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Source: *The Geographical Journal*, Vol. 59, No. 6 (Jun., 1922), pp. 453-457

Published by: [The Royal Geographical Society \(with the Institute of British Geographers\)](#)

Stable URL: <http://www.jstor.org/stable/1780638>

Accessed: 21/12/2014 10:47

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could be done. But what political officers have to do out in Luristan and Kurdistan and those parts to which the lecturer is returning, is to establish influence entirely through their own personality, for they have not a military force behind them now. By advice simply and by personal influence, they have to establish some kind of order and bring some degree of civilization amongst those most unsatisfactory people. Having listened to Mr. Edmonds, we in this Society shall follow his adventures on his return to Kurdistan, and we shall understand something of the kind of difficulties he has to face, and shall realize, too, the calm and tactful and humorous way in which he sets about his duties. And we shall hope that, having given us this delightful account of Luristan, he will return to us in two or three years, and give us an even more charming account of his adventures in Kurdistan.

A SURVEY OF THE EUPHRATES VALLEY FROM DEIR-EZ-ZOR TO ALEPPO

Major C. G. Lewis, R.E.

DURING the winter of 1918-19 I was engaged on survey duty in the Euphrates Valley, under the Survey Directorate of the Mesopotamia Expeditionary Force, with instructions to carry out a topographical survey of the valley up to Deir-ez-Zor, at that time the limit of civil administration in Iraq. On arrival at Deir, having carried triangulation up to that point, there seemed to be no reason why the survey should not be continued further up the valley, and indeed the subdued state of the tribes at the close of successful campaigns in Iraq and Palestine offered a unique opportunity for such work. I was therefore directed to endeavour to take the triangulation on to Aleppo with as much detail survey as possible. A brief account of the journey may be of interest.

Up to Deir-ez-Zor the survey had proceeded more or less at leisure by normal methods; detail survey by plane-table on the 1-inch and $\frac{1}{2}$ -inch scales, executed by two Indian surveyors, followed the triangulation. Beyond Deir more rapid methods were for various reasons necessary. The route lay outside the area of British administration in the jurisdiction of the newly set-up Arab Government, whose officials had not yet been apprised of my coming. Shortly after leaving Deir I was one day overtaken by a ragged *zaptieh* bearing a letter from the acting Kaimaqam of Raqqa, in which he intimated that my presence in his district was undesirable, that he did not require a map of the country, and would I return to Deir without delay. I replied politely that my work had the full approval of his government at Aleppo, and that he would doubtless receive information to that effect before long. But to avoid complications I judged it advisable to loiter as little as possible, especially as the demeanour of the Arabs at this point was not too friendly—some of them were on one occasion only with difficulty dissuaded from requisitioning the clothing of the entire party, during my absence on a neighbouring hill.

I was provided with an escort of six Arab *shabanas* (police) armed with antiquated rifles, not one of which—as I discovered after the last-mentioned incident—could be actually discharged. The remainder of the party consisted of two British drivers of the R.A.S.C., in charge of the two Ford cars (“vanettes”) with which I was fortunate enough to have been provided, and a small squad of Indian survey *khalassis*. The Political Officer at Deir engaged a dozen camels for the transport of tents and baggage, and furnished me with rations for the journey; after the customary day's delay owing to the non-appearance of the camels, I set out from Deir on 4 March 1919.

The River Trade Route, with its numerous interesting ruins, is so well known as not to need further description other than a few remarks on the conditions then prevailing. During the war the Turks commenced work on a metalled road from Aleppo to Baghdad: a few short sections, usually in the neighbourhood of *wadi* crossings where bridges or culverts were required, had been completed and were in use, but not being kept in repair were rapidly wearing out. About half the road from Aleppo to Meskenah, as far as Deir Hafar, had been laid out, but the metalling was not consolidated and it has never been actually used. It is doubtful whether anything but traces of this road now exist, though many of the bridges and culverts should still be in use for many years. The ordinary track is well suited to the prevailing traffic and is perfectly feasible for light cars when the *wadis* are not in spate. I made the return journey from Aleppo to Baghdad, some 550 miles, in five days. Another feature, doubtless due to the war and to the passage of Turkish troops, was the paucity of scrub growth in the valley. Previous travellers have remarked on the large areas of tamarisk scrub occurring in many parts; these are now greatly reduced, many places being entirely denuded. At Meskenah, for instance, I had great difficulty in procuring wood. I had noticed that the derelict telegraph line which had hitherto kept me company, sagged wearily to the ground some distance before the village. The reason for this was made clear when the captain of the Arab detachment quartered there reluctantly offered me half a telegraph pole, in response to my request for firewood. While at Meskenah I met the real Kaimaqam of Raqqa returning from Aleppo. He was much concerned when I showed him his substitute's letter, and asked me to report the matter at Aleppo.

The Euphrates valley, contrary to expectation, provides a favourable field for rapid triangulation. Its width between the well-defined edges of the adjacent plateaux of the Jezirah and Shamiyah is on the average about 6 miles, and admits of triangles of a size in accordance with the general accuracy of the class of work carried out, without excursions “inland”—a term which may suitably be applied to the desert from the point of view of the traveller along the river-banks. Confined as one was to the right bank of the valley, without means of crossing the river, it was necessary to select sufficiently well-defined pivot points on the opposite side for the

formation of triangles. Throughout the length of the valley, situated on the higher eminences on either bank are occasional Arab graves marked by stone cairns. It was these cairns that saved the situation. They formed as good a mark as a topographer could wish for in the absence of one constructed for the purpose. In such places—and they were few—where no suitable points were available for intersection on the left bank, it was necessary to extend the triangles over the right-bank plateau; and on these occasions one realized the difficulties that were being avoided by the use of the valley depression. Mirage became the ruling factor. It reduced the length of side to 2 or 3 miles; any mark at a greater distance was indistinguishable unless considerably raised above the level of the plain. Owing to the existence of these cairns it was seldom necessary to prepare forward stations: the highest point of a cairn was observed to, and on visiting it subsequently, care was taken to place the mark-stone vertically below the original highest point. Stations were marked by a circle and dot inscribed on a stone, the latter being set at ground level in the centre of the cairn. Many of these cairns have evidently been standing for long periods and are probably as permanent as anything in the country.*

The theodolite used was a 5-inch micrometer by Messrs. Cooke, reading to 10 seconds, an instrument capable of a high order of accuracy having regard to its portability and small bulk. A few points were fixed by intersection in the Jebel Bishri and in the hills north of Palmyra, some 60 or 70 miles distant; but otherwise few distant points were visible. As a check on the triangulation bases were measured at Albu Kamal, Deir, and Aleppo: two measures of each with a 500-feet steel tape; and azimuths were observed at intervals of about 70 miles. There was an average difference of 35" between the observed azimuth and that brought up through the triangulation from the previous azimuth station. Computations were completed up to date each evening; the use of spherical co-ordinates made this work somewhat irksome, but saved subsequent labour. Beyond Meskenah the computing fell into arrears, but by working out triangles only, I was able to plot points sufficiently accurately by azimuths and distances.

"Detail" of the valley and of as much of the adjacent country as was visible, was put in by means of the plane-table on the $\frac{1}{4}$ -inch scale. The course of the river was well visible at all times and should be accurate, though it is probable that some islands and smaller branches have been omitted. The existing maps, based mainly on Chesney's survey of 1839 as regards the river, show how completely the latter has changed its course within the limits of the valley floor during the interval of eighty years. In the area between Meskenah and Aleppo the survey shows but few points of resemblance with the old map, the latter having been compiled from reports and uncontrolled sketches.

* The mean triangular error of 10'', from 65 triangles, is an indication of the suitability of the signals (existing cairns); four measures of each angle were taken.

The method of transport lower down the river had been by *shaktur*, the local boat fashioned of rough planks, somewhat similar in proportions to a matchbox with slightly sloping ends, and made watertight with bitumen. These boats can carry a load of 4 tons and are towed upstream, but the rate of progress is very slow, only 5 or 6 miles a day, and less in difficult parts of the river. Downstream, *shakturs* travel 40 to 60 miles a day in mid-current when the river is in flood. Progress by this form of transport was much too slow, although it had the advantage of providing access to both banks of the river; from Anah onwards I abandoned it in favour of camels. From Deir the average day's march was 18 miles, or 15 miles including in the calculation three days' halt *en route*. To carry out triangulation computed up to date daily and detail survey at this rate single-handed would have been impossible without the assistance of the two cars. I used them throughout as a means of rapid transport from station to station, for myself and the men carrying the instruments.

One cannot avoid a brief comment on the remarkable change in the country on striking west from Meskeneh. Shortly after leaving the river one enters upon a settled and cultivated region in marked contrast with the desert adjoining the Euphrates Valley. This is the basin of the Jebbul Salt Lake. Running streams are crossed every few miles, meandering towards the distant lake; in many places the ground is boggy and impassable for cars. The last settled village in the valley is Raqqa, 60 miles distant; but here villages hustle one another in their proximity. The absence of timber, and possibly the greater rainfall, have evidently exerted an influence on rural architecture. Each village resembles nothing so much as a collection of conical beehives, in which the flat timber-supported roofs common in town dwellings are replaced by innumerable pointed domes of mud, requiring no wood in their construction.

I reached Aleppo on March 20, sixteen days after leaving Deir. Survey operations in Palestine had not at that time reached Aleppo, but the officer in charge very kindly came up to meet me and arranged for the inclusion of my last stations in his triangular network, which was of a high order of precision. Their values in terms of the Palestine Survey were received subsequently and showed the closing discrepancies to be: -7.9 secs. in latitude; $+1.1$ secs. in longitude; and -30 feet in height: * a satisfactory result in view of the small degree of accuracy to be expected from this class of triangulation. No astronomical determinations of latitude were made between Baghdad and Aleppo. The difference in longitude between Baghdad and the Fao (Basra) longitude station had been determined by wireless signals; and longitudes in northern Mesopotamia were based on the Baghdad value.

* The approximate height of the river above M.S.L. at Deir-ez-Zor is 690 feet; at Raqqa 840 feet; at Meskeneh 900 feet.

The following are the corrections to hitherto accepted positions :

			Lat.		Long.	
Aleppo	+0' 20''	...	+1' 10''	Chesney's survey controlled by astronomical observations.
Meskeneh	...	...	+0' 30''	...	-4' 10''
Raqqa	...	...	+1' 20''	...	-2' 0''
Deir-ez-Zor	...	...	+1' 40''	...	-3' 0''
Meyadin	...	...	-0' 30''	...	-3' 30''

The survey was represented in sections on a single sheet at M.E.F. Survey Office in Baghdad in October 1919.

THE PERMANENT COMMITTEE ON GEOGRAPHICAL NAMES

WE are glad to publish the following appeal from Major-General Lord Edward Gleichen, Chairman of the P.C.G.N., and to emphasize its claim upon geographers. The work of the Committee was begun at the request of the Admiralty, and provision was made for it at first from public funds. The Society has given the Committee house room and much assistance, besides spending about £450 on printing the results of the work, and can for the present afford little more. Unless, therefore, it finds some further support at once, the Committee will have to acknowledge that the first adjective of its name was ill-chosen, and close down its operations, with great waste of accumulated material.

AN APPEAL TO THE FELLOWS OF THE R.G.S.

A leaflet was issued with the *Geographical Journal* for this last April, explaining the work that the Permanent Committee on Geographical Names (consisting of representatives from all Government Departments meeting under the ægis of the R.G.S.) was carrying out, and stating that, owing to the inability of the Treasury to continue the grant on which it had hitherto subsisted, the enterprise was on the point of extinction, unless funds from somewhere else were quickly provided.

The broad hint thus conveyed met, I regret to say, with practically no response whatever. The only subscriptions received from the whole of the Fellows of the Royal Geographical Society, some 5400 in all, were two—one for one pound and one for ten shillings sterling !

I cannot bring myself to believe that this "blank draw" was entirely due to the want of interest taken by the R.G.S. in the work of the P.C.G.N. It must have been due to the method of appeal, and to the fact that the leaflet was, for those who took the trouble to read it, not worded in a sufficiently urgent manner. In the first place, it is only human nature not to read a leaflet, especially if, in these hard times, it looks as though it were an appeal for subscriptions ; and in the second, the leaflet omitted to say that "the smallest subscription (half a crown and upwards) will be thankfully received." It is unnecessary again to tell those who have read the leaflet what the work of the P.C.G.N. has been for the last three years ; but to those who have not, I should like, as its chairman, to point out that the object of the Committee is,