long before displaced the Yueh-chih in this very Kansu region, forcing them to migrate far to the west, toward Transoxiana, whither Chang Ch'ien went to seek them out, hoping—a hope that was disappointed—to ally them with the Chinese against their common enemy the Huns. Finally, it should be noted that to complete their turning movement which had pushed the Huns away from China, the Chinese had carried a supplementary fortification (the celebrated *limes* discussed by Sir Aurel Stein) from the Great Wall in Kansu right away to the Lop Nor basin.

In fact, it appears that the initial entry of the Chinese into Inner Asia was

to gain a foothold that would enable them to manipulate the nomadic barbarians of contiguous regions, to maintain the north-westward drift of migration, and prevent a recoil toward China. Trade, it is fairly plain, did not precede the flag, but followed it. After Chinese embassies and missions had begun to pass among the oasis peoples, carrying rich gifts of Chinese produce to impress them with the power and wealth of China, they came in touch with the regions beyond, which are now Russian Turkistan and Persia: regions much richer in potential trade and revenue. Still farther to the west were even more valuable markets for Chinese products, especially silk—how valuable, we can divine from classical and post-classical references to silk and the "silk-weaving Seres," who were none other than the Chinese, standing behind the shadowy kingdoms and powers of Inner Asia.

Thus the development of trade routes in the zone of oases appears to have been, throughout history, dependent on the introduction of through traffic from exterior regions. The mere falling away of through traffic, however, would by no means account for the pronounced evidences of decay in the inner basin of Chinese Turkistan. To account for the abandoned cities far out in the desert, and the withdrawal of population to points nearer the source of water supply, we must approach again the vexed problem of desiccation.

It has been much debated how far the ruins of Chinese Turkistan were due to local causes and simple abandonment, and how far to a widespread dislocation of human life by general desiccation, entailing great movements of peoples and destructive wars. I venture to think that some light may be cast on this by a consideration of what I have called the vertical structure of society in Chinese Turkistan. It may be that such a structure could account for destruction as well as for development. During a period of drought, or the recession of ice-caps in the high mountains causing a diminution of the rivers, the oasis people would tend to move up the rivers, nearer to the source. At the same time the pastoral mountain people, under pressure of the same causes, would be impelled to move downward and even to raid the people of the plains in the effort to secure a larger supply of food than they could purchase with their diminished power of barter. Neither in the mountains nor on the plain would lateral movement, or true migration, relieve the pressure, because of the difficulty of movement which would mean the abandonment of all heavy transport. It could well be argued, however, that such regional conflict might originate without a direct climatic cause. The migrations of the nomadic tribes, sweeping by on the other side of the mountains, might so dislocate the "through traffic" of which I have spoken, that a resultant economic slump would precipitate local wars.

That the painful relief of the pressure of population by war and slaughter was effected on these restricted vertical lines, up and down between plain and mountains, appears likely from our broad knowledge of the great lateral migrations, which carried the nomadic people to such enormous distances. To take only one example, a late one, the Mongol conquest of Chinese Turkistan does not appear to have moved along the trade-route line from oasis to oasis, on the southern flanks of the Tien Shan. It seems to have swarmed along the northern flanks of the range, where continuous pasturage was available; then, when they had mastered the whole northern line, they could strike back across

the mountains, descending to and conquering each individual oasis by a vertical descent along the river that supplied it with water.*

One remarkable change in trade routes must be noted, because of its importance in linking the routes of nomadic origin with those of the zone of oases. This is the Tien Shan Pei Lu, the "Road North of the Heavenly Mountains." It runs along the northern foot of the Tien Shan from the terminal Bar Köl Tagh to the Hsi Hu (Shikho) oasis, where it divides, one branch continuing along the Tien Shan and one traversing to Chuguchak. It is essentially a route linking oases, not one suitable to the passage of nomadic hordes. Its historical importance is that it lies roughly parallel to the true line of nomadic passage, which skirts the southerly slopes of the Altai and arrives at Chuguchak by a line providing continuous pasturage, and that it gradually supplanted this nomadic route.

This change of routes, probably originated in the seventh century A.D., when the Chinese under the T'ang dynasty gained for a period control over the eastern Tien Shan, may be said to mark the turn of the tide, and the ascendancy of settled civilization over the nomadic culture. It is true that later migrations reasserted the supremacy of the Altai route, but at intervals trade and wealth were diverted again to the foot of the Tien Shan, and at the present day the true arterial routes of Chinese Turkistan are recognized to be the road south and the road north of the Tien Shan, both the nomads' direction of march along the Altai and the Silk Road through the wastes of Lop Nor having fallen into desuetude.

Not until comparatively late in history was real coordination effected between the trade routes of China within the Great Wall, the oasis-marked routes along the Tien Shan and the caravan routes that had succeeded to the nomadic directions of march. In every movement toward coordination the culture of the Chinese predominated. Even such influences of culture as those that accompanied the religions imported successively into Central Asia —Buddhism, Manichaeism, Nestorian Christianity, and Islam—were speedily assimilated, in every material respect, to Chinese influences. It is even more noteworthy that the periods in which Chinese influences were most widely paramount were those in which the Chinese themselves were ruled by alien masters—the Mongols of the Yüan dynasty in the thirteenth and fourteenth centuries, and the Manchus of the Ta Ch'ing dynasty, whose downfall a few years ago has been followed by a weakening of the Chinese power in every territory beyond the Great Wall, and in Tibet.

In such periods only could it have become profitable and safe to trade on routes that crossed Mongolia from south to north, such as that from Kalgan (or alternatively Kweihwa) to Urga, and thence to Kyakhta on the borders of Siberia, traversing the general lines of communication and the general delimitation of zones. A significant proof of this is that the traditions of the caravan men of the present day ascribe to the great Manchu emperor, K'ang Hsi, who set in final order all the affairs of the new empire, every tradition and custom of theirs which marks them off from ordinary Chinese.

*Additional evidence that the great periods of wholesale migration had an indirect rather than a direct political effect on the inner basin of Chinese Turkistan is provided by the anthropometric data gathered by Sir Aurel Stein, which apparently indicate that racial type in the oases has varied inconsiderably throughout history.

At different times in the long, dark centuries that preceded such periods of splendour—times when the impulse toward migration and conquest lagged for awhile—those directions of march which were afterwards to become arterial caravan routes must have seen the passage of envoys and missions, going between the lords of tribal dominions, or between the Chinese and different powers and princelings of Inner Asia. The bearing of gifts is hard to discriminate from the origins of trade, and trade, of such a venturesome kind, must often have started up and died away again during that spectacular succession of troubled centuries. Only when the turbulence of Inner Asia had thrashed itself out in innumerable migrations and wars were these routes gradually made conformable to their present service.

The link between that past and our present survives in the trading caravans, which camp in solitudes that once saw the passage of migrating hosts: the fighting men in the van, and the rear brought up by tents and baggage, women and children, herds of ponies, camels and cattle and flocks of slow-moving sheep. The men of the caravans themselves represent the people of the march country, adjacent to the Great Wall, in which there has always been a mingling of influences, between the nomads and the settled Chinese. They are borderers, men of no-man's-land. Their ancestors for uncounted generations, though alternately harried by barbarian raiders and cowed by Chinese tax-gatherers, must always have served, as opportunity offered, to further trade and the intercourse of nations. In the same way they themselves continue to carry trade, and trade of much the same kind, although dragooned by Chinese militarists and plundered by Mongol, Chinese and Muhammadan bandits.

I find it a matter of pride to have travelled among these men on a level footing, hardship for hardship and danger for danger. It is my most sincere hope that I may have been able to interpret something of their spirit and tradition; for their survival and their obscure but noble calling do more than anything else to illuminate and give meaning to the ancient routes they follow.

DISCUSSION

Before the paper the PRESIDENT (Col. Sir CHARLES CLOSE) said: It is our privilege to-night to listen to the third Asia lecture. These lectures owe their existence to the generosity of the Rev. Mr. Dickson, who is with us to-night and who was kind and generous enough to found these lectures about five years ago. Since then each alternate Session has commenced with an Asian lecture. The first was by Sir Aurel Stein, when he gave us a remarkable and very full account of Innermost Asia; while the second was delivered by Dr. Roy Chapman Andrews, who brilliantly described an expedition which the American Natural History Museum had sent to Mongolia.

To-night Mr. Owen Lattimore is to discuss the journey which he took in Southern Mongolia along a route which has never previously been explored. The three lectures have, roughly, dealt with the same part of the world: that is to say, to the north of China and Tibet and to the south of Siberia; they are, as it were, *en echelon*. Any one who desires to learn about that part of the world cannot do better than study the two previous lectures together with that we are about to hear to-night, of which I have had the pleasure of reading a proof.

Mr. Owen Lattimore has been many years in China and has learned the Northern Chinese dialects. He was, therefore, able in a very remarkable degree

to identify himself with the people with whom he travelled. Mr. Lattimore started from Peking and eventually arrived in India, though, if I understand rightly, he looked upon the end of his journey as being about 1000 miles north of Lhasa. It was a point which most of us would have been very glad to have reached by other means. Mr. Lattimore chose the most difficult route possible, and got through. He was joined on the borders of Russian territory by Mrs. Lattimore, who also had a most interesting journey, but will not speak to us about it to-night.

Enough has been said by me to show how very valuable these Asia lectures have been in increasing our knowledge of that great continent, and when we have heard Mr. Owen Lattimore's lecture we shall have learned a good deal more about Southern Mongolia than was ever known before.

Mr. Lattimore then delivered the lecture printed above, and a discussion followed.

The PRESIDENT: The lecturer's route crossed that of Sir Francis Younghusband. We should be very glad to hear Sir Francis.

Sir FRANCIS YOUNGHUSBAND: The lecturer told us that his very faithful servant, Moses by nickname, advised him not to speak the truth. Well, I think he has taken that advice to heart. At any rate, although he has this evening told us some of the truth, he has not told us the whole truth; he has not told us the tremendous hardships that he must have gone through in following the Winding Road across the desert. My route went close under the mountains and was, for the Gobi Desert, comparatively good. From it I used to be able to look out in a southerly direction over the kind of country that Mr. Lattimore must have traversed. Therefore I can realize full well the tremendous difficulties that he must have encountered. My part of the road was desert enough, but the other part is more so. It is most gratifying that a man should have been able not only to have gone through those physical hardships, but to have had the tact and intelligence to get along witht he people at a time when brigandage was so rife. Of course, the reason why Mr. Lattimore could not travel along that comparatively good road which I had the good fortune to be able to follow was on account of the brigandage, and he was forced down into the worst road. Even there there must have been great risk of brigandage, and we must remember that in these times China is in an altogether upset condition. The authority of the Empress Dowager does not run as it did in my time ; there is not the same attention to the central authority that there used to be, and there is a great deal of brigandage. It therefore required much tact and intelligence for a traveller to get through as Mr. Lattimore did.

I should like to join the lecturer in his tribute to the wonderful caravan men who cross the Gobi Desert. They are certainly a marvellous race. I went with a small caravan and had one Chinese camel-man and a Mongol assistant, together with my own Chinese servant, and the latter seemed somehow to do what Mr. Lattimore said—he seemed to feel his way along. He would moon along at night, half doubled up and half asleep, but somehow or other at about one or two o'clock in the morning he would wake up at exactly the right spot where there was something in the nature of a well. The traveller would not recognize it as a well, but that little Chinaman would be able to tap water from the place somehow or other. They are a very hardy race, subject to great hardships and the risk of brigandage. They do somehow stick to one. I went across the country by myself and Mr. Lattimore did the same. We were both entirely in the hands of our men. It would have been very easy for them to dispose of us and nothing more would have been heard: it could have been supposed we had been run through by brigands. But they were faithful to us and saw us through.

If I might have the map put on the screen I would like to show exactly where my route differed from Mr. Lattimore's and explain what was the object of my journey. Well, it was a military object. I started off from Peking in 1887 at the time when the Russians were pressing pretty hard upon the Russian frontier, and Colonel Bell, the head of the Intelligence Department in India, had gone through the settled part of China to see how far the Chinese would be able to support Chinese Turkistan, in the event of invasion of that country by the Russians.

Chinese Turkistan touches India. The Russians had come down to Kuldja. They were pressing down towards India, and the question was whether the Chinese from China would be able to reinforce Chinese Turkistan and keep the Russians off. Colonel Bell, starting from Peking, went by the old road through the settled parts of China—the more important militarily—to see how Chinese Turkistan could be supported. I asked if I might go with him, but he said it would be waste of energy for two officers to go by the same route and advised me to try the Desert road, less important militarily, to see if there was any possible means by which Chinese military forces might get across the Desert into Chinese Turkistan. He said we would meet at Hami at a certain time at the end of the desert journey. I remember the members of the Legation saying that he probably would not wait for me more than a couple of days. I arrived ten days late, and when I got into India Colonel Bell told me he had waited at Hami a whole morning, and as I did not arrive he went on in the afternoon.

As to my route, I followed for a certain way what is apparently called the Small Road and then took the Great Road. I remember celebrating Queen Victoria's first Jubilee on the way, and my twenty-fourth birthday a week later. The route makes a détour in order, as Mr. Lattimore has explained, to get under the Altai Mountains, and we followed, as he has quite accurately described, along the base of the mountains, so that where the ravines came down we should be able to get just a little water. Sometimes there was a trickle of water; generally we had to dig for it. At any rate, we did not go more than a couple of days without getting water of some kind, and we used to take a camel-load with us. My route eventually left the caravan route which goes to Suchow, and I turned south, and had a most wonderful view of those beautiful Tien Shan Mountains—the Heavenly Mountains—standing right up in the sky.

But after that I had the very worst part to traverse because we descended into the lowest portion of what is known as the Desert of Dzungaria, lower than the rest and absolutely barren. I had 70 miles at the march, starting at 11 o'clock in the morning, resting for about three hours in the night, and getting into camp at 3 o'clock the next afternoon. That camp was at a place I was able to identify with Mr. Lattimore; it was on the map I made on the spot. When I was there it was park-like country with trees and a certain amount of water, but no habitation. I understand from Mr. Lattimore that there is now habitation there, and a fort somewhere near. You will realize that this is really not what may be called the permanent route between China and Turkistan. On account of the brigandage caravans have been forced down into the route Mr. Lattimore travelled, hitherto unknown to us. The other will always be the main line from China to Turkistan because it runs along the outlying spurs of the Altai Mountains. It is all the way through burning desert, but not so bad as the lower route. In conclusion, I should like to congratulate Mr. Lattimore on his very remarkable journey, and also Mrs. Lattimore for having the courage and enterprise to go and meet him.

Lord RONALDSHAY: The only part of the country described by Mr. Lattimore this evening of which I can speak from personal knowledge is on the Tien Shan

Mountains in the neighbourhood of Kuldja, a little Chinese town within easy access of that great coach road long ago established by the Russians which, starting at Tashkent in Western Central Asia, carried one for 1000 miles to the frontier of Siberia in an easterly direction and, turning north, went on about 450 miles to Barnaul to the south of the Trans-Siberian Railway. It is about twenty-five years since I travelled along that road from Tashkent, and some parts, at any rate, of the old posting road are now covered by railway. When I travelled over it, unless one was a Russian official, driving was a very slow and leisurely process. I remember a gentleman in an official position in Siberia telling me that he had once driven 1000 versts, approximately 660 miles, along one of these roads in forty-eight hours. I thought then, and still think, that he was romancing. My own experience was very different. Driving day and night, whenever that was possible, it took me thirteen days and two hours to cover the 808 miles from Tashkent to Kuldja, with a couple of Russian *tarantass*, the springless carriage which one uses in those parts. Arrived at Kuldja, I then travelled south in the Tien Shan Mountains, and in the valleys saw some of the nomadic life of Kurds and Kalmuks of which Mr. Lattimore has spoken. I also noticed that the Kalmuks whom I took shooting with me invariably broke an animal's bones, and I imagined that was only to obtain the marrow which they swallowed with satisfaction; but, unlike Mr. Lattimore, I unfortunately could not talk their language, and so did not realize they broke the bones to render the animals innocuous after death. The home-life of the Kurds and Kalmuks was simple but pleasant. I frequently had occasion to spend a night in their hemispherical tents, and found their beds extremely comfortable. I remember being entertained by the headman of one of these Kurd settlements, with herds amounting to some 4000 animals. He regaled me with *kumiss* and a sort of liqueur made from the mare's milk by a primitive process of distillation. The Kurdish women, though the Kurds are Muhammadans, did not cover their faces in the presence of a stranger and were jolly and hospitable.

May I conclude these very brief remarks by expressing to Mr. Lattimore the sense of pleasure which I have derived from listening to his most interesting account of this fascinating part of the world and from seeing the delightful photographs by whose aid he brought that country so graphically before us?

The PRESIDENT: We have listened to Mr. Lattimore's lecture with the greatest interest. We have learnt much about a new route through Southern Mongolia which has never previously been described and about the caravan people with whom he travelled. I was delighted to hear what he said about the Chinese Wall. There has been for some years a sort of agitation against fortification, and as an engineer officer I feel the whole agitation is factitious. It is engineered, if I may use that term, by a lot of young Staff College officers. The Chinese Wall is an example of a very successful wall, or fortification, of the very worst type possible from their point of view. We ourselves have the Antonine wall, and Hadrian's wall, and the Romans were not exactly fools in the military art. Coming to more recent times, we have the Hindenburg line. I am delighted to hear Mr. Lattimore reinforce opinions which I have always held in regard to fortification. The Chinese Wall was a big thing; it affected nations; the Antonine wall and Hadrian's wall affected nations too, just as fortification in future will affect nations if only we have intelligence to study it. However, that is a little beside the mark.

We are all delighted to have had this opportunity to learn something more about Mongolia. We thank Mr. Lattimore very much for his lecture and congratulate him on his lecture and on his journey, and Mrs. Lattimore on hers.

FROM THE TIEN SHAN TO THE ALTAI

LIEUT.-COL. R. C. F. SCHOMBERG

THE country between the Tien Shan and the Altai has not been much visited, and an account of a journey through this region, made this spring, may be of interest. The country between these two mountain ranges is not attractive. It comprises desert and salt lakes, with few habitable places and many arid uninviting hills. In some degree there is a resemblance between it and the Tarim basin, south of the Tien Shan. As the great rivers of Southern Sinkiang roll down from the highlands to find a grave in the dismal sands of the Takla Makan, to the benefit of no one, so the streams from the northern slopes of the same mountains bury themselves in the desert or fill some useless marsh or salt lake.

Several days of unusual rain had delayed the start, and it was not possible to leave Manass till April 29, when we bade farewell to the kind Dutch priest in charge of the Catholic mission there. The orchards were in blossom, and spring had driven away all traces of the dismal Dzungarian winter. The weather was now good, and for several days the heights of the Tien Shan were visible. Some features of the area traversed are indicated upon the map on p. 503, illustrating Mr. Lattimore's paper, to the north-west and north of Urumchi.

The early stages of the route were along the right bank of the Manass River. The track lay over a scrub-covered plain capable of cultivation, and in places efforts at irrigation had been made. Below on the left, at the foot of clay cliffs 20 to 60 feet high, rolled the sluggish muddy stream. The snows had not yet melted, so that the river was low. The number of backwaters showed that the Manass river was not faithful to one bed. One looked over great areas full of toghraks (desert poplar), tall impenetrable reed, much tall grass, with glimpses of water full of duck and geese. The vegetation near the river itself was inconsiderable compared with that of the backwaters, which presented, with their dense mass of trees and vegetation, a contrast to the surrounding country.

At Da-Kuai ("Big Bend") the river was crossed, and on both sides as well as towards the north-east, the direction of its flow, there were extensive swamps. The river here had, apparently, begun to find a new channel. Thirty miles farther on is the halting-place of Tang-Chou-Tsu (The Canal of the Tang Dynasty). This was a miserable place, hot, shadeless, insect-ridden, but of much interest. It was by the side of the Telli Nor, the real end of the river. The people here said that the lake was steadily drying up, and that ten years ago there had been more water. One old man said he remembered when the whole lake had been full. In May 1928 the Telli Nor was dry and I rode over it. The marks on the lake-side enabled an estimate of the different levels to be made.

Although the Telli Nor may be drying up, the Manass river certainly is not. Apparently in early May the volume of water was not enough to reach the lake, because part of the water was swallowed by the old swamp on the way, and the rest was diverted into the marshes where the Manass was endeavouring

to make a new course. When the river should rise, the lake would receive part of the water, but never the whole. Consequently in time the Telli Nor will be wholly dry, and a new basin will be formed to receive the end of the new channel of the river. Before Dakuai, at Taipingliang (the abode of great calm) the river was about to cut a chord across a wide curve where sandhills blocked its farther trend, in an easterly direction.

The Canal of the Tang dynasty was a solid piece of earthwork along the east side of the Telli Nor. At the north-east extremity of the lake, where the canal ended, there was a good growth of reeds and poplars. The canal was hopelessly out of repair. Before Dakuai many abandoned canals had been passed, as well as deserted houses, empty fields, and other signs of former cultivation. It seems that some years ago the dam that kept up the irrigation water burst. The cultivators all left, as they could not repair it. The only men able to do the work lived some way off, and could only spare the few weeks between the end of their harvest and the beginning of winter to mend the earthwork. It was said that in 1928 this dam would be repaired, so that a large area should again be under crops in 1929.

At the Telli Nor I left the Manass river. I was told there was a petrol spring to the west of the lake, in a low inhospitable range of hills.

An arid bleak stretch, with desolate hills and black gravelly "sai" glistening in the heat, was crossed before reaching the next water, at the Orchu or Urhu river, 28 miles to the north. Here was the oasis of Urumuhu. The undulating plain, fretted with small jagged hills, suddenly broke. The track abruptly descended 80 feet down a soft clay bank. Looking down into the rift, one saw a valley some 5 miles wide filled with toghrak trees. The leaves were just out, and a belt of delicate emerald filled the gash in the barren plain. The river, hidden by the trees, known locally as the Urumuhu river, flows from the Urkashar hills. Usually it is an insignificant stream, but it happened to be in spate and was crossed with difficulty. The oasis was populated by Torgut Mongols, of disagreeable habits, and there were a few Chinese farmers. The oasis could undoubtedly be developed. The soil is good, and the water ample. The climate is warm, and snow never lies. In May the temperature under the trees reached as much as 100° F. The river flows into the Airik Nor. After widening and passing through much swamp, full of toghraks and reed, the river narrowed about 7 miles from the lake, and was confined by barren hills. The Airik Nor, which lies north-east to south-west and is a long narrow sheet of water, was fringed with vegetation on the oasis side, but barren with arid hills on the far side.

Crossing a desolate dreary stretch, it was pleasant to reach, after 25 miles, the Kobuk river. Flowing from the Saur Mountains, this river watered a large area. There was some cultivation and fair grazing, besides a small bazaar for the farmers and travellers. The waterless region had now been left, and the southern slopes of the Kara Adyr and northern sides of the Salburty range were watered by small streams. Between them was a wide open grassy plain, on which many nomads, chiefly Torguts but a few Kasaks, pastured their flocks.

Though the height was not great, it was bitterly cold crossing the Kara Adyr. In one of the most depressing places, by a small spring, an enterprising

Chinaman had opened "The Inn of Heavenly Fortune." He certainly deserved such. A long 25 miles, over a sloping plain which grew less and less grassy as it descended, finished at the Uliungur Nor. There was a small spring close to the lake, which was here a backwater or stagnant expanse of evil-smelling water, with black sludge and reeds. The water of the lake itself was slightly brackish, but quite drinkable. Opposite, just discernible, was Buluntokhoi, where the Chinese kept a garrison. It is a great name, but not much else. Its chief importance is as a rendezvous for caravans. The lake was a bright green colour, with violet and purple shadows. Its waters were clear, and the duck, teal, and geese, besides a party of swans, dived and floated undisturbed. There were traces of gold-workings by the shore, towards the north-west end. There was a fair growth of reed and grass near the edge. The chief feeder of the lake is the Urungu river, but it must receive much water from the drainage on the eastern slopes of the Saur Mountains.

Since leaving Manass four areas, without a visible drainage exteriority, had been passed, the Manass, Urumuhu, Kobuk, and Urungu river ends. Near the Uliungur Nor the topography is strange. The black Irtish and the Urungu rivers rise in the same range, the Altai. The waters of the former find their way through Siberia to the Arctic Ocean. The Urungu discharges itself into the Uliungur lake, the northern shores of which are but 4 miles from the Irtish. Leaving the shores of this lake, the ground rises steadily, and a range of low hills effectively separates the lake from the Irtish river.

The latter was a whirling flood of black water. Its left bank was bounded by high sandhills, but its right bank had failed to hold the swollen river, and the country was inundated by the flood water. Presumably as the snow-level of the Altai was so much lower than that of the Tien Shan, the snow-water, in spite of difference in latitude, came six weeks earlier. Thus the Irtish was in flood when the Manass was as yet unmoved.

There was a good rope ferry over the river, but although there was some traffic—for the caravans from Ku-Cheng come in here—yet there was no accommodation for man or beast, and no supplies either. This caravan route avoids Urumchi and Manass and other tax-collecting places. Ku Cheng is now the distributing centre in the province for all goods from China, and this direct route is convenient, though in summer the water difficulties were said to be considerable. North of the Irtish the country was flooded and progress difficult. The horses disappeared completely in what seemed ordinary ditches. The Kran river was almost as formidable a stream as the Irtish, and had likewise overflowed its banks.

From now onward many Kasaks, all of the Kirei tribe, were met as they migrated to the mountains. The southern slopes of the Altai mountains were crowded with nomads. Under present political conditions nobody is allowed to cross into Outer Mongolia. The western valleys held Kirei, the eastern Torguts, though in some places in the west there were Uriankhai Mongols.

The capital of the Altai region was a small prosperous town of some 2000 inhabitants. There was an extremely uncivil Taotai, and the usual officials. The town was embellished by the presence of a Bolshevist consul who lived in a bazaar house. The shops were good, the bazaar well stocked, and the price of everything was exorbitant. Though colloquially known as Altai, the

Chinese call the town Cheng-Hua-Ssu (the blooming or blossoming flower) To the Kasaks and Mongols it is known as Sharasume.

The Kran river, a fine rushing stream, flows in three branches below the town, and is crossed by good bridges. The climate was delightful, fresh and invigorating, with bright sun and cold nights. The winter was said to be severe, and the fuel difficulty great. There was much gold-mining done in the warm months, and the population was increased considerably, and not by at all a desirable class of immigrant.

After leaving Sharasume, the journey, by no means under official auspices, was resumed towards the western valleys of the Altai, the Kaba, and Burchun valleys. It was necessary, less for geographical than for political reasons, to return to the Irtish river at its junction with the Burchun. In former times steamers from the Siberian side of the frontier came here. The houses were all in the Russian style, and the local mandarin occupied a particularly fine one, though neglect and other causes were rapidly ruining it. The Irtish here was crossed by a good ferry. It was a fine river, reinforced by the Kran.

The Burchun river was a surprise. It was as wide as the Irtish, and was a roaring uncontrollable mass of water. A ferry, worked by two Kasak women and a small boy, was particularly good. On the farther side, the inundations were so great that a dry place was reached with difficulty. There were four subsidiary rivers to cross, and the water was over the horses' backs. It was only the absence of current that made the crossing at all possible. The flood increased and in a short while it was not possible to reach the ferry—nor the bazaar. Kasaks, stark naked, struggled to swim their horses as far as the ferry, but they had to give up the attempt.

From here it took three days to reach the Altai Mountains. The scenery could not be called fine. There was, though, a freshness about the hills that contrasted agreeably with the plains. The snow had nearly all melted. What the landscape needed was one conspicuous peak, one snow giant to dominate the mountains and to give dignity to them. But the sun-lit glens, full of poplar, birch, and willow, and aglow with flowers, the grassy sides and clear streams, were an unending delight. Everywhere there were flocks. The pastures were a mass of sheep and goats, whilst the Aouls, the felt tents of the Kirei, stood by the dozen on any suitable site. These Kasaks were migrating to the upper pastures, and the narrow paths were choked with their animals.

Leaving the Burchun, the track led to the Kaba river, which is for some way the boundary between Russia and China. There are here two branches, the "White" and "Black" Kaba respectively. The former is the frontier in some places. The Black Kaba flows in from Russian territory, and the two streams united form the Kaba river, which flows into the Irtish.

From the small frontier post on the Ak-Kaba a track led over the watershed into the valley of the Burchun. The forests of larch stretched down into deep grassy meadows, covered with flowers. The big purple gentian, the small blue one, cyclamens, anemones, and other flowers were in profusion. The violas grew in huge masses, purple, violet, cream, and yellow, and made patches of colour in the turf. A "Christmas rose," the size of a single dahlia, and a deep magenta, was everywhere, a noble plant, in some cases over 2 feet high.

Descending into the Upper Burchun valley, we entered a wide plain extending for several miles, green and level, an ideal pasture. The valley, save for a small police post and four or five Uriankhai Kalmuck tents, was empty. Just above this plain the Kanaz lake filled the valley. It should be noted that the valley and river are both called Kanaz in their upper part. The lake itself was an ideal Scottish loch, a long piece of clear water. The western shores were steep and rocky, the eastern were green and wooded, and rose gently up the valley's side. The narrow end of the lake is in the insignificant main Altai range, on which there was some snow, though fast melting. The absence of animal life in the whole of the Altai was noticeable. The ovis ammon and the wapiti, the roedeer and the ibex, had all been killed off. It was sad to see this ideal ground denuded of its fauna. There were said to be a few bears, but the sables had vanished. This was not remarkable, as the price of a sable was £11, and this for the inferior Chinese variety.

The Uriankhai Kalmucks come down in the winter to these levels, and there were low log huts in several places, which were then occupied. Although not too hot for the Kasaks, the Kalmucks fled to higher pastures in the summer. The Kirei and Uriankhai pastures were kept strictly apart. No trespassing was allowed.

The pleasantest feature of the journey was meeting the Kirei. These Kasaks consider themselves the *élite* of their race, and no more agreeable people could be found. They were courteous, hospitable, and intelligent. They made the foreigner welcome, though he must often have been a nuisance. They were quite unspoiled, and long may they remain so.

The distances travelled were as follows:

Manass to Sharasume	349 miles.
Sharasume to Burchun	63 ,,
Burchun to Kanaz Lake *viâ* Ak-Kaba Post	110 ,,

For the first stage of the journey, as far as M. 255, there is a telegraph line and also a postal route. Hardly any travellers were met on the way.

With regard to maps, it may be noted that War Office Map 1/4,000,000, Central Asia, Sheet 21, gives Tulta as another name for Sharasume. This is incorrect. Tulta is the next valley, just at the C of "Cheng." Sharasume itself should be on the Kran River and not to the east of it.

Stieler's Atlas (Map No. 62) only gives Tulta, and this in the wrong place. The Kobuk river of the War Office map above quoted should be spelt Khobuk, the kh being guttural. This river is spelt Chobuk by Stieler. The Russian "40-verst" map, 1910, agrees with the War Office in calling the river Kobuk, and with Stieler in putting Tulta in the wrong place, and assigning this name to the site of Sharasume.

thousand years; change is almost unknown to the 6000 Catalans who make up its population, and the little State is mediæval in all its essentials.

Mr. Newman gives a readable account of Andorra's history, showing that the country has preserved its independence chiefly because it has had both Spain and France as nominal overlords and neither would permit annexation by the other; and it will come as a surprise to most readers that, but for the sturdy spirit of the people, Andorra would have become a fashionable gaming centre in 1880, when a French syndicate, seeking a site where gambling might be carried on without interference by the rigorous laws of a powerful State, attempted to "open up" Andorra and went to Monaco only when the Andorrans had refused to countenance the scheme.

The greater part of Mr. Newman's book is taken up with a description of Andorra, its surroundings, and its people as they are to-day. His last chapter contains some practical advice to the intending visitor, giving itineraries to suit both pedestrians and motorists, and shows that, for the man of slender purse, a fortnight's tour need not cost more than £20. Mr. Henley Gardener's illustrations add charm to the book, which is accompanied by a sketch-map and an index. Mr. Newman mentions that a new map of Andorra, published by the Librarie Dardel of Chambéry, may be obtained in England from Messrs. Stanford. O. R.

TURKESTAN DOWN TO THE MONGOL INVASION. By W. BARTHOLD. Second edition. Translated from the original Russian and revised by the author with the assistance of H. A. R. Gibb, M.A. (E. J. W. Gibb Memorial Series, N.S. 5.) *London: Luzac & Co.* 1928. 10×6 *inches;* xx+514 *pages, and a map.* 25*s*

Professor W. Barthold has done more than any other scholar past or present to turn to account the Arabic and Persian sources dealing with history and geography of Central Asia. He has always been an indefatigable worker, as is shown by the fact that since 1892, when he published his first article, he has produced nearly 300 books and pamphlets, all of them bearing the stamp of his accurate scholarship. His researches have always been concentrated on the mediæval history of the Middle East, and his learning is based not only on an unsurpassed acquaintance with Muslim literature, but also on first-hand knowledge of the topography and archæology of the countries in question. That the great services he has rendered to science are not fully appreciated in this country is no doubt due to the fact that most of his work has appeared only in Russian. The appearance of a second edition of his great work on Turkistan in English is therefore an event of special importance to us: for in it are summarized most of the precious data this Russian scholar has accumulated during the past thirty years. For the translation, most admirably executed by H. A. R. Gibb, has been controlled by the author throughout, and the subject-matter, the notes and the bibliography have been entirely brought up to date.

Space will not permit the contents of this *magnum opus* to be described in any detail here. Suffice it to say that as far as regards both history and geography it supersedes all other works on the subject, and that it must for all time hold its own as the standard authority on Turkistan and the neighbouring countries from the time when those regions first enter the arena of Muslim history down to the arrival on the scene of the devastating hordes of Chingiz Khan in the thirteenth century. Apart from this Barthold is the first scholar who has described the social and economic conditions prevailing in Middle Asia in the Middle Ages. Over one hundred pages of this work are devoted to the reconstruction of the topography of Transoxiana, based on a critical examination of the known

materials. It would be surprising to learn that he has ignored any single work in any language which throws light on his subject.

It is by great good fortune that so many of the ancient Arabic works on geography have been preserved to us, though many others known to us by name still await discovery. In quite recent years one or two of the most important have been brought to light. Barthold has pieced together all the information obtainable from these old works and has been able to give us a comprehensive survey of the most important towns and of the main routes connecting important provinces and cities. It is interesting to recall that it was Barthold who first conclusively proved, partly by the study of new sources and partly by the re-examination of known texts that during the thirteenth to sixteenth centuries the Amu Darya actually flowed into the Caspian, former scholars having maintained that it could only have done so, if at all, in mythical times.

The value of the bibliography cannot be overestimated, for it includes many Russian works which are little known in this country. The index is in keeping with the high standard set by the book itself. E. D. R.

THE CULT OF THE PEACOCK ANGEL: A short account of the Yezîdî Tribes of Kurdistan. By R. H. W. EMPSON, with a Commentary by Sir RICHARD TEMPLE. *London: Witherby* 1928. 9×6 *inches; 236 pages; plan and illustrations.* 15*s*

The Yezîdî Tribes, now reduced to some 40,000 by the massacring Turks, live for the most part in the vilayet of Mosul and the foothills of the mountains of Kurdistan. They have attracted attention by the mystery of their origin, and especially by their religion, which, based on the propitiation of evil, has gained for them the name of Devil-worshippers. The name of Satan being forbidden utterance, a symbol was chosen which could not possibly be confounded with it. This symbol was a peacock, and Satan became Melak Tâ'ûs, or the Angel Peacock. The Yezîdîs declare that the image of the angel is a symbol and not an idol of their faith. The images are taken round by travelling Qauwâls (priests), and exhibited to the faithful with certain ceremonies. They hold in highest reverence a saint, Sheikh 'Adi, and a shrine of the same name is their Mecca where their chief festivals take place. This shrine—tucked away in a valley in the mountains of Kurdistan, and referred to by Mr. Empson as the nearest approach to our conception of an earthly paradise—was visited by him, and he gives a full description of it with a plan. Their religion is a strange medley showing traces of the teachings of Zoroaster, Manes, Christianity, and Islam. Mr. Empson remarks that it is difficult to imagine how such a strange compound inspires the Yezîdîs with fortitude in face of oppression, but the smallness of the population is in no small measure due to the fact that they are nearly all martyrs to the cause. The two big Turkish massacres of 1845 and 1892 would have put an end to a sect less strongly imbued with the essential spirit of unity.

The author is fortunate in being able to append to his work a commentary upon it by Sir Richard Temple, who, with his great knowledge of the religions of the East, is able to throw some light on that of the Yezîdîs. In his view the basis of their religion is Islamic, with a large admixture of other faiths with which they have come in contact, *e.g.* aboriginal Paganism, Nestorian Christianity, and Zoroastrianism. This, he adds, is really the history of almost any heterodox Islamic sect one may mention. The Muhammadan nature of the whole legend of Melak Tâ'ûs comes out in the dedication of the image. The influence of Islam is overwhelming in their religious ideas. They are really extremists (*Ghulât*) of the Shi'a Moslem sect. E. A. P.

THE DEVELOPMENT OF INDIAN AGRICULTURE. By ALBERT HOWARD, C.I.E., and GABRIELLE L. C. HOWARD. ('India of To-day,' Vol. VIII.) *London: Humphrey Milford, Oxford University Press* 1927. 7×5 *inches;* iii+98 *pages, and illustrations.* 3*s* 6*d*

The uplift of rural India, where 90 per cent. of the population, living in half a million villages, are directly or indirectly dependent upon the soil, is the central problem for Indian Statesmen. That this was so was fully realized by Lord Curzon, who initiated scientific investigation into the problems of Indian agriculture; and the results so far attained are, as Lord Ronaldshay says in his 'Life,' "the fruit produced by the tree Lord Curzon planted."

This little book states clearly the conditions of the problem, what has been done towards its solution, and what remains to be done; and the lately published Report of the Royal Commission on Agriculture in India supports almost entirely the conclusions arrived at by the authors. Some success, taking the line of least resistance, has been achieved in getting the Indian cultivator to improve his crops of cotton, wheat, rice, sugar-cane, jute, tobacco, ground nut, and fodder plants, by using seed of better yielding varieties so as to increase production without extra expense. But the progress is slow. The chief obstacles to rural uplift are the indifference and illiteracy of the cultivator, his chronic indebtedness, and a mentality enslaved by superstition. Nowhere have the people come forward themselves or through their representatives in the Councils to urge practical steps for agricultural improvement. Obviously the key to the situation is education, and excellent suggestions are made as to this by the authors. The policy which has been adopted in the Malay peninsula is equally suited to India: to give the peasants as good an education as can be given in their own language, an education that will not tempt the people away from the land, but will make the son of the farmer a more intelligent farmer than his father has been. Until this has been achieved adult education that shall be practical, accessible, and attractive is of urgent importance. W. H. A. W.

SIAM AND CAMBODIA IN PEN AND PASTEL: With Excursions into China and Burma. By RACHEL WHEATCROFT. *London: Constable & Co.* 1928. 9×6 *inches;* x+296 *pages; illustrations and a map.* 21*s*

Having spent two years painting in Ceylon, Miss Wheatcroft decided to go farther east. Apart from a visit to Siam, she tells us that the three places on which her heart was set were Borobudur in Java, the Great Wall of China (from Peking), and Angkor. She tells us little of Java, but she saw a good deal more of China than Peking and went up the Yangtze to Chungking; she gives us some pleasant descriptions of Cambodia, whence she made her way to Siam, going as far north as Chiengmai and then on to Burma and up the Irrawaddy to Bhamo. She travelled leisurely, painting and sketching as she went (as she puts it, each stage was to furnish the wherewithal for the next), and travelled not on the tourists' track but where fancy took her. In this way she was able to catch the spirit of the countries she visited, and though she suggests that her book is merely supplementary to her pictures, it is a lively record and makes easy reading, while the illustrations—from pen-and-ink sketches of elephants to beautiful pictures in colour of such scenes as Angkor Wat at dawn—give it distinction. A word of praise is also due to the publishers, who have had the foresight to include exactly the right kind of map to supplement such a volume as this, with clearly printed place-names and opening from a fly so that one may keep it before one as one reads. O. R.

Skagastölstind in Norway, Aorangi in New Zealand, and, finally, the thrice-assaulted Everest. There is naturally not much geography in the book. The stand for the name Aorangi deserves a word of commendation; but the abolition of Mount before Everest will not find favour with this Society.

A small point of a purely technical nature may interest climbers. The author is somewhat severe on Slingsby's two companions on the Store Skagastölstind in 1876 for wearing boots without nails "on principle." One of the two well-known guides in the Horungtinder told the reviewer this year that he had been up "Storen" over sixty times in his life, and had never had nails in his boots.

THE LIFE OF LORD CURZON: being the authorized biography of George Nathaniel, Marquess Curzon of Kedleston, K.G. By the EARL OF RONALDSHAY. Volumes 2 and 3. *London: Ernest Benn, Ltd.* 1928. 9×6 *inches;* 424 *and* 458 *pages; illustrations.* 21*s each volume*

We take leave to congratulate our former President, Lord Ronaldshay, on the triumphant conclusion of the great task he undertook in the biography of his great predecessor in the Society's chair. The first of his three volumes, covering the years before Lord Curzon's viceroyalty, has already been noticed in the *Journal*. The second volume deals with the Viceroy in the fullness of his powers, at the culmination of his early ambitions, supremely confident in the greatness of the British destiny in India, and in his own peculiar fitness for the task, won by long years of arduous travel and intense study. In the third volume, which is in many ways the most interesting and, if we may say so, the most skilful, we have sympathetic treatment of the nemesis of his home-coming, to find himself denied for years any place in political life, and driven, to the great benefit of the University of Oxford and of our Society, to divert his enthusiasms into other channels. Then came the great war which found but half-completed his schemes for that full establishment of the Society in Kensington Gore which we are only now able to realize, but now upon an even greater scale. The letters and memoranda in this third volume must be of lasting value for the political history of the war, and a precious possession to the student of dialectic. But the whole book will have a wider and more permanent interest as a penetrating study of a complex and remarkable character, exalted yet with curious trivialities which there is the less need to gloss over because their possessor seemed to take a special pride in exhibiting them in his own volumes of reminiscences. One side only of that many-sided character we seem, perhaps, to miss in the biography: a peculiar force of words in conference or interview, whose memory recalls the phrase used by Mr. Arthur Benson of Dr. Warre, a "kind of secret power in him." That there was in Lord Curzon something of the same quality, not quite human, must be felt by many who had the formidable privilege of serving him. Lord Ronaldshay has marshalled his matter with great skill to explain just how it came about that he never had in English public life quite the influence that his talents and industry should have won him. These three handsome volumes, with their finely set and beautifully printed pages, will be a permanent source of instruction for students of public affairs, and will, we think, come to be reckoned among the few great biographies of our time.