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Assises d'Antioche, reproduits en français (*The Armenian Academy of St. Lazarus, Venice, from Prof. Léon Alishan, per S. Baronian, Esq.*). Floods in the Thames Valley, by F. J. Palmer (*Author*). Interlaken et ses environs, par P. Ober (*Librarian R. G. S.*) Description physique de la République Argentine, par H. Burmeister, traduite par E. Daireaux, vol. ii. (*Dr. H. Burmeister*). Financial Statement of Colonial Treasurer of New South Wales, 1877 (*The N. S. Wales Government*). Le Pamir, par J. B. Paquier (*Author*). And the current issue of publications of corresponding Societies, Periodicals, &c.

DONATIONS TO THE MAP-ROOM BETWEEN 24TH APRIL AND 14TH MAY, 1877.—Map of routes travelled and discoveries made by the exploring expeditions under the command of Ernest Giles between 1872-6 (*H. M. Secretary of State for the Colonies*). Preliminary map of Eastern Turkestan; map of the Pundit's route from Ladakh to Assam, 1874; and map of the Havildar's route from Afghanistan, &c., and the Mullah's route from Jalalabad to Sarhadd-i-Wakhan, 1873-4 (*Capt. H. Trotter, R.E.*). Map of North-East Africa and Arabia; photograph (*General Stone, Chief of General Staff, Egyptian Army*). Map of Aberdeenshire, &c.; map of Forfarshire, &c.; Johnston's Political map to illustrate "The Eastern Question;" war map of Turkey in Europe; and war map of Turkey in Asia and Transcaucasia (*Messrs. W. and A. K. Johnston, publishers.*) Map of Nippon (Japan), Yezo, &c., by R. H. Brunton, M.I.C.E., F.R.G.S., Trübner, Ludgate Hill (*Author*).

The PRESIDENT said the Paper to be read gave an account of the remarkable journey of Nain Singh across Thibet in 1874-5, and was drawn up by Captain H. Trotter, R.E., Deputy Superintendent of the Trigonometrical Survey of India. It was Captain Trotter's intention to have given the Paper a wider scope, by including in it several other recent explorations in Central Asia, which had been carried out under his superintendence, or by himself personally, viz. the journeys of two other *employés* of the Trigonometrical Survey, surnamed "the Havildar" and "the Mollah," through previously unknown parts of Western Turkistan, and his own important explorations north of Kashgar and across the Pamir Steppe. He had, however, suddenly received orders to proceed on service to the East, and had been unable, in consequence, to finish the Paper in time for the present Meeting. It was fortunate that the journey of Nain Singh could be given with considerable completeness, this being of some interest to the Society at the present time, as the Council had recently awarded to the Pundit the Patron's Medal for his meritorious explorations.

Account of the Pundit's Journey in Great Tibet from Leh in Ladakh to Lhása, and of his Return to India viâ Assam. By Captain H. TROTTER, R.E.

[ABRIDGMENT.]

NAIN SINGH, the explorer who undertook this journey, is the original Pundit whose journey to Lhása in 1865 from Katmandhú,

the capital of Nepál, was described at length by Colonel Montgomerie, R.E., in the 'Trigonometrical Survey Reports' for 1866-67. The Pundit had been in the service of the brothers Schlagintweit while they were carrying on magnetic and other scientific observations in Ladákh and Kashmir in 1856 and 1857; he was subsequently appointed Head-master in a Government Vernacular School in his native district of Milam in Kumaon, and remained in the Education Department until 1863, when, at the instance of Colonel J. T. Walker, R.E., the Superintendent of the Great Trigonometrical Survey, he was entertained for employment as a Trans-frontier explorer and duly trained. From that time to the present he has been constantly engaged either in carrying on explorations himself, or in training other natives to follow in his footsteps. In 1865-66 he made the famous journey, alluded to above, from Katmandhú to Lhása, and thence to the Manasarowar Lake and back to India. This exploration earned for him the present of a gold watch from the Royal Geographical Society of London, which, unfortunately, was subsequently stolen from him by one of his own pupils. In 1867 he went in charge of a party of natives, and did excellent service in exploring and surveying the head-waters of the Sutlej and the Indus rivers. In 1870 he was deputed to accompany Mr. (now Sir Douglas) Forsyth's first mission to Yárkand, but shortly after the Mission left Leh he was sent back to India. In 1873, he was sent under Captain Trotter's orders with Sir Douglas Forsyth's second mission to Yárkand, in connection with which he did much good service. In July 1874, while at Leh, after the return of the Mission, the Pundit having volunteered to make a fresh exploration, Captain Trotter was authorised by Colonel Walker, R.E., to despatch him on the journey to Lhása now to be described. His instructions were to proceed by a much more northerly route than the one he had previously followed. From Lhása he was to endeavour to get attached to the caravan which proceeds thence every three years to Peking. If he failed in accomplishing this, he was to endeavour to return to India by an easterly route from Lhása, down the course of the Brahmapútra if possible.

On the 15th July, 1873, the Pundit and his companions left Leh. On the 21st they reached Tánksé, three marches further on; at Chágra, they found a summer-encampment of shepherds, the last inhabited spot on the road to Yárkand.

From Chágra they followed the Changchenmo route to Yárkand, halting at the foot of the Lankar or Marsemik Lá (Pass). On the following day they crossed the pass (18,420 feet high) and then quitted the Yárkand road, and turned off to the east; crossed the

Kiu Lá, still higher than the Marsemik, and encamped for the night at Pángur Gongma, after a march of 9 miles.

The Pundit was obliged to travel slowly, as the whole of his worldly possessions—including tent, bedding, and commissariat for the whole party—had to be carried on the backs of sheep. It is astonishing what admirable beasts of burden these animals make in a pastoral country. The Pundit started with twenty-six sheep from Tánksé. Of these some were eaten on the road, some became ill and were exchanged for fresh ones; but four or five of the original lot reached Lhása, having, in less than four months, carried loads of from 20 to 25 lbs. each, over a distance of more than 1000 miles. Throughout the journey they never received a single ounce of food beyond what they could pick up for themselves on the road and at the camping-grounds.

On the 28th of July the party descended to Ningri, and on the following day reached Niágzu Rawang.

From Niágzu six short marches brought our travellers to Noh. The country through which they passed was almost uninhabited; a few solitary tents belonging to the Noh shepherds, and a single hut, occupied by a frontier guard, were the only inhabitants passed *en route*.

Noh is a small village in the Rudokh district, containing about twenty huts, built of stones cemented by mud. It has a small permanent population, which is increased largely in the winter months by numerous shepherds, who during the summer are scattered in tents in twos and threes, in whatever parts of the district grass and water are to be found in sufficient abundance for their numerous flocks of sheep and goats.

The province of Western Tibet is frequently termed Nari Khursum. The inhabitants of the northern portion, i.e. the district through which the Pundit travelled, are called by the settled population to the south Champas or *Changpas*, i.e. literally, *Northmen*. By the inhabitants of Turkistán they are called *Tághlik* or mountaineers. The Champas encountered by the Pundit were, contrary to the generally received opinion of them, quite inoffensive people, of the same class as the people of Rudokh and the more civilised districts farther south. They are all Buddhists.

The road near Noh skirts the Pangong Lake, which at Noh is joined by a stream from the north-east, up which goes a good road to Khotan, *vià* Polu and Kiria.

The distance to Khotan by this road is about 450 miles. For a distance of 40 miles from Noh it gradually rises up to a height of 15,500 feet; and then, for about 160 miles as the crow flies, crosses,

in a north-easterly direction, a series of elevated plains and ridges before it descends somewhat suddenly to the plains of Eastern Turkistán. The average height above sea-level of the halting-places, on the elevated plain to the north of Noh, is 16,500 feet. This vast highly-elevated plateau, over which the road passes, is the eastern continuation of the Ling-zi-thang and Áksu Chin plains, which lie at a similar, or in places even a higher, elevation in a north-westerly direction from Noh, between the Changchenmo River and the Kuen Luen Range, and have to be crossed by the traveller who adopts the eastern (or Changchenmo) route between Leh and Yárkand. To the north of the Kuen Luen there is a rapid fall into the plains of Eastern Turkistán.

The Tibetan plateau extends eastward as far as the head-waters of the great rivers which water China—up, in fact, for a distance, as the crow flies, of more than 800 miles to the Bourhan Búda Mountains (south-west of the Koko-Nur Lake on the road between Lhása and Pekin), where, according to the Abbé Huc, and the still more recent researches of the Russian Captain Prejevalski, a table-land rises from 14,000 to 15,000 feet above the sea-level, above which tower gigantic snow-covered mountains.

Seven miles to the east of Noh is the eastern termination of the series of lakes known to us as the Pangong. Its extreme length is exactly 100 miles, while its breadth probably nowhere exceeds six or seven.

At its eastern extremity it is entered by a small stream, 3 paces broad and $1\frac{1}{2}$ foot deep. Although the greater portion of this lake has been previously surveyed and described, its eastern limit has now been determined for the first time. It is a curious fact that the water at the eastern extremity is sweet and good to drink, while that at the west end is very brackish. It has been conclusively shown by Major Godwin-Austen that this lake once upon a time drained into the S shyok, but at present it forms the most western of a numerous series of inland lakes with no outlets, which we shall find stretch for a considerable distance across the elevated plateau of Central Tibet.

From Noh the Pundit toiled on for many weary marches over this Tibetan plateau; his road lay eastward along a wide, open grassy valley, varying in width from 6 to 10 miles, bounded on the north and south by low grass-covered hills, through which occasional openings gave a view of extensive plains stretching away as far as the eye could reach. Beyond the hills sometimes appeared snow-capped mountains; while an occasional shepherd's tent in the foreground, and the frequent appearance of large herds of wild

asses, antelope, and gigantic wild sheep, helped to relieve the monotony of the journey. In almost every day's march large sheets of water were passed, generally salt, but occasionally fed by fresh-water springs. At the latter, the Pundit and his companions would fill their water-skins, as they rarely knew from day to day whether or no they would be able to obtain a fresh supply on the road. More than once their supply of this precious fluid was exhausted, and on one occasion the whole party were for more than twenty hours without fresh water. For fuel, also a traveller's necessary, they were better off; the *argols*, or dung of the numerous flocks of wild animals, were a never-failing source of supply, while occasionally, but rarely, firewood was obtained in considerable quantities. At Tchachap Cho, a fresh-water lake, 8 miles to the east of Noh, and the 27th halting-place from Leh, a large stream flowing from some snow-covered hills to the north-east of the lake was found to be covered on both banks with a dense forest of willow, tamarisk, and other trees and shrubs. For the first thirty marches from Noh the heights of the camping-grounds varied between 13,700 and 15,000 feet, and for the rest of the journey to Namcho the ground was somewhat higher; but there was no considerable rise or fall throughout this portion of the Pundit's route. The large, flat, open valleys traversed by the Pundit, locally termed *Sangs*, appear to be much of the same nature as the *Pámirs* between Eastern and Western Turkistán, and the *Jilgas* of Northern Ladákh. These *Sangs* of Tibet, however, would seem to have more of plain and less of precipitous mountains than either the *Pámirs* or the *Jilgas*.

The *Khámpas* of this plateau had migrated from their own country (near Ziling to the east of the Koko-Nur Lake) about twenty-five years prior to the Pundit's visit. They travelled *viâ* Lhása and the Manasarowar Lake, near which place they plundered a caravan, and fled with their booty to their present camping-grounds, which, prior to that time, were uninhabited. Soon after settling there, they were called on by the Garpon of Gártokh to pay tribute, which they now do annually to the extent of 5000 *Nák-tang* or *Tankas*, *i.e.* about rupees 2000 (200*l.*), or its equivalent in gold, ghi, horses, and cattle. This tribute is paid in Gártokh, and a punctual payment doubtless secures a certain immunity from their peccadilloes being inquired into. They possess large herds of cattle, &c., each tent possessing from ten to sixty horses, and from 500 to 2000 sheep. They despatch annually to a fair at Gáni-ma, near Manasarowar, large quantities of sheep and goats'-wool, salt, and gold; and, according to their own account, when they have finished

their mercantile transactions, they send back the cloths, &c., that they have purchased, under the escort of the older and less active members of the tribe, while the young men start on some marauding excursion, the victims of which are generally travellers and strangers to the country. The Khámpas are well armed with guns and swords, which latter are constantly worn even by boys. The scabbards are often handsomely ornamented with gold, turquoises, and coral.

The men are fine, large, broad-shouldered fellows. They wear, both in summer and winter, *postíns* made of sheep-skins, the hair being turned inside. These coats are worn short, extending to the knees only, and are fastened round the waist by a woollen girdle, above which the coat is roomy and capacious, affording ample space for the storage of their goods and chattels when on a journey. They have felt hats, resembling in shape a broad-brimmed English *wide-awake*, and leather boots with woollen tops and curved pointed toes. They have no hair on the face, and that of the head is plaited, Chinese fashion, into pigtails. The women dress very much as the men, but their *postíns* are longer and less roomy. They wear round leather caps and very long hair, to the plaits of which are fastened long pendants, nearly reaching the ground, profusely ornamented, chiefly with silver coins, of which the favourite is the British *rupee*. Both men and women are always in the saddle; they ride large, powerful horses, and both sexes are skilful riders. They are great sportsmen, and kill large quantities of game, chiefly wild horses, sheep, and antelope. They either employ firearms, or kill their prey with swords and spear when caught in a trap. Their capacity for eating meat appears to be unbounded, and they are apparently naturally somewhat bloodthirsty; as the Pundit states that on several occasions when an animal had been killed, he saw the Khámpa boys kneel down and lick the blood off the ground. This fondness for blood would appear to be derived from a still earlier age, as the food given to infants, when their mothers can no longer support them, consists, in the entire absence of grain in the country, of pounded cheese mixed up with butter and blood. They are of the Buddhist religion; but their language is quite different from that of other Tibetans, and only one man of the Pundit's party, who had resided some years at Sining-fu (to the east of the Koko-Nur) was able to understand it, and to make himself understood.

Between Gargethol and the Champa district of Shankhor on the south is a place called Gegha, where a large fair is annually held in July and August.

On the 29th of August the Pundit returned to Hissik Cháka, where he saw a large herd of *kiánga*s, wild horses, fully 200 in number. He continued his route over uninhabited level plains, till the 1st of September, when, at a camp called Humacho, he met on the road the Gombo of Garchethol, a gentleman who was distinguishable from his followers in that he wore a pair of golden earrings of such length as to rest on his shoulders. The presentation of the letter of introduction from their medical friend at Garchethol secured our party a civil reception.

The following night there was a sharp frost, the first sign of the approach of winter.

On the 3rd of September they reached the village of Mango, the head-quarters of the Gombo, who had gone on ahead of the travellers. The Pundit paid him a formal visit in his tent—a large one made of yák's hair—and made him a small present of sandal-wood. The Pundit was kindly treated, and on intimating to the Gombo that he was on his way to visit a celebrated monastery near the Namcho Lake, Chiring Dunduk (the Gombo), said he was himself about to move his camp several days' march in that direction, and proposed that they should perform the journey together. The Pundit gratefully acquiesced.

Among other visitors was an old man named Sonám Darka, about eighty years of age, a native of a country near Lhása, who had been living as a servant amongst the Khámpas for several years, and had gradually accumulated a good deal of property. The Pundit, when he found that this man could speak good Tibetan, succeeded in securing his friendship by the present of a couple of common sewing-needles, and obtained from him the following information about the neighbouring countries:—

Sonám Darka had on one occasion, some thirty years ago, made a journey from Thok Daurákpa to Ájan, a country about two months' journey in a north-easterly direction. The road lay throughout over an extensive plain, no large mountains being seen, or streams encountered *en route*. Drinking-water was obtained from a succession of small fresh-water lakes, mostly supplied from rain-water. Shortly before reaching the Ájan country, the road traverses a bare rocky range of mountains. Ájan itself was inhabited by the Sokpo Kalmucks, a nomadic pastoral people who obtained grain (rice and flour) from the neighbourhood of Karka, a large monastery said to be ten or twelve days' journey beyond the southern frontier of the Ájan country. Near Karka is a large city called Kokod, the residence of the ruler of the Sokpo districts, while Karka itself contains several monasteries, one of which is the residence of the

spiritual head of the Sokpo Kalmucks. The road just described is never now made use of, on account of the difficulty of ensuring a certain supply of water *en route*; no one would venture to travel by it unless after an unusually heavy rainy season. Wood and grass are said to be plentiful throughout.

Karka is a name about which I have for some time past been endeavouring to obtain authentic information, but I can hardly venture to claim any great success in the attempt. It is first mentioned, as far as I am aware, by Major Montgomerie, R.E., in his discussion of the work of the Pundit, who explored the Namcho Lake in 1872. On the present occasion the Pundit had been specially instructed to make inquiries about it. He saw in Lhása some men who were pointed out to him as from Karka, tall, copper-complexioned, fine-looking men, but, unfortunately, he could not understand their language, and his stay in Lhása was so short that he was unable to learn anything authentic about them.

As far as I can gather from inquiries made at Yárkand, and from information collected by the Pundits, Karka is situated about one and a half month's journey to the north-west of Nák Chu Kha, a large village situated on a river of the same name a few marches to the north-east of the Tengri-Nur or Namcho Lake. At this village it is said that two roads diverge; one to Karka, passing in a north-westerly direction, and the other to Koko-Nur and Pekin in a north-easterly direction. The position of Karka thus obtained would agree approximately with an account I heard from a Kalmuck in Kashghár, which located Karka at about a fortnight's journey to the south-east of Lake Lob. It probably lies somewhere between Lakes Lob and Koko-Nur, and I think it not improbable that the country of Ájan to the south of it may be the same as the country of Anj Si which is mentioned by *Uspenski* in the Russian *Investigia* as a country lying in a westerly direction from the Zaidan Plain, which is to the west of Koko-Nur.

On the 4th of September the Pundit left Mango, in company with Sonám Darka, and the Gombo Chiring Dunduk, the headman of Garché, together with their flocks and herds; there were about six tents of Nomads in all. For four days they kept company, advancing slowly at the rate of about 8 miles a day. It is the habit of these people, when they have exhausted the pasturage near any one camp, to shift bodily to fresh ground; they were now on one of their customary moves. On the fourth day they reached Kezing, in the neighbourhood of which place are very extensive pastures, sufficient for the subsistence of the Gombo's large flocks for a couple of months.

Some idea of the wealth of this people may be inferred from the fact that one of the headmen was himself the fortunate proprietor of 50 horses, 400 yáks, and 2000 sheep. Other members of his tribe were said to be even more wealthy than he.

These Garché Khámpas, numbering in all about 100 tents, had only been settled in the country for about fourteen years. They are under the jurisdiction of the Gyalpo of Lhása, and are very much better off than their neighbours the Gargé Khámpas (who are under Rudokh), as they only pay what must be to them an almost nominal tribute (in gold) of the value of about 20*l*. This gold is obtained at Thok Daurákpa, to the east of Garchethol, in exchange for the produce of their flocks, and for borax, extensive fields of which exist at Noring Cho, which were passed by the Pundit *en route* to Kezing.

The Pundit appears to have ingratiated himself most successfully with the Gombo Chiring, for that chief very kindly made arrangements that he should travel onwards with two other men, servants of a merchant from the neighbourhood of Shigátzé, who were travelling with some spare yáks in advance of their master from Thok Jálung to Shigátzé. These men, for their own sakes, were only too happy to travel in company with the Pundit and his party.

From Kezing eastward for a distance of 80 miles, up to Thok Daurákpa, the country was uninhabited when the Pundit passed through it; but it is occupied by the Khámpas of Garché at certain seasons of the year. There is capital grazing and an abundant supply of water and fuel (argols) throughout. The road lies the whole way in one of the broad open *sangs* before described, lying between ranges of hills running east and west. South of the Tashi Bhup Cho, the southern range runs off in a south-east direction, rising rapidly in height and forming a massive group of snow-covered peaks, the positions of several of which were fixed by the Pundit, although at a distance of from thirty to forty miles south of his road.

From this snowy group flows northwards a very considerable stream, the Shyal-chu, which was crossed by the Pundit in three separate branches, which, although nowhere more than a foot in in depth, are said to be passable only with very great difficulty during the floods caused by the melting of the snow in the summer months. This stream flows into the Tashi Bhup Lake, whose southern shore is about two miles to the north of the Pundit's road. From the eastern end of the lake a stream issues, whose waters are said ultimately to drain into the Charget Lake, from which they emerge under the name of the Nák-chu-khá River, and flow east-

ward to the village of the same name which lies on the northern road between Lhása and Pekin. At the point where the Shyal-chu was passed by the Pundit, his road was crossed by another track going from Manasarowar to Nák-chu-klá, which passes south of Tashi Bhup Lake, and then follows throughout its course the stream which emerges from the east end of the lake and flows to the Chargot Lake and Nák-chu-klá. This road is said to be perfectly easy and to abound with grass and water, but the country it passes through is uninhabited throughout.

The Pundit, who had been forewarned that the neighbourhood of the crossing of the two lines of road was a notorious place for robbers, took the precaution of pitching his camp 2 miles off the road. It is said that the custom of the Khámpa robbers who infest this country is to cut at night the ropes supporting the tent of the traveller, whom they fall upon and cut down while attempting to escape from the folds of his tent.

While under the immediate protection of the Gombo Chiring the Pundit had felt pretty safe, but he appears, not without good reason, to have passed several sleepless nights before he again reached inhabited country.

Travelling as a Láma, he had affected great poverty, and throughout the journey he kept his rupees concealed here and there in the most out-of-the-way places imaginable. His chief repository was a very old and ragged pad carried on the back of a donkey that had accompanied him from the West, and which animal, in consequence of the riches he bore, obtained amongst our travellers the *soubriquet* of *Sarkári Khizánchi*, or Government Treasurer.

The Pundit reached the gold-fields at Thok Daurákpa on the 17th of September, having taken on the latter part of the journey a somewhat difficult road over hills in order to avoid the easier road to the south, which passes round the foot of the hills, but where he thought he was more likely to meet with robbers. He had now quitted the Khámpa country and had entered the Nákcháng Pontod district, in which he passed two or three abandoned gold-mines before reaching Thok Daurákpa.

The Pundit only halted one day at the gold-fields, and continued his journey on the 19th of September. His route lay over precisely the same kind of country that he had previously traversed: it crossed several streams, all flowing to the north. For the first three marches the country was uninhabited; but after leaving Lhung Nakdo, numbers of Chángpa tents were almost daily seen from the line of march.

Although the plain he was now traversing was more than

16,000 feet above the level of the sea, the Pundit does not appear to have suffered very much from the great elevation; the weather was mild, and he speaks of the whole of the journey over the plains of Tibet as a delightful pleasure excursion, when compared with his experiences over the Karakorum and other passes on the road from Leh to Yárkand. The sheets of velvet turf, covered with countless herds of antelope, must, indeed, have formed a pleasant contrast after the equally elevated, but bleak and uninhabited, bare plains of Ling-zi Thang and Dipsang, in Northern Ladákh. The Pundit (who is fond of statistics) asserts that on one occasion he actually counted 2000 antelopes (*cho* and *gua*), which resembled in appearance a regiment of soldiers, with their horns glistening in the sun like bayonets. The horns frequently found lying on the ground served him in lieu of tent-pegs.

In the Nákcháng Ponted (Northern and Southern) district, which extends for several marches east of Thok Daurákpa, there are altogether about 150 families of Nomads, all wealthy in horses, yáks, sheep, and goats. Throughout Nákcháng the sheep are very large and strong, and are almost all black—a peculiarity of this district alone, those in Western Tibet and Lhása being nearly all white. Yáks are used almost exclusively as beasts of burden, and on one occasion the Pundit met a caravan with two hundred of these animals carrying tea towards the west.

The Changpas of Nákcháng, who are also promiscuously termed *Horpas* and *Dogpas*, speak a language which differs but little from that of Lhása, and the Pundit had no difficulty in carrying on conversation with them.

In the eighth march from Thok Daurákpa, the Pundit encountered a lofty range of mountains, which was crossed by a high but easy pass, called Kilong, 18,170 feet above sea-level. This range runs southward, and culminates in some enormous peaks known by the name of Tártot Lhá, from which extends eastwards a snowy range, numerous peaks in which were fixed by the Pundit, along a length of 180 miles, up to where the range terminates in a mass of peaks called Gyákharma, which also lie to the south of and very near the Pundit's road. The highest of these Gyákharma peaks was ascertained by measurement to be 22,800 feet above sea-level, and the Pundit estimates that the highest of the Tártot peaks (which lay too far off the road for vertical measurement with a sextant) is at least 2500 feet higher than the highest of the Gyákharma group. Tártot Lhá was seen from the Chapta Pass at a distance of over 100 miles, and is believed by the Pundit to have been the highest mountain seen by him on his journey.

The highest peak of the Tártog Lhá group is called Tártog *Yap* (or father), while an enormous lake, which lies at the foot of its northern slope, is called Dángrá *Yum* (or mother); these two, according to local tradition, are the progenitors of the whole world. The circuit round the mountain and lake combined is a common pilgrimage, not only for the people of the Hor country, but for their more distinguished co-religionists from Lhása. Similar circuits are made round the sacred mountain of Kailás, near the Manasarowar Lake.

The circuit round the lake alone occupies from eight to twelve days, the distance being about 200 miles; but the complete circuit of lake and mountain takes up nearly a month. The country people believe that if they make the complete circuit (termed locally *kora*) once, they will be absolved from ordinary sin; for a man to be cleansed from murder requires two *koras*; but if the round is completed thrice, even the murder of a father or mother will be atoned for. The Pundit did not feel much comforted on learning that this is all implicitly believed by the country people.

The district surrounding the Dángrá Lake and another smaller lake, to the north of the road, is called Nákcháng Ombo. It is surrounded on all four sides by snowy mountains, and contains several villages. Each village contains twenty or thirty houses, built of stone, and surrounded by richly-cultivated fields, which produce a profusion of barley. The harvest was not quite gathered in on the 28th of September, the date of the Pundit's arrival.

The existence of this cultivated Ombo plain enclosed by mountains, which in their turn are surrounded by boundless extents of pasture-land, is a very curious feature.

The Pundit had not seen a single field of grain of any description since leaving Chabuk Zinga, thirty-five marches to the west, nor did he again meet with cultivation until reaching Tulung village, near Lhása, thirty-nine marches beyond Ombo. The height of the plain (15,240 feet above sea-level) is not less than that of the surrounding country, and, although somewhat protected from wind, it is no better off in this respect than the district of Nákcháng Gomnak, which borders it on the east, which is also well watered, and has apparently a richer soil, but is, nevertheless, totally devoid of cultivation.

The Pundit is of opinion that the Dángrá *Yum Cho* and the smaller lake of Táng Jung, to the north, were formerly connected together in one vast expanse of water. The Dángrá Lake is even now so large, and the wind sometimes raises such violent waves, that the Pundit compares it to the ocean.

Thus far on the journey, the Pundit states that a cart might be driven all the way from Noh, without any repairs being made to the road; but in crossing the range, which bounds on the east the Pembo country, the path was steep and difficult. There is an alternative road, however, lying to the north, by which it is said a cart (supposing there to be such a thing in the country) might easily travel from Thok Daurákpa to the Namcho Lake without meeting a single obstacle *en route*.

The country to the east of the Pembo district is of a precisely similar nature to what the Pundit had already passed through on the west. It is inhabited, as far as the Namcho Lake, by pastoral Changpa Nomads, who live mostly on the produce of their flocks and herds. No grain whatever is grown, but large quantities are imported from the Shigátzé and Lhása districts to the south. The inhabitants are well off, as, in addition to the produce of their flocks, they sell to the merchants of the south large quantities of salt, which is obtained from numerous *chákas*, or salt-lakes, which lie at from eight to twelve days' journey to the north of the Pundit's road.

The height of the plateau traversed appears to vary but little between 15,000 and 16,000 feet above the sea-level. The plain is, as a rule, confined between mountains which run parallel to the direction of the road, but a few transverse ridges of considerable elevation are crossed *en route*. The drainage all tends to the north, the streams from the snowy range to the south finding their way into numerous large lakes, which either lie in the *sangs* traversed by the Pundit, or are enclosed in similar *sangs* to the north. These lakes are the characteristic features of the country, and the Pundit may well be proud of the discovery and survey of such a numerous and extensive system. Of the whole series extending from Noh to Lhása, and stretching across both sheets of the map, the only one that has hitherto been known to geographers is the Nam Cho, or Tengri-Nur Lake, to the extreme east, which, although its position with regard to Lhása was approximately known, and was marked on the old Chinese maps, yet it is only within the last few years that its position and extent have been determined with anything like accuracy. This was done by another Pundit, a pupil of the veteran explorer, whose discoveries are now given to the public.

The largest of these newly-discovered lakes, the Dángrá Yum Cho, is about 45 miles in length, by 25 in breadth, at its widest part; another large lake, the Kyáring Cho, is 40 miles in length, and from 8 to 12 across. The waters of the former are slightly brackish; but those of the Kyáring Cho, and nearly all the lakes to

the east, are beautifully fresh, and, as well as the streams which feed them from the south, contain abundance of fish, and are covered by myriads of wild-fowl.

On the occasion of the former exploration of the Namcho Lake it was frozen over, and although the Pundit made the complete circuit of the lake he was unable to discover any stream flowing from it. On the present occasion, however, our Pundit, having visited it in the autumn, before its waters were frozen, distinctly traced a stream issuing from its north-western extremity and flowing in a westerly direction. Although, at the time he saw it, the stream was not more than a few feet in width, the water-course was broad and deep, and in the summer months must give exit to a large river.

The largest river crossed by the Pundit in this section of his travels was the Dumphu, or Hotá Sangpo, which receives the drainage of the southern slopes of the Tártot-Gyákharma range of mountains, and flows into the Kyáring Cho, forming one of the numerous sources of the Nák-chu-khá.

The subsequent course of this last river, of which some of the head-waters have now been traced, must, I fear, remain a mystery. The account which was given by the Pundit is inconsistent with the existing ideas of the geography of the country. It is to the effect that after passing the village of Nák-chu-khá (Na Ptchu of the Abbé Huc), which is on the road between Lhása and the Koko-Nur Lake, the river flows in a south-east direction to Chámdo, or Tsiamdo, a well-known place on the road from Lhása to Bathang (Pá) and Peking. Thence it is said to flow south-east and east through Ámdú to China, under the names of Máchu and Konkong. If this statement were reliable it would prove the Nák-chu-khá to be a branch of the famous Yang-tsze-Kiang; but, after a very careful examination of the whole of the data, Captain Trotter came to the conclusion that the evidence in its favour is not sufficiently strong to justify his entering into the subject at length.

It appears, on the whole, not improbable that the first part of the Pundit's statement may be correct, viz. that the Nák-chu-khá River flows to Tsiamdo; if so, it bears successively the names of La-chu, Lo-chu, and Lantsang-Kiang, which, according to most modern authorities, is afterwards known as the Kamboja, or Mekhong River.

If, however, Klaproth's well-known map is to be relied on (but we know that in one important instance at least, viz. the identity of the great river south of Lhása with the Irawaddy, modern geographers entirely disagree with him), the Nák-chu-khá does

not flow to Tsiamdo, but forms the head-waters of the Nou or Lou Kiáng, which modern geographers identify with the Salween River, which empties itself into the ocean at Moulmein.

The Pundit took the same route along the northern shore of the Námcho Lake which was followed by his predecessor in 1872, and was described by Major Montgomerie in the Survey Reports for 1873-4. From the east end of the lake to Lhása the routes are identical down to the village of Dam. From Dam, Nain Singh followed the river of the same name in a south-west direction, instead of striking across the hills to the south-east, the direct route which was followed by the other Pundit.

It was not till the 12th of November that the Pundit quitted the higher table-lands of Tibet, and after crossing the Baknak Pass, 18,000 feet above sea-level, descended into the bed of the Tulung, an affluent of the river of Lhása, where for the first time for several months he found himself at the comparatively low elevation of 13,000 feet, from which a steady descent for five short marches brought him to Lhása, at an elevation of 11,910 feet. His pleasure was great on reaching Tulung Valley, where he found cultivated fields replacing pastures, and grain in abundance, vegetables, chang, and other luxuries to which he had long been a stranger. Ordinary cattle and donkeys now took the place of yáks as milk suppliers and beasts of burden. Fowls and pigs were seen for the first time since leaving Ladákh. The more civilised Bodhpas replaced the Changpas, and the Pundit was looking forward to a pleasant stay in Lhása.

But, unfortunately for him, the approach of civilisation brought him considerable anxiety. On nearing Lhása he heard a report that it was currently stated there that an English agent was on his way there from India, and that a *boná fide* Chinaman, who had recently arrived from India *viâ* Nepál, had been arrested and kept in confinement until an interview with the Chinese Ambán had enabled him to prove that he was not the man they were in search of.

The Pundit, on hearing this, halted a day at Lang-dong, and sent one of his own servants (Nendak, a native of Lhása) on ahead to engage a room in a traveller's serai, and to inquire whether any news had been received of the caravan from Leh. The man returned, and reported that nothing had been heard of it; the following day (the 18th of November) the Pundit entered Lhása.

On the occasion of the Pundit's first visit to Lhása he remained there three months, and wrote a good description of the place. His present hasty visit of two days only has not added to our

existing store of information. He left it on the 20th of November, accompanied by his two servants. Prior to starting, he collected the most bulky and least valuable articles of his property, tied them up in an old blanket, carefully sealed the parcel, and handed it over to the owner of his lodging-house, whom he informed that he was going on a pilgrimage to a monastery ten days' journey to the north of Lhása, whence he expected to be back in about a month to reclaim his goods. He started accordingly in the afternoon in a northerly direction, but, as soon as evening came on, he wheeled round, and commenced his return journey to Hindústán.

The first night he halted at Kombo Thang, only 2 miles out of Lhása; the following day he reached Dhejen, a flourishing town, with a large monastery on the left bank of the Lhása River. His route for the first stage was along the high road to Pekin.

From Lhása to Pekin there are two roads; the one generally used, and which is believed to be open all the year round, goes at first nearly due east from Lhása to Tsiando, the capital of the Kham country; it then takes a southerly direction, and passes through Pá or Bathang, and the Chinese province of Sze-chuen, crossing *en route* numerous snow-covered passes across the ranges which divide the streams which rise in Tibet, and flow southwards either into the sea or into the great Kin-sha-Kiang, afterwards the Yang-tsze-Kiang. From Lhása to Pekin by this route is 136 caravan-marches, and the distance about 2500 miles.

The other or northern route, which is generally preferred by travellers in the hot season, is probably easier, and there is much less snow encountered *en route*. It goes by Nák-chu-khá, and crosses the head-waters of the Yang-tsze-Kiang, from which there are two alternative roads to the Koko-Nur. Thence the road passes by Sining-fu (Silling) to Pekin. It was followed by the Abbé Huc in his journey to Lhása.

At Dhejen the Pundit quitted the Pekin road, and, turning south, crossed by the Gokhar Pass (16,620 feet) the range that separates the Lhása River from the Brahmapútra. The pass was covered with fresh snow. From it he obtained a very extensive view, embracing the Yalá Shimbo snowy peaks 60 miles to the south-east, and the Ninjen Thang Lá peaks at a still greater distance on the north-west.

On the 27th of November he reached the Sama-yé Monastery, which lies on the right bank of a small tributary of the Brahmapútra, about 2 miles before it falls into the great river.

From Sama-yé the Pundit travelled down the course of the Brahmapútra for two marches, passing several small tributaries *en*

route. He crossed the great river in a boat on the 30th of November. In this portion of its course it is known either as "Tsanpo" or "the river," or by the name of Támjun Khá. At this, now the lowest known part of the course of the Brahmapútra in Great Tibet, the Pundit estimates the width of the river at 500 yards. The stream was very sluggish, its current near the banks being no more than two-thirds of a mile per hour. Its depth was nowhere more than 20 feet.

The valley through which the river flows was here several miles across; on the left bank of the stream was a stretch of sand fully $1\frac{1}{2}$ mile in breadth, the whole of which is said to be under water in the months of May, June, and July; during which season the river is much flooded, both on account of the increase of water from the then rapidly melting snows, as well as from the rain, which falls in considerable quantities from April to June. The river is here no longer used for irrigation, as above Shigátzé, but all the smaller streams which issue from the mountains on the north and south are thickly bordered with cultivated land.

The Pundit left the river near Chetang, from which point he states that its general course is visible due east for a distance of 30 miles, after which it encounters a range of mountains which cause it to diverge in a south-easterly direction. By taking bearings to, and fixing the position of some peaks on this side of which the river is said to flow, he fixed the course of the river approximately for a very considerable distance below where he quitted it. The course of the river thus determined is very fairly accordant with that shown on Du Halde's map of Thibet.

The Pundit has thus been able to throw a little more light on the lower course of the Tsanpo, or the Great River of Tibet. It is unnecessary to follow Wilcox, Mongomerie, and others, who appear to have clearly proved that the Tsanpo must be the large river which, under the name of Dihong, enters Assam near Sudiya, where it is joined by the Brahma-kúnd. We may safely admit that this is the case; and although the name Brahmapútra is doubtless derived from the Brahma-kúnd of the Assam Valley, geographers have, in consideration of the wide-known celebrity of the name Brahmapútra, bestowed it on the Tsanpo, the upper and most important source of the great river.

From Chetang the Pundit's road lay up the Yálung, through a rich and fertile valley, which contains numerous villages and monasteries scattered about on both sides of the stream. The country is very productive, and contains numerous fruit-trees, principally apricots and pears; wheat and barley are abundant, as well as peas, and many other kinds of vegetables. There is good

grazing on the mountains which border the valley, but the breed of sheep is very small.

From Chetang to the Dálátang plain at the head of the valley is 36 miles. In addition to numerous scattered villages of 10 or 12 houses each the large towns of Naitong and Chukyá Bhtáng are passed *en route*. From the Dálátang Lá to the Karkang Lá the road traverses for 15 miles a grassy plateau, between 15,000 and 16,000 feet above sea-level, through which flows a stream which takes its rise in springs, and ultimately finds its way into the Brahmapútra below Chetang. On this elevated region, which extends from a considerable distance to the west, the Pundit again found himself among the Dogpas, or Nomad population. It is by the Karkang Pass to the south of the plain that the main Himalayan watershed is crossed. On reaching it the Pundit states that a magnificent view presented itself. The whole of the foreground was occupied by gently undulating grassy plains, over which on the north-west, at a distance of but a few miles, rise the very conspicuous group of snowy peaks called Yála Shimba. Other snowy peaks beyond the Brahmapútra appeared topping the plateau to the north, while east and west and south, snowy peaks rose in every direction, but at great distances off.

From the watershed, which is 16,210 feet above sea-level, the road to the Kyá Kyá Lá, a pass about seventy miles further south, traverses a high undulating plateau, which is bounded on its west by a well-marked snowy ridge, which runs nearly due north and south, and contains numerous glaciers. The drainage of this country is most irregular. The Pundit's road for the first 20 miles from the pass followed a stream which, under the name of Sikung Sángpo, flows for 40 miles nearly due east, through the Chahuil country, and ultimately turning south-east, runs nearly parallel to the upper course of the Brahmapútra, which river it is said to join in Assam. After leaving the main stream, the road ascends a branch valley for a distance of 20 miles to the Serása Pass (15,300 feet), and thence descends into a stream which flows due south for 40 miles, and subsequently, under the name of Táwáng-chu, takes a westerly course, and flows round the southern extremity of the southern range which has been mentioned as bounding the plateau on the west.

That portion of the plateau which contains the head-waters of the Sikung River is from 13,000 to 15,000 feet above sea-level. It is a very flourishing, well-cultivated country, covered with numerous small villages containing settled inhabitants.

The road itself, after leaving the Serása Lá, goes nearly due

south, crossing in succession several spurs from the western range, and after reaching the Kyá Kyá Pass, rapidly descends into the Chukhang Valley, which is separated from that of the Táwáng by a very high ridge which is crossed by the Mila Khatong, a pass which was covered with fresh snow.

Between the Sikung district and Chona Jung the country is uninhabited.

Chona Jung is a place of considerable importance, and is a great exchange-mart where salt, wool, and borax from the Hor country, and tea, fine silks, woollen cloths, leathern boots, and ponies from Lhása, are exchanged for rice, spices, dyes, fruits, and coarse cloths from Assam. This market must be one of considerable importance, and contains 300 or 400 shops. The Pundit is of opinion that although the import and export trade is not nearly so valuable as that at Leh (the great exchange mart for India and Eastern Turkistán), yet that the number of traders and animals and men employed in carrying loads is somewhat larger. The merchants who import the articles from Assam are mostly natives of Táwáng, who are called Monhpas; but the goods imported from Hor are brought in by the Dogpas or Changpas. The goods from Lhása are brought by merchants from that place. The road from Chona Jung to Táwáng Chukhang is closed by snow from January to May or June.

The Pundit reached Táwáng on the 24th of December, and was detained there till the 17th of February, having been unable to get permission to proceed to the south.

Leaving Táwáng on the 17th of February, the Pundit reached Odálguri, in British territory, on the 1st of March, the road being often deep in snow, while four passes had to be crossed *en route*; of these the passage of the Sai Lá and the Menda Lá were somewhat difficult on account of snow.

At Odálguri the Pundit put himself in communication with the Assistant-Commissioner of the Darrang District, who kindly made all the necessary arrangements for forwarding him to Gauháti, whence he went by steamer to Calcutta, which place he reached on the 11th of March, 1875.

Before closing this Paper it may be well to recapitulate the chief results of the Pundit's last exploration.

He has made a very careful and well-executed route-survey of the whole line of country traversed. viz. 1013 miles from Lukong (west end of Pankong Lake) to Lhása, and 306 miles from Lhása to Odálguri. Of this total distance of 1319 miles, throughout which his pacings and bearings were carefully recorded, about 1200 miles lie through country which has never previously been

explored. Numerous lakes, some of enormous size, and some rivers have been discovered; the existence of a vast snowy range, lying parallel to and north of the Brahmapútra River, has been clearly demonstrated, and the positions of several of its peaks have been laid down, and their heights approximately determined.

The Brahmapútra has been followed for a distance of 30 miles in a portion of its course, 50 miles lower down than the lowest point hitherto determined; and as its approximate course for another 100 miles has been laid down, the absolutely unknown portion of that mighty river's course now remaining has been very materially reduced. The route between Lhása and Assam, *viá* Táwáng, of which next to nothing has hitherto been known, has been carefully surveyed, and the daily marches described.

As a framework for the map, no less than 276 double altitudes of the sun and stars have been observed with a sextant for the determination of latitude, and the close accordance of the results *inter se* and with the mapping of the route, by the paces and bearings, prove incontestably the general accuracy of the work.

The temperature of boiling water has been observed on nearly every pass and nearly every camping-ground (497 observations in all), adding materially to the value of the maps.

Frequent observations of the temperature of the air and the direction of the wind have given us some further addition to the knowledge of the Tibetan climate.

The Pundit suffered much in health during the latter portion of the journey, and his eyesight has become seriously injured from exposure and hard work, in most trying climates, throughout a long series of years. He is now anxious to retire from active work, and will probably receive a grant of land in his native country; and thus, having happily survived the perils and dangers of the road, it is hoped he may spend the declining years of his life in comfort, and with a due appreciation of the liberality of the British Government.

[The above Paper will be printed entire in the 'Journal,' vol. xlvii.]

The PRESIDENT was sure all present must have felt that the journeys of Nain Singh were of the greatest interest. He had filled up a great blank in the map of Thibet, and had discovered numerous lakes and rivers which were formerly unknown. His last journey was of special interest at the present time, because the English Minister at Pekin, in his recent convention with China, had stipulated that there should be a right of travel from China across Thibet into India, opening up the very route which Nain Singh had traversed. Every part of Central Asia was becoming daily of more interest, politically, and even commercially. Such journeys as that which the Pundit had accomplished, however, were full of peril and wasteful of human life, and

therefore the Pundit was entitled to great praise. He had undertaken two journeys each extending over 1200 miles. The last was across the great northern plateau of Thibet. By far the most interesting account of any journey previously made in the present generation in that country, was that written by the Abbé Huc, and his brother missionary, the Abbé Gabet. The Abbé Gabet died very soon after his return home; and though Abbé Huc lived to write a brilliant book, and was very much fêted and appreciated in his own country, France, he died a very few years after. There was no doubt that the health and constitution of both were ruined by the trials which they experienced in traversing the Thibetan plateau from 15,000 feet to 16,000 feet above the level of the sea. The Society were much indebted to Captain Trotter for giving them an account of the journeys of the native explorers beyond the Himalayas.

Colonel H. YULE said, although he had not himself been in Thibet, in that respect he was in a similar position to every one present. Some few Europeans might have got, as it were, upon the margin of the region, but in the course of many centuries very few had actually entered on the great plateau. If only the journey of the Pundit from Ladak to Lhása, which had just been described, was considered, it might seem that the results were not of the highest importance; but the labours of Nain Singh must be taken as a whole. This was not his first journey. In 1865-6 he made another and a more important journey of about the same length, when he visited Lhása, and traced nearly the whole course of the great river which was generally identified with the Brahmapútra. Thibet was a most interesting country in many respects. If the sea were supposed to rise until it attained some 13,000 feet above its present level, nearly the whole of Asia would disappear, and so would Arabia, Persia, India, and China, leaving the large tract which was called Thibet. That would remain above the surface. There was no other such extensive area in the world of such an elevation. A region extending over 300,000 or 400,000 square miles might be found in Thibet never descending below the level of the top of Mont Blanc. That was one remarkable circumstance about Thibet. Thibet must really be considered to begin immediately north of Cashmere, and to extend to the Chinese frontier at Sining-fu. Over all that country substantially the same language was spoken, and, with one exception, it was of one religion, that of Lama Buddhism. The only exception was to the extreme west, where in the country which was known as Little Thibet the people had for some centuries been Mahometans. The accurate geography of this country might be said to have begun in the year 1710 or 1712, when the Jesuit Missionaries were engaged in making their great survey of China. They were not themselves able to enter Thibet, but they partially trained some Lamas, very much as Colonel Montgomerie had trained the Pundit, and these Lamas made a kind of survey, giving in a general way the course of a good many rivers, which were afterwards mapped by d'Anville in his great atlas of China. Until lately that had been the foundation for our knowledge of Thibet. It was not, however, known what value to attach to a good many of their points, and a great deal of their description was obviously very vague and general. The Pundit Nain Singh was the first who had given accuracy and substance to the map of Thibet. He had fixed the position of Lhása, and of the great river, and carried a diagonal from Ladak to Lhása. Though Thibet had been entered at various times by European travellers, unfortunately none of them were geographers or surveyors. About the year 1660 or 1670, two Jesuit priests, Grueber and d'Orville, travelled from Sining to Lhassa, then to Kathmandu, and into India; but the account of their journey was very meagre, and they took no observations. Afterwards an Italian priest, Ipolito Desideri, entered Cashmere and travelled from Ladak to Lhása—possibly by the very route which the Pundit had described, but his journal

had only recently been recovered in Italy, and had not yet been published. In the last century a Dutchman, Vanderput, travelled from India through Lhása to China, and back again the same way, but had left hardly any record of his journey, and that little would have been totally unknown but for the exertions of Mr. Markham when compiling his book on Thibet. The next journey was by Bogle to the north of the Tsanpo; and 40 years later, Mr. Manning reached Thibet. Why he went there it was difficult to understand, even from his own journal; but he did get there, and was arrested, and sent back again. The next account was that of Huc and Gabet. They also were not geographers, and they added almost nothing to the geographical knowledge of the regions, though the book which the Abbé Huc published was one of the most entertaining that ever was written. It therefore remained for the Pundit Nain Singh to give an accurate basis for the maps of Thibet. That was the great achievement which he had accomplished with very much toil, and with the sacrifice of his own health, and which was the great reason why the Geographical Society had awarded him their Gold Medal.

Sir HENRY RAWLINSON said he was particularly glad to attend on the present occasion, because, independently of the interest which in common with all geographers he took in the discovery of previously unknown tracks of Central Asia, he had a personal interest in the Pundit's journeys. Ten years ago, when Colonel Montgomerie brought the first journey of the Pundit before the notice of the Society, he was the means of obtaining from the Council of the Geographical Society the presentation of a gold watch to the Pundit in recognition of his valuable services to the cause of Geography. He had therefore always felt that he was to a certain degree sponsor for the Pundit in his geographical work. On referring to the 'Proceedings' of the Geographical Society of that date, he was particularly struck by a remark of the late President, Sir Roderick Murchison, who, with that wonderful prescience which distinguished him on so many occasions, in presenting the gold watch to the Pundit, said that he felt pretty sure that that was only an earnest of further distinction, in fact, he unmistakably alluded to the probable presentation to the Pundit of the Gold Medal of the Society on some future occasion. From that time to the present he had always followed the Pundit's work with deep and ever-increasing interest, and he was delighted to find that his career had now culminated in his carrying off the Blue Ribbon of Geographical science—the Gold Medal of the Royal Geographical Society. But while he gave every possible credit to the Pundit for his perseverance, his gallantry, and his skill, he could not forget the claims to consideration of the Department of the public service which founded the school to which the Pundit belonged. It was found to be a crying want in the geographical researches of India that Europeans were unable to penetrate into those countries which lay on the north and north-western frontier, and it occurred to the heads of the Department of the Trigonometrical Survey that it would be desirable to found a school for the purpose of promoting discovery by native agents. It was a very difficult task to commence with, but by degrees the Department succeeded in training both Mahometans and Hindoos for the purpose of exploration; and he had always felt that great credit was due to those officers, especially to Colonel Walker, the head of the Trigonometrical Survey; Colonel Montgomerie, who really founded the school of native explorers; and Captain Trotter, who not only completed the work of his predecessors, but also utilised the results which they had obtained. Such men as the Pundit, the Havildar, and the Mirza, were invaluable in traversing unknown countries, where Europeans were unable to show their faces. They collected facts, recorded distances, and made observations for altitude and latitude. None of them had, however, as yet been able to determine a longitude. The taking of a lunar appeared to be beyond the power of any native surveyor. The longitudes had been arrived

at by cross routes and dead reckonings, so that the position of Lhása had not yet been scientifically ascertained. The latitude was determined by the Pundit on his former visit in 1865, when he spent three months there. Great credit was due to the officers who had sent out these native explorers, and on their return had tabulated their observations and memoranda. He regretted the absence of Captain Trotter, who no doubt would have been most gratified to hear Colonel Yule's well-deserved eulogium on the Pundit's work, and the few words which he himself (Sir Henry Rawlinson) had expressed as to the services performed by the Trigonometrical Survey.

The PRESIDENT said he had hoped that Sir Douglas Forsyth would have been able to attend that evening, but a letter had been received from that gentleman stating that he was suffering from a serious cold, and could not be present. He had, however, written a few observations, pointing out that Nain Singh had been one of his own employés, and was engaged in carrying out a system of exploration which Captain Trotter designed.

“14th May, 1877.

“Though unfortunately I am unable to attend this Evening's Meeting of the Royal Geographical Society, I shall be glad to be allowed to convey through you some remarks on the labours of the distinguished Pundit, Nain Singh, an account of whose latest travels, I understand, is to be read instead of the Paper promised by Captain Trotter.

“A very interesting summary of the Pundit's proceedings was given in the ‘Times’ not long ago, from a perusal of which, the claims of this remarkable Indian surveyor to the high honour which has just been conferred on him by the Royal Geographical Society are made abundantly evident. Yet even in that statement the facts are in one instance only inadequately represented, and there is a not unimportant omission which I would in a few words supply.

“I allude to that part of the statement which says that the Pundit was attached to the Mission to Kashgar in 1873, but returned the same year, and no mention is made of the services rendered to that mission, either by himself or his brother Pundits, nor are the facts attendant on, or rather leading to, his undertaking the final journey which has proved the crowning point of his labours alluded to.

“The facts are as follows. When the Government of India decided to send a diplomatic mission to the Atalik Ghazee in 1873, it was determined to appoint an officer of the Indian Survey Department to accompany the Expedition as Geographer, and to give him an efficient staff of Assistants. Captain Trotter was the officer selected; and Abdul Subhan, a sub-surveyor in the Topographical Survey Department, and two of the great Trigonometrical Survey Pundits with their Assistants, were added; and so far from Pundit Nain Singh having returned the same year without doing anything, he remained with the Mission the whole time, and was despatched on his Lhása trip by Captain Trotter, after our return to Ladak in 1874.

“Of the invaluable service to science rendered by Captain Trotter, it is not necessary now to speak, as I hope some other opportunity may be afforded him of proving his claims on this Society. But as the Paper which has been read this evening, giving a record of Pundit Nain Singh's travels, was drawn up by Captain Trotter, and as the Pundit was deeply indebted to his English superior, at almost every step, for advice and instruction, it is only fair to Captain Trotter that those of us who had opportunities of observing his powers of organising the staff placed at his disposal should bear testimony to the evidence of good generalship thus displayed.

“The original plan for utilising these Assistants was to send the Mahomedan portion into the countries across the Pamir and the Alai—wherever, in fact, they would meet their co-religionists—and to send the Pundits by the northern

route to Lake Lop, and thence to despatch them across the great Gobi Desert, through Thibet and Lhása to Hindostan. These plans had to be abandoned, and a less ambitious programme was carried out, in which Pundit Kishun Singh proved himself to be a worthy follower of the one whom we now delight to honour. I will tell immediately what Kishun Singh did, but will first dispose of Pundit Nain Singh. He remained during the severe part of the winter in Yarkund, and took valuable meteorological observations. As soon as the season for crossing the Pamir came round, Pundit Nain Singh was despatched from Yarkund to explore the Kogyar route to the Karakorum, and the report he sent back proving very favourable, we all returned to India by it.

“Pundit Kishun Singh's explorations were of a more extended character. Besides accompanying Captain Trotter in his expedition from Kashgar, he was taken by that officer on his Pamir Expedition, as far as Tash Kurgan, and despatched thence to Yarkund by the direct route, viz, the Charling River. He then was sent by Khoten and Polu, across the eastern continuation of the Kuen Luen, and over the vast lofty plain to Lake Pangong and Leh. The survey of this route was pronounced by Captain Trotter to be one of the most important geographical results secured by the Mission. After detailing the Pundit's progress, Captain Trotter says, ‘The newly acquired knowledge of this road may, perhaps, lead to important practical results . . . It is apparent, by combining the results of this survey with other information collected by the Survey Pundit during the past few years, that a road exists between the plains of Hindustan and Turkestan, which entirely avoids the territories of the Maharaja of Kashmir, and which in summer months may be traversed without once crossing snow, or without encountering one really difficult pass, such as are known to exist in the Kara Korum and Changchemno routes.’ One result of Pundit Kishun Singh's route-survey was to cause an alteration of more than 30 miles in the previously accepted value of the longitude of Khotan.

“The success achieved by Kishun Singh in this journey across the range from Khoten to Leh, suggested, or at all events stimulated, the idea of sending Nain Singh on his long cherished journey of exploration through Thibet, and across the eastern end of the Himalayas to India, a trip which he has bravely accomplished.—T. DOUGLAS FORSYTH.”

Mr. E. DELMAR MORGAN remarked, that although the Pundit's journey was no doubt a very interesting one in many ways, it was desirable that some European should visit the same regions, who would be able to collect facts relating to the animal and vegetable life there. Sir Henry Rawlinson had spoken of the difficulties to be overcome in such a journey, but when it was remembered what English explorers had done in the Himalayas, and what Russian explorers had done further to the north, among mountains as high and passes as difficult as those which the Pundit had visited, surely men could be found to explore the great plateau of Thibet. Colonel Yule had omitted to mention one explorer who had done good service in the northern part of Thibet, the Russian traveller Prejevalski.

Mr. TRELAWNEY SAUNDERS said, no one who had studied Himalayan geography could fail to feel grateful for the two vertical sections across the mountains down to the Tsanpo, by Pundit Nain Singh, one of which was described in the Paper. Those sections had thrown a general light on the whole subject. He was highly delighted to hear that the Society has awarded its medal to the Pundit. Nothing could be more encouraging to our fellow-subjects of low rank in India than such an appreciation of merit. He looked upon Thibet and its great flocks of sheep as a source of wealth, not only to that country, but to India and England, and a substitute for cotton, whenever the Americans themselves manufactured that cotton which now supplied the English looms. One point that the Pundit had settled beyond

dispute was that of the distinction between Hor Pa, or High Land, and the Sok Pa. These were the two great ethnological divisions of the country; the Hor Pa being occupied by tribes of Turkish race, and the Sok Pa by Mongols, whose Sok or pastures gave them their name, and pointed to the origin of the ancient Scythians. While the region inhabited by the former was a high mountainous plateau drained by interior lakes, that occupied by the Sok Pa was intersected by the deep ravines of the affluents of the Brahmaputra, the Salween, the Cambodia, the Yang-tsze-Kiang, and the head-waters of the Hoang-ho. He was particularly delighted to hear that all this magnificent region was probably no longer to be hermetically sealed to European observation. Allusion was made in the Paper to Kalka, which had long been regarded as an inexplicable puzzle, and he hoped that when the Paper was printed in the 'Journal' it would be accompanied by an explanatory note on the subject of Kalka. Mr. Markham had elsewhere, and so had he himself, explained the problem. Karka was noticed by Turner. It was identical with Kalka, which was derived from the Kalka River of Northern Mongolia. That river gave its name to the Mongolian princes, who, when driven out of China, previous to the Manchu invasion, settled on the Kalka River, and so acquired the name of the Kalkas. Outer Mongolia is divided among the four Kalka Khanates to this day. The high priest or Taranath Lama of the Kalkas governed the priestly influence that controlled all Mongolia. Such was the importance attached to this high priest, that the Chinese Emperor found it necessary to take his election out of the hands of the Kalka princes and make it subordinate to the Grand Lama at Thibet. The Russians supported an armed mission at Urga, the seat of the Taranath Lama; and he hoped that we might look forward to some peaceful intercourse with Lhása, at no distant period.

Sir HENRY RAWLINSON said intelligence had recently been received that Colonel Prejevalski had reached Lob Nor, the lake in the great plain of Tartary, which had never before been visited by an educated European. He had travelled round it, and found that it was of greater extent than had previously been supposed. He had also discovered traces of several ruined cities on the southern and south-western shores, recalling those traditions of buried cities which Sir Douglas Forsyth had collected. Mr. Morgan asked why English officers were not able to perform journeys into Thibet. The physical difficulties of course could be overcome, but the exclusive policy of the Chinese had hitherto prevented any Englishmen from surveying the country. If the Chefoo convention was carried out, as it was hoped it would be, then no doubt there would be a little army of scientific explorers sent into Thibet, who would collect specimens of the fauna and flora, and exhaust the scientific examination of the country. The same political difficulties existed in some Mohammedan countries. No European had been allowed to trace the upper course of the Oxus, or the great route by the Chitral Valley from Peshawur.

The PRESIDENT said Lhása was the Mecca of the Buddhist world of Eastern Asia, and it was no more possible for a European to get to Lhása than to Mecca. It was true that Captain Burton had succeeded in reaching the latter city; but when Mehemet Ali once was asked by a well-known traveller for authority and an escort to go to Mecca, the reply was: "Yes, you can go to Mecca and you can have an escort; but you won't come back, you know, and I don't think many of your escort will return either." Geographers are indebted to Sir Thomas Wade, who has obtained the recognition of our rights as to travelling through this country under the "Favoured Nation" clause. No doubt it would be a long time before the advantage would be much utilised, for it was a very natural thing for the Chinese, whose power over the country was really dependent on the influence of the Lama at Lhása, to look with the greatest possible jealousy and suspicion upon the entrance of Europeans,

who might shake their authority there. A debt of gratitude was due to the Pundit, who had been exposed to great perils. When in Lhása he was recognised by some one who knew him, and it was only a question of time as to when he would be betrayed; and, in all probability, if he had been, no more would ever have been heard of him. However, when he was convinced that he was recognised, he gave his journals and observations to two of his attendants, and despatched them off to India, while he went forward for two days, in order to blind the authorities, and give his attendants a good start. That was a piece of true heroism. It was not that Englishmen were not capable of encountering the physical difficulties and dangers of such a route, but the political and religious element was sure to bar the way. In awarding Nain Singh the Gold Medal, the Council wished to show to the world that in bestowing their highest honour, they were not influenced by considerations of race, or creed, or nationality, but gave it to the men who had done the greatest service to Geographical Science.

ADDITIONAL NOTICE.

(Printed by order of Council.)

Voyage of the 'Ellangowan' to China Straits, New Guinea. By
REV. S. MACFARLANE.

WE left Somerset on the 21st of March, having on board our newly-arrived medical missionary, Dr. Turner, and his wife; also the teachers' wives from Yule Island, who had come over to recruit their health, and had sufficiently accomplished the object to enable them to return to their husbands and work.

We anchored for the first night at the lee-end of a reef near Village Island, and, although rocked all night, got very little sleep. Next day it was too rough to call at York Island—our wooding-station—so we ran on to Darnley. Here we found the teachers suffering from fever and ague, as well as the natives themselves, but nothing serious.

We started from Darnley on the morning of the 24th, and sighted Anchor Quay about noon. Crossing the Gulf we had a light head-wind; still we hoped to reach Yule Island by the evening of the following day. The sun set, and darkness came on, however, before we reached the passage, and a heavy squall came off the land, rendering it impossible for us to see our way. Having run what we supposed to be our distance, we anchored in 15 fathoms of water, and in the morning were pleased to find ourselves near the mouth of the pass.

It was a lovely Sabbath-morning when we steamed into Hall Sound. The wind and rain had ceased. The sun rose behind Mount Owen Stanley, dispersing the thick banks of clouds and lighting up the hills. The scene was grand. The mountain-ridges rose tier on tier, like mighty fortifications, piled up to the heavens, and patches of fleecy, snowy-white clouds lay on the hill-sides, as if the artillery from these gigantic batteries had been recently at work. Mounts Yule and Owen Stanley sat in solemn grandeur in the midst of this majestic scene like Nature's generals, with their bare heads in the clear atmosphere, and a cloudy plaid drawn around their shoulders. The rising sun and morning clouds made it quite a panoramic view, upon which we gazed long after we came to anchor.