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Problems in Exploration: Discussion

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and south to the edge of the Desert, is left almost as blank on Kiepert's latest map as the Desert itself. A few caravan tracks are drawn through it with those unwavering lines which suggest either a perfectly flat and featureless plain country, or the perfectly plain ignorance of an uncompromising cartographer. A very few village names and wells occur, usually written simply "Dorf," with an added note of query if off the tracks, and at suspiciously equal intervals if on them. I started from Aleppo for Bab, seven hours away, and during even that short journey learned, to begin with, that there were three times more villages in sight than were marked on the map, and that Bab itself was considerably further distant and more to the north than the cartographer had placed it. Thence I expected to jump off into an almost uninhabited steppe, with 20 miles to cover as far as a solitary midway station called Arimeh, and 20 more to Mumbij. I had the pleasant surprise of finding that each of those stages reduced itself to about two-thirds of the cartographer's distance, and that there was quite an embarrassing choice of villages all along the way, lying in rich ploughed lands. When later I covered the further road from Mumbij to Kalat en-Nejm on the Euphrates, I passed six villages on a road where only one is marked, and that does not exist. Any one armed with Kiepert's map, a prismatic compass, and a reliable watch, who will spend even a month in going to and fro between Aleppo, the Sajur, and the Euphrates, can fill hundreds of names and features into a cartographic blank, which is in reality as well populated and fertile as any region in Syria.

This, then, there is for an explorer to do even in so near a region as Western Asia. Almost everywhere he may add important details to maps very imperfectly filled in. His most accessible and remunerative fields will be in Eastern Asia Minor and North Syria. In the mountainous districts of Asia Minor, Syria, Armenia, Kurdistan, and Western Persia, he will find also abundant ethnographic and economic work to do, especially in the observation of tribal grouping and custom, and of natural products. Throughout the great desert tracts, which make fully a third of the whole area, he will find it the easiest thing in the world to avoid the tracks of any European predecessor, and to see nomadic populations to which Western guests have never come. In Southern Arabia, if he have a stout heart, he may yet make more than one journey which offers not less of the unknown, not less long detachment from Western civilization, and withal not less personal peril, than were sought and found by the greatest pioneers of the past.

Before the paper, the PRESIDENT: The lecture of the evening is to be one of a series describing the unexplored parts of the world. I think you will not be surprised when I say it is probable that some of these lectures cannot be read at

our evening meetings, but will appear printed in our *Journal*. We hope in this way to obtain a very valuable series of articles, describing what remains to be done in the world in the way of exploration. It is, I believe, fourteen years since Mr. Hogarth lectured here, and possibly to some of us he wants reintroduction. But to those who have served on the Council and know the valuable aid he has given to us, he needs no introduction. He is a master of archæological exploration in Egypt and in Greece, and he knows a great deal about the localities which he is going to discuss to-night, and I will therefore not do any more than call upon him to deliver his lecture.

Sir THOMAS HOLDICH: I very much regret that my old friend, Colonel Wahab, is not here to-night to make his own remarks. They are not long, but you will see at once that in the main they bear out exactly those principles we have just heard from Mr. Hogarth. Colonel Wahab was engaged for some years in the delimitation of the boundary to the north of Aden, and since that very troublesome boundary has been settled, he has occupied himself in a very close examination of the questions which are before us to-night—the possibilities that may occur for further exploration in Arabia. And this is what he has to say about it—

Colonel WAHAB: "All who have travelled in, or studied the geography of, Arabia will be grateful to the lecturer for bringing the subject of its unexplored wastes before the Society. Throughout northern Arabia, that is north of a line from Jidda, passing through Taif and across Nijd to Hofuf and the gulf, the peninsula has been crossed and recrossed at intervals sufficiently close to enable us to form a fair idea of its general character. South of this line no trade or pilgrim route crosses it; few Europeans have penetrated more than 100 miles in a direct line from the coast, and these have found their way barred by the sands of the Dahna. On the east and south coasts the strip between this desert and the sea has been explored, first by the Indian Marine surveyors and more recently by Zwemer in Oman, and by Hirsch and Bent in Hadramaut; on the west Glaser and Halevy, both skilled archæologists, reached the western edge of the desert and explored the seats of ancient Sabæan and Minæan civilization in Marib and Nejrán, leaving little to be discovered by travellers under present conditions. Omitting the half-million square miles of the Dahna desert as unprofitable waste, there still remain the northern districts of Yemen, the whole of the Asir highlands, and the hinterland extending north-east to the borders of Al Hasa as a field for the geographical explorer. A route from Saná northwards to Taif would lead through one of the most interesting districts of Arabia, of which nothing is known at first hand, except from the meagre accounts given by Tamisier and other French officers of Mehemet Ali's army between 1830 and 1840. A journey through Asir and down the Wadi Dawasir to Yemáma would indeed be, as the lecturer describes it, the biggest feat left for a traveller to perform in Asia. All we know of the hydrography of this vast area is that the *wadis* of Asir, and perhaps of Nejrán, drain to the north-east; but whether they unite to form the W. Dawasir, or some of them form a separate and southerly *wadi* system draining by the Wadi Yabrin to the Khor ad Duwan, or the salt marshes east of it, we cannot say.

"The difficulties and risks of such a journey are serious. The whole Red sea coast is Turkish, and British subjects have not, of late years, found travelling in Turkish possessions a safe or easy matter. The independent tribes in the interior of Asia and Northern Yemen are somewhat fanatical followers of the Imám, whose capital Sada lies in the direct road north from Sana. The British authorities would forbid any one entering from the Aden district. The only approach to this hinterland would therefore seem to be from the coast some distance to the east of Aden, and thence, as suggested by the lecturer, an explorer with local experience

might find his way to Marib and along the fringe of the desert to Nejran. Whether he could then get into relations with the Beni Kahtan and continue his journey northward, or whether he should try to work eastward along the old Sabæan trade route to Shabwa and the Hadramaut valley, must depend on the explorer's discretion. The latter alternative would no doubt help to solve some minor geographical problems, such as the upper course and source of the Hadramaut valley; but the main points of interest on the route, Marib, the Jauf, and Hadramaut, have been already examined by competent archaeologists as thoroughly as present conditions of travel permit, and the geographical results would be small compared with what might be achieved on the northern route.

"As the operations in the Aden hinterland have been referred to, I would like to say that an exploring party was sent at the time from Aden towards Hadramaut, but was obliged to return after an attack by the tribes, in which the surveyor of the party was killed. Any exploration towards Marib, in territory claimed by Turkey, was out of the question while the boundary negotiations were being carried on, owing to the jealous suspicions of the Turkish officials."

That is what Colonel Wahab has to say about it, and if I could point out to you one by one the names he mentions in this paper, you would see that they coincide very fairly closely with the most important route indicated for future explorers by Mr. Hogarth. I would like to say for myself, that when I was at Muskat I heard a report that there was a direct route across the Great Desert from Muskat to Mecca, and that pilgrims from Persia made use of it. I never met any really competent authority who would justify me in stating that such a route exists. But reports like that, when they are constantly affirmed, generally have some basis of fact, and I believe that there is a route from Muskat, following the northern edge of the desert, running somewhat south of Riad, and so passing on to Mecca. This route, which is given in some maps, must be some 1100 miles in length, and it is stated that it takes twenty-one days to accomplish it. That would mean travelling at the rate of 50 miles a day. Not an impossible rate of travel in those regions, but it would certainly indicate that there must be oases and cultivated spots where water is procurable, of which we know nothing at all. I may also point out that there is in Arabia a certain amount of triangulation on which any traveller who wishes to begin an exact survey in the south-eastern portions of the desert might base his work. From the Persian coast it was carried across to Cape Mussendam, and peaks were fixed which at once brings eastern Arabia into line with the great Indian Survey. There is just one other point to notice, relative to Mr. Hogarth's concluding remarks on the subject of the use of instruments. I regard it as a very poor business indeed if a traveller can only depend on a prismatic compass survey. The results of such a survey are never very satisfactory, and I would point out that in the hands of our Indian explorers it has seldom been necessary to revert to this method. I admit that they have not been much employed within the limits of Ottoman territory, but they have been in that territory; and a great deal of the Kurd country, to say nothing of the central part of the Hadramaut valley, have been surveyed by Indian surveyors, who have used the ordinary instruments which we use in the Indian Survey with very useful results. In the Hadramaut particularly, you have seen some photographs which Mr. Hogarth has put on the screen which were taken, I think, by Mrs. Bent, which show that it is quite possible to use the camera in those regions. Where it is possible to use the camera, there, I maintain, it is possible to use instruments of a little better class than the prismatic compass; and I may mention that by the use of the plane-table, surveyors have been able to adapt themselves to circumstances in a variety of ways. It is really comparatively easy to take

plane-table observations without creating very much disturbance. If I remember right, Captain Bower, when he was crossing Tibet, used to ring a little bell in the evening to call the attention of the inhabitants of the country generally to the fact that he was going to say his prayers, and the instrument was accepted as part of his ritual. In a country which is particularly difficult to deal with, to the west of Makrán, bordering the Kurdish country (where I doubt whether any European could go), an Indian surveyor used a plane-table with great effect by combining it with a camera, and so long as he produced a few photographs at the end of his journey, he was quite safe. I would strongly recommend travellers to study the possibilities of making use of such instruments before starting. I will only conclude by expressing my cordial approbation of this lecture system of informing travellers beforehand where they are going and what they are going to do. In my own opinion, geographical work well begun and backed by such knowledge as experts like Mr. Hogarth are able to give, is work really half done.

Colonel MAUNSELL: My experience of travel in Arabia is confined to a journey down the Hejaz railway, but even this had a peculiar fascination from the strange grandeur of the scenery, the brilliant colouring of the landscape, where red, yellow, and purple were the predominant colours, and green was entirely absent. It might be possible to reach the Red sea from various points on the line, but a range of apparently volcanic origin, with a line of difficult peaks of a curiously jagged nature, would have to be crossed at the watershed. But routes certainly exist, and are travelled by the Arabs, the duration being from three to four days.

I think, undoubtedly, that the right spirit for a traveller to enter Arabia is to go as a gentleman of quality, paying a visit to the great chieftains of the interior, and it is useless to attempt disguises. It must be remembered that the great spread of Western thought throughout Asia has also reached Arabia, and the Emirs of Nejd might not be so averse to travellers visiting their country as they were formerly. In Kurdistan, the chief fascination of travel is that you may come across, in the forgotten corners of the great mountains, remnants of peoples of the past driven thither as successive tides of conquest passed by. In the Telu ranges are the Nestorian Christians of the period just before the Moslem conquest, and various settlements of Jews who had been there since the captivity. The district of Modikan, near Bitlis, would probably yield traces of Chaldean times. One great range there is named the Hormuzd Dagh, and there are strange stories of the religion and curious cave dwellings of the inhabitants. In the hills not far west of Modikan, differences are still settled by fights between men armed with swords, and protected by a leathern target. A Kurdish chief came out to visit me, attended by men with battle-axes and what resembles the lictors of ancient Rome, whose frontier fortress of Nisibis was not far distant in the plain below.

The district of Lazistan, on the Black Sea, can also be recommended to the traveller. It presents the beautifully wooded scenery common to the Black sea coast, the hills rise to some 9000 feet, and the summer climate is superb, while here also there are studies to be made in the former history of the population.

The PRESIDENT: Perhaps Mr. Bury will say a few words and tell us a little about the difficulty which he has met with in Southern Arabia in surveying and in dealing with the natives.

Mr. BURY: During the last ten years I have had occasion to go into the Aden hinterland on various work. I have got as far as the south-west corner of the Rubá el-Khali, or Empty Quarter. I have looked towards the north and north-east across 70 or 80 miles of rolling sandhills some 150 feet in height. Far across and probably about 30 miles due east of Mareb can be seen a flat-topped range of hills, known as the Hadhenah range, which are said to be of marble,

but more probably are of limestone. That marks the utmost limit I have ever seen of the Great Red Desert. I may tell you, as regards the difficulties which would be met with by an explorer in that district, that the chief of all would be the water-supply. Even the natives themselves have very hazy ideas as to where the water-holes and wells are. As a matter of fact, I believe the water-supply along the southern edge of this desert is much more plentiful than we are led by natives to suppose, owing partly to the presence of the larger fauna there, such as the white oryx and wild ass. The tribes living along the edge of the desert are of a truculent disposition, but amenable to reason. I believe it is humanly possible for a man to start on the coast, work his way up towards $15^{\circ} 30'$ or 16° lat. N., and then to make his way across to the Persian gulf. He would have to be guided by the season of the year, and he would get into the desert as far as he thought wells would last him.

Prof. J. L. MYRES: I should like to express the satisfaction which it gives to have so full and clear an exposition of this region. A remark of the last speaker suggests that, in the map which illustrates Mr. Hogarth's paper, there is more than a superficial similarity in the distribution of comparatively well-explored areas and of the areas of large precipitation, and between the unknown areas and the areas of comparative drought. Indeed, I venture to think that the Society's cartographer has done well to employ red for the colouring of this map, and not the blue which one associates with the distribution of moisture, for really the distribution of exploration is so like that of the rainfall of the region that it was with a feeling of surprise that I found, when the map was first put into my hand, that it was not actually a rainfall diagram. To illustrate this point, I would only point out how the railway towards Mecca steers a line of compromise between the difficulties of the more mountainous region westward, and the difficulties, further east, of finding water for the locomotives.

Speaking as one who has made the geography of the past, rather than of the present, his study, I may perhaps be allowed to suggest a point of view in regard to this region. Like some of its own verbs, it has no present tense. It has a fine series of past tenses, and I believe it may have great future tenses; but in the present it is what the past has left it. It is not without reason, for example, that Mr. Hogarth took as the boundaries of his region precisely the boundaries which are assigned to Hither Asia by its first geographer, Herodotus, with his "column" of nations running from the Persian gulf to the Euxine, and his two peninsulas stretching out from it, Arabia and Asia Minor, the one with only three nations, and the other with thirty. And this ancient criterion, of relative populousness, is again in close conformity with the relative intensity of the colouring on Mr. Hogarth's map. He has had to deal in Arabia with an immense area, very ill explored; but it is one in which, from many points of view, there is not very much to know. We should not be unduly discouraged by the great blanks of light tint. In all probability the conditions which prevail round the edge of them simply increase in intensity towards the middle; and in that sense there is little probability that any great surprise awaits us in the desert interior. In the northern peninsula, on the other hand, the little regions of lighter tint are regions of unimaginable complication; regions where difficulties arise, not from absence of mankind, but from the denseness and compositeness of the population.

There are three points in which Mr. Hogarth has indicated subjects of inquiry for the student of human geography, as distinct from that of environment. In the first place, he has given us once more the prospect, based on native reports, that there exist in Southern Arabia fragments of that Negroid population which was placed there in the ethnological scheme of Herodotus; and for ethnologists such

a Negroid population is the only possible means of connecting the two great groups, eastern and western, of the black mankind of our own day. Secondly, one of the most fascinating projects for the explorer of this southern Arabia peninsula is that it has been, and is likely to remain, the fountain-head of successive Semitic emigrations; and when we consider what the world owes to the activity and thoughts of Semitic-speaking folk, their origin becomes the most fascinating problem of the whole range of human civilization. The third problem lies in those little unexplored regions to the north, for it is here that we have our only chance of discovering what the population of Asia Minor and all that great mountain region was like, before the intrusion of nomad folk from the grasslands of the south, the north-east, and the north.

I welcome particularly Mr. Hogarth's opinion that there is still a great deal to be done by that sort of explorer who is content to take a very little district and know a great deal about it. The triangulation and outline survey of great regions is of course of prime importance; but after all the three sides and the three angles of a triangle are there to enclose a space, and for a great many geographers it is rather that which lies within that space than the precise dimensions and proportions which are of interest, and I am glad to hear an explorer, with the experience of Mr. Hogarth, emphasizing the value for geographical purposes of the comparative humble traveller who will take a district and settle down there for three months, or even three weeks, and try to learn its contents from every point of view.

One last point. Mr. Hogarth has shown us how greatly our knowledge has depended in the past upon the work of explorers whose object was not geographical, but commercial, political, or military; and he mentioned one instance recently where an opportunity was missed of exploring geographically, as well as in a military sense, a fragment of the south-west corner of Arabia. I hope that among other results this series of lectures will be the means of attracting and instructing that wider circle of people which has the power, if it will, of insisting that next time anybody goes anywhere with a rifle in one hand, he shall take a theodolite in the other.

MR. H. J. L. BEADNELL: In spite of native reports—in my experience frequently untrustworthy—it does not seem at all unlikely that in the great deserts of Arabia discoveries of the first importance await us. Geologically, Arabia may be regarded as a portion of the Sahara, the Red sea having been formed by subsidence of part of the country in comparatively recent times. Although our geological knowledge is lamentably deficient, we know, from the researches of Carter and Blanford in the south, from the observations of Blunt and others in the north, that the peninsula must be considered as the eastern portion of the great Saharan desert plateau. As in the Egyptian deserts, the basis of the country consists of crystalline rocks, overlain by horizontal sedimentary formations of Cretaceous and Eocene age. Such familiar Saharan formations as the Nubian sandstone and the Nummulitic limestone are well known to have, in many respects, a very similar development in Arabia, and it is not unreasonable to assume that they to some extent beget similar physical conditions. Although the eastern portion of the Sahara—the Libyan desert—of which, after many years' exploration, I can perhaps claim to speak with some authority, is one of the most rainless regions in the world, absolutely devoid of streams and rivers, large communities are enabled to exist in the huge oases depressions of its interior by reason of the presence of the underlying sandstone charged with abundant supplies of pure artesian water. Even at the present day the four large Egyptian oases alone contain 30,000 souls, self-supporting and irrigating their lands entirely by underground water. Moreover, during the Persian domination and in Græco-Roman times these oases were of still greater importance.

When, therefore, our explorers, overcoming the existing difficulties, obtain access to the arid plateaux of the Ruba el-Khali and Nefud deserts, let them recollect the possible presence of strata containing an abundant supply of deep-seated water, and carefully look for depressions where such beds may lie within reasonable distance of the surface. Even should such depressions be found uninhabited at the present day, it is not unlikely that a careful examination will reveal traces of former occupation, in the shape of sanded-up wells, subterranean aqueducts, and ruined forts and settlements.

The PRESIDENT: Before calling on Mr. Hogarth to reply, I am sure I may, in the name of every one here present, give him a hearty vote of thanks for his extremely interesting lecture. We have often heard in this lecture-hall the fear expressed that there was no exploration left to be done, and the hope expressed that the whole world would soon be mapped. I think this lecture destroys these hopes and these fears. Mr. Hogarth's lecture will, however, tend to stimulate explorers, and to fix their minds on that part of the map to which attention should be given. There is plenty to do for the accurate observer and for the man who is ready to take his life in his hands. I will do no more than express our thanks to you, Mr. Hogarth, for your lecture.

Mr. HOGARTH: I can only thank you, ladies and gentlemen, for having listened to me so patiently. Just two words in reply by way of explanation. Colonel Maunsell, I was very glad to hear, gave some further account of certain districts which are still unexplored. Of course it would have been possible to have compiled a paper, and also a map which would have more exactly shown each particular district, however small, which has not been visited by Europeans; but it would have been impossible to have read that paper or to have conveyed its sense to you orally. As a matter of fact, even in western Asiatic Turkey, there are quantities of small districts, which, so far as we know, have not been visited, and one might therefore have made a map which would have been dotted over with little white spots. That, however, was not my intention, and therefore I took the two Kurdish regions, which seemed to me the most important among the still absolutely unvisited regions. Still, those regions to which he called your attention are also of very great interest, and I hope explorers will endeavour to gain as much more information about them as about those two of which I spoke. The only other point has regard to what Sir Thomas Holdich said about the use of instruments. It was only due to the condensing of my paper in reading that I gave the impression that nobody could use anything but a prismatic compass. What I meant to say was that, in the comparatively civilized and well-administered parts, it is, I think, difficult to use anything more elaborate. There, at any rate, you will arouse native suspicion, and have the emissaries of a comparatively civilized Government down upon you. It is one thing to set up a plane-table in a savage land, and to expect to have your observations regarded as part of your prayers; but it is quite a different thing to do that in many parts of Asia Minor, where you will generally find, at any rate, some Christian who will be quite aware of what you are doing. I was really speaking of Asia Minor more than of anything else, and I did not mean to imply that over a great part of the region it was only possible to use what, I agree with Sir Thomas Holdich, is a very unsatisfactory method of surveying. As regards Marib, Colonel Wahab seems to regard the exploration done there as more complete and more satisfactory than personally I should regard it from what I have been able to read. Glaser was there for a month under the direct protection of a number of Turkish soldiers; but the natives were hostile to him, and he himself confessed that he had by no means exhausted the possibilities of the district. For one reason or another, he never published one-half of what he actually saw there, nor

any photographs of the ruins. He is now dead, and I have not heard that there is likelihood of any more of his notes being published. Therefore one must regard that region as, from an archaeological standpoint, only half explored.

THE HEJAZ RAILWAY.

By Lieut.-Colonel F. R. MAUNSELL.

THE Hejaz railway has many remarkable features which distinguish it from other lines. Its principal object is to provide a means for faithful Moslems to perform their pilgrimage to the holy places of Mecca and Medina with a greater degree of comfort than formerly. There are still many of the more rigidly orthodox who prefer the long tedious journey by camel, with its fifty-two stages from Damascus to Medina, and count the hardships involved as part of the duty of pilgrimage. The railway also has the object of binding together some outlying provinces of the empire to the centre. Its inception is due to the initiative of the present Sultan, and the enthusiasm created by its first announcement brought in subscriptions from the faithful in all parts of the Islamic world. A special stamp-tax forms a solid annual contribution to the expenses, somewhat less evanescent than other contributions may prove to be.

Geographically, the line has provided a means of travel in a country with a fascination of scenery quite peculiar to itself, and unlike any other part of the world. Instead of traversing populous countries and great cities, it seems to delight in passing through immense solitudes—through a country peopled mainly by the spirits of the Arabian Nights, where little surprise would be occasioned in finding a roc's egg in some inhospitable rocky valley, or in seeing a genie floating in a stream of thin vapour out of a magic bottle.

The line commences at the traditional parting-place of the Great Pilgrimage, the Bawaubet Allah, or Gate of Allah, and the first station is the Kadem-i-Sherif, the noble starting-place, shortened in vulgar parlance by the railway porter to Kadem. At first the line traverses the Hauran, running parallel to the French Hauran railway. From ancient times the district has been an extremely rich one, and the Romans used it as a granary. Both lines of rail find sufficient traffic, besides which the opening of the Hejaz line has been a means of opening up the trade of the Jebel Druz or Druse mountain, which sends its trade to Ezra and other small stations in that vicinity. The line, moreover, has brought general security, and the area under cultivation is increasing. From Deraa a branch runs to Haifa, on the Syrian coast, where a harbour is to be constructed. Quite a good restaurant exists at Deraa, and there is an increasing tourist traffic on this part of the route.