WILEY

Some Further Notes concerning the Liao Ho

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Captain LYONS: In the previous autumn rain in Abyssinia was very deficient; therefore there was nothing to fill up the springs, and the Blue Nile ran down rapidly; the Sobat supplied little, but there was the same constant discharge above the Sobat junction. It is the extra supply that ordinarily comes at the low stage from Abyssinia which decreases in the years when either the whole rainfall has been feeble, or when the September and October rainfall has failed.

Sir COLIN SCOTT MONCRIEFF: The practical question we always wished to solve in Egypt was to find what sort of forecast we could have. As you say, I suppose it will be only by very careful examination of the great territories south of the Victoria Nyanza you will ever get at that.

Captain LYONS: Yes, probably by studying the rains as they extend northwards, together with the meteorological conditions existing over the western part of the Indian ocean.

Sir J. ELIOT: Is the Egyptian Service establishing any rainfall stations in Abyssinia?

Captain LYONS: We have had instruments for two or three years at Addis Abbaba, but they need replacing, and it is difficult to send them there safely. The Russians and the Italians are taking observations there also. Three or four rain-gauges have been sent to other places, but no returns have yet been received.

The PRESIDENT: In proposing a vote of thanks, I wish to say I am not myself a specialist on these points, therefore I can only give an outside view. It seems to me we owe Captain Lyons a debt of gratitude in three ways. In the first place for the positive information chiefly in regard to the real causes of the rise of the Nile, which have been so much in dispute for a long time; in the second place, for the negative portion of the paper, in which he disproves the relation, so far as we can see it, between the sunspot curves and the flood curves; and in the third place, raising the question of any relation between the flood in Abyssinia and the rains in India. I think that will give rise to much discussion. Altogether, I think it has been a most admirable paper, and has given rise to much interesting discussion.

SOME FURTHER NOTES CONCERNING THE LIAO HO.*

By Lieut.-Colonel A. W. S. WINGATE.

MR. ROBERT T. TURLEY contributes to the March number of the *Journal* (pp. 297-300) some interesting "Notes on the River System of the Upper Liao, Manchuria," accompanied by a "Sketch-map of the Liao River System," which, as the author justly says, should be of exceptional interest at the present juncture. With the object of maintaining that interest and of supplementing the valuable information contributed by Mr. Turley, the following notes have been written. Let me begin by calling attention to a few misconceptions in Mr. Turley's notes and map.

1. First and foremost as to nomenclature. I have been at some pains to discover the true names of the river in question, and my

* The latitudes and longitudes are approximate only, being derived from Russian maps checked by plane-table traverse. The exception is Hata, the data for which were furnished by Major Goold-Adams, R.A.

inquiries have resulted in this: that the Liao Ho (Ho is the Chinese for river) is known by that name only after the union of the Hsi Liao Ho with the Tung Liao Ho (East and West Liao rivers) at a place called Ta-min-tun, about 65 miles a little east of north from Fa-ku-men; this is Mr. Turley's Liao Ho. With the eastern branch I shall not concern myself at present. The Hsi Liao, or Western Liao, is known by that name from the time it leaves Manchuria until its junction with a river of many names and spellings, but known to the local Chinese as the Hwang Ho, and to the Mongols as Shara Muren, both names signifying "Yellow river," after the colour of the water. I shall have more to say about this stream later. From this point (*i.e.* the junction of the above two rivers) our stream becomes the Lao Ho of the Chinese and the Laocha Muren of the Mongols. Thus Mr. Turley's Liao Ho includes the Shara Muren, Lao Ho, Hsi Liao Ho, and Tung Liao Ho, which, all united, form the Liao Ho of Manchuria; the first-named three being in Mongolia and Chili province. It is, therefore, the lower rather than the upper Liao which lies in Manchuria.

2. The headwaters are composed of quite a number of streams, though there are two main sources—the Lao Ho, which rises, as Mr. Turley says, just north of the 41st parallel and just east of the

A PORTION OF THE PAI-CHA PLATEAU, AND SOURCE OF PAI-CHA RIVER.

(Photo by Lieut. H. J. Doveton.)

THE NORTHERN WEI-CHANG (IMPERIAL HUNTING-GROUND), SHOWING THE COUNTRY WHERE THE SHARA MUREN AND TRIBUTARIES TAKE THEIR RISE. THE PHOTOGRAPH WAS TAKEN LOOKING NORTH-WEST FROM THE SUMMIT OF TA KWANG TING-TZE, 6000 FEET ABOVE SEA-LEVEL.

(Photo by Lieut. H. J. Doveton.)

118th degree of east longitude, and Tso-lao Ho, which begins close to Chien-chang Hsien (Ta-tzu-ko). But the Lao Ho certainly does not derive any water from the "hunting forest near Jehol," for it is separated from the valley of the Je Ho (Hot stream) by a range of mountains which Dr. Franke calls Yung-an or Mu-yu mountains. It would be more accurate nowadays to speak of the Lao Ho as rising in Outer Chili, the time for speaking of any portion of the country lying south of the 43rd parallel as Mongolia, or a land inhabited by Mongols, having long passed away. Outer Chili is to-day as much China as any other part of the eighteen provinces. Its inhabitants differ scarcely at all from those dwelling within the Great Wall; indeed, the north banks of the Shara Muren and Hsi Liao Ho mark the modern southern limit of Mongol territory. Mr. Turley says the Lao (or, as he calls it, the Liao) Ho loses much water "as it wends its way slowly over the plateau." But what plateau? I have always understood that the Mongolian plateau ends with the Hing-an range; but if this be not the case, yet is it misleading to speak of the Sandhills district (Mr. Turley's Sha-tu Kwaw), on the edges of which the Lao

Ho, Shara Muren, and Hsi Liao Ho undoubtedly do lose much water as a plateau.

3. Mr. Turley goes on to say, "Until it enters Manchuria it passes only one town, Bada, a noted barter-market." Now, if Hata or Chih-feng Hsien (its Chinese name) is on the Lao Ho, or the Hsi Liao Ho, or any other river of like name, then every map in existence is wrong! Mr. Turley's map is somewhat out in this direction. The town in question is in lat. $42^{\circ} 18' 40''$, long. $118^{\circ} 50' 30''$ E., on the Ying-ching Ho, an important tributary of the Lao Ho, 130 miles long, whose headwaters are to be found in the north of the Wei-chang (Imperial hunting-ground) on the slopes of the very mountain (Ta Kwang Ting-tze, the same, I believe, as Dr. Franke's Tuchte, and not improbably Huc and Gabet's Sain-oula, or Good mountain) which has for centuries formed a kind of will-o'-the-wisp to travellers and sportsmen engaged in looking for Verbiest's and Gerbillon's 10,000 feet high Pai-cha (Pei-sha or Pétcha). I am thankful to say we have at last run that phantom to earth. The region is extremely interesting, not only to geographers and sportsmen, but also to the naturalist and botanist, and merits a paper to itself. Here I will only say that there is not a single peak of the Hing-an range south of the Shara Muren which overreaches 6600 feet above sea-level.

THE SHARA MUREN, ABOUT 30 MILES FROM ITS SOURCE AND 20 MILES ABOVE ITS JUNCTION WITH THE PAO-LI-KU HO, FROM WHICH THIS CLEAR WATER DERIVES ITS YELLOW TINGE. LOOKING EAST DOWN RIVER.

(Photo by Lieut. H. J. Doveton.)

THE HWANG HO OR SHARA MUREN 15 MILES ABOVE ITS JUNCTION WITH
PAI-CHA-HO. LOOKING WEST UP RIVER.

(Photo by Lieut. H. J. Doveton.)

4. Thanks to the "Boxers," our knowledge of these regions is not so "vague and uncertain" as it was prior to 1900. The disappearing rivers are common enough and easily accounted for, but the "intermittent springs" sound interesting, and one would like to hear more about them. The "Ta-miao Ho" is not marked on any map in my possession, but is possibly the Yang-hsi-mu Ho (Dr. Franke's Yang-sheng-mu) with its tributary the Hsiao-shwei Ho. As to "Ku-lor," it is impossible to know which place is meant, as it is not marked on Mr. Turley's map. It may be Ku-lu-Kou, Ku-lien-erh, Ke-li-kê, or a host of similar-sounding places.

5. Certainly the geologist would find much to interest him in the country drained by the Lao Ho and Shara Muren and their tributaries; but I am inclined to doubt the likelihood of a former "highly civilized race" having done much building in these regions prior to the rise of the Manchus to power. Perhaps researches conducted like those of Dr. Sven Hedin in Central Asia might produce something of interest.

6. Mr. Turley thinks "the most northern bend of the Liao, which is formed by the junction of the Lao Ho (Khe) and Sira Muren (or upper Liao), is fully 100 miles due north of the position allotted to it on most maps. . . ." The statement that the Sira Muren is identical with the upper Liao is a geographical error, as, of course, such is not

the case. The Sira Muren (Shara Muren, Shira Muren, Hsi-la-mu-lan, or Hwang Ho) is the most important tributary of the Hsi Liao Ho, and rises on the north-western slopes of the plateau which forms what is generally known as the Pai-cha district. But if we call it by its Chinese name, Hwang Ho, then undoubtedly its source is the Pao-li-ku Ho, which, rising in the hills north of Chin-p'eng, flows south for 25 miles, and then turns sharp to the east on meeting the Shara Muren. The reason for this conclusion is that, above the point of junction the latter river loses its yellow tinge and becomes clear water. The headwaters of the Shara Muren and Sun-li Ho (a branch of equal

THE HSI LIAO HO NEAR CHUNG-CHIA-TUN, AFTER IT HAS LOST MUCH WATER IN THE SHA-TU KWAW (SANDHILLS DISTRICT). BRIDGED BY A SINGLE BOAT. ABOUT 20 MILES DOWN RIVER FROM HERE IT JOINS THE TUNG LIAO HO.

(Photo by Captain F. E. Gunter, R.A.M.C.)

BOATS ON THE LIAO HO, WHICH REACH TUNG-CHIANG-TZU.

(Photo by Captain F. E. Gunter, R.A.M.C.)

THE MANCHURIAN LIAO HO AT YING-KO (TREATY PORT). LOOKING UP RIVER
AT SUNSET.

(Photo by Captain F. E. Gunter, R.A.M.C.)

length and greater volume) all lie within a day's march of each other in lat. $42^{\circ} 40'$, long. 117° (about). It may be as well to say here, for the benefit of future travellers, that the Dolon Nor and Ch'ang-tu Fu sheets of the new (1904) German 1 : 1,000,000 map are very misleading in a good many places.

Mr. Turley is quite correct in saying that the most northern point touched by the Hsi Liao Ho is shown too far south on the maps of the day. The mistake has arisen from supposing the small stream which joins the Liao Ho about 15 miles north of Fa-ku-munn (shown on Mr. Turley's map, but without a name) to be the real Hsi Liao Ho, which, uniting with the Tung Liao Ho (Mr. Turley's Liu-chia Ho Yen) at Ta-min-tun (lat. $43^{\circ} 23'$), form together the Liao Ho of Manchuria. But Mr. Turley has gone to the other extreme by placing the highest point at $43^{\circ} 50'$, whereas $43^{\circ} 35'$ is about the maximum. In fact, the Shara Muren and Hsi Liao Ho, between E. longs. 118° and $123^{\circ} 40'$, follow, roughly speaking, a course between lat. $43^{\circ} 15'$ and $43^{\circ} 35'$.

Mr. Turley says, "No boats are allowed above Tung-chiang-tzu" (the port of Fa-ku-munn, from which it is distant about 15 miles). This is, I think, not quite accurate. I have heard that fair-sized boats reach Ta-min-tun, 65 miles higher up, and that very shallow boats get 16 miles further, to a point within 3 miles of Chung-chia-tun (lat. $43^{\circ} 28'$ approx.).

7. With respect to the course of the Liao Ho proper, in its passage through Manchuria to the sea, I have nothing to add to Mr. Turley's first-hand information. There are certainly no bridges over these rivers at present existing, though it would be easy enough to make them in certain spots. But that good stone bridges existed at one time

over some of their tributaries, is demonstrated by the artistic photograph in Dr. Franke's well-known work, 'Beschreibung des Jehol-Gebietes in der Provinz Chihli,' of a stone bridge over the Tsagan Muren, a tributary of the Shara Muren which drains the Barin country.

THE FIELD OF GEOGRAPHY AND SOME OF ITS PROBLEMS.*

By Rear-Admiral Sir W. J. L. WHARTON, K.C.B., F.R.S.

It is sometimes denied to Geography that she has any right to consider herself as a science, the objection being apparently founded on the view that it is a subject that can be learnt by heart, but not studied on any systematic line or reduced to principles which enable advance to be made, as in the more exact sciences, by continual investigation by means of laws discovered in the course of such investigation. This, it appears to me, is a misapprehension due to an incomplete recognition of what science is, and of what geography is. Science is, in its simplest interpretation, "knowledge," such knowledge as comes from an intimate acquaintance with and study of any subject duly co-ordinated and arranged. The subjects which the advancing education and civilization of the world have caused to be minutely studied are very many, and as knowledge has increased specialization has become a necessity, until the list of sciences is very long.

Science may be broadly divided into several categories. Pure or Exact Science, such as mathematics; Natural or Physical Science, which rests on observations of nature; Moral Science, which treats of all mental phenomena. Some sciences are of ancient foundation, some have arisen from new inquiries and needs of man, or from fissure in subjects too wide for convenient treatment as one. Many of them are capable of exact definition, and their boundaries and limits can be well marked. To others no very distinct limitations can be assigned. From their nature they overlap and are overlapped by other subjects, and it is impracticable to confine them by a strict line. Geography is one of the latter.

Geography is one of the most ancient subjects studied with a view of co-ordinating facts. A desire for exact knowledge of, first, the bearings and distances of one place from another for the purposes of intercommunication must have arisen as soon as men became collected into groups whose growing civilization and needs required travel to obtain what could not be obtained in the community. This was the earliest form of geography, and it is an aspect which still remains, and to some is, in the modern shape of maps, the principal, if not the sole, end of geography.

From the earliest times, however, geographical information included other than topographical data. It was soon found that for the traveller and statesmen, whether in peace or war, more was wanted to enable geography to supply requirements. The nature of a country, the supply of food and water, the character of the rivers, the manners and customs of the inhabitants, their language and affinities, the climate, and other matters, were all of much moment, and geography dealt with them all, being, as its name denotes, in the broadest sense a "description of the earth."

After the first crude guesses of relative positions, founded on times occupied on journeys, other knowledge was enlisted in the cause. Astronomy was soon

* Presidential address to the Geographical Section of the South African meeting of the British Association, Cape Town, August, 1905.