

REPORT
ON THE
IDENTIFICATION AND NOMENCLATURE

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OF THE
Himalayan Peaks

AS SEEN FROM
KATMANDU, NEPAL.

BY
CAPT. H. WOOD, R.E.,

WITH PREFACE BY
COL. ST. G. GORE, C.S.I., R.E.

PREPARED UNDER THE DIRECTION OF
LIEUT.-COLONEL F. B. LONGE, R.E.,
SURVEYOR GENERAL OF INDIA.



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HEAD QUARTERS

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PREFACE.

THE question of the name of the Indian Survey peak XV, the highest mountain in the world, is one which has given rise to considerable controversy.

When peaks are first fixed by the Survey of India they are given letters or numbers by the triangulator for purposes of identification and record. Subsequently enquiries are made, and if a native name can be found which is really applied to the mountain in question, that name is entered on the map. Failing a native name it has never been the custom of the Indian Survey to give fancy names, and the mountain remains known by its original distinguishing letter or number.

In the case however of peak XV in 1856 Colonel Waugh, the then Surveyor-General, finding no native name for the peak which on computation proved to be the highest known mountain on the globe, proposed the name "Everest," by which name it has since been known to the English-speaking world.

His Excellency the Viceroy having kindly interested himself in the matter, His Excellency Maharaja Chandra Shamsher of Nepal gave permission for an officer of the Indian Survey to visit Nepal during the autumn of 1903, on purpose to identify and sketch the various peaks seen from the neighbourhood of Katmandu and try and settle the question of the identity of Gaurisankar.

Captain Wood has now visited the valley and has fully and accurately identified all the survey peaks that can be seen from the Kaulia hill and also from the hill Mahadeo Pokra. In his report will be found a summary of the controversy which has arisen on the subject. It will be seen that the claim that peak XV should be called Gaurisankar rests almost entirely on the evidence of Hermann Schlagintweit, who visited Katmandu in Nepal and also Falut on the ridge dividing Nepal from Sikkim. From both these places he drew panoramas of the view, and on each of these he marked a prominent peak as Gaurisankar, believing them to be one and the same peak XV. The name Gaurisankar he obtained from Maharaja Jang Bahadur of Nepal, and his pandits.

With Captain Wood's panorama of the view as seen from Kaulia before one, it is not at first evident why the Gaurisankar peak, which is in reality peak XX, should have been particularly chosen as the recipient of a name when the nearer and more striking groups to the north are nameless. The reason is however that from the town of Katmandu the snow mountains to the north are more or less hidden, and Gaurisankar, lying more to the east, is the most prominent of the snows visible. It has therefore become more familiar to the inhabitants of Katmandu than any of the other peaks.

On comparing Captain Wood's panorama taken from the top of Kaulia with that of Schlagintweit, it seems clear from the relative heights of the nearer and more distant ranges that Schlagintweit drew his panorama from a somewhat lower elevation than Captain Wood did. This may account for the fact that the former shows no signs of peak XV (Everest) though it is visible from Kaulia as a low, insignificant peak in a gap, 2° to the right of the Gaurisankar

peak. Everest is not visible at all from the valley of Katmandu, and it is only on ascending to some considerable height that its point comes into sight. In Schlagintweit's panorama, the nearer range cuts and obscures the southern slope of Gaurisankar, just at the point where the peak of Everest should have been visible.

Captain Wood gives a full account of his attempts to obtain names for the various peaks, and it is clear that the people of the country have no names which are generally associated with special peaks. The officials and those living in Katmandu seem to have given the name Gaurisankar to the peak which is prominent from that point of view, though even this name is by no means a well known one. Whenever used it is however given specially to the Gaurisankar mountain and not to the group, His Excellency Maharaja Chandra Shamsheer who throughout took great interest in Captain Wood's work and gave him every facility to prosecute it, giving the name Gauri to one of the points and Sankar to another. The whole evidence collected by Captain Wood is quite against the theory that Gaurisankar is a name given to the mountain mass of which peak XX, which is the prominent point, is only one peak.

There now remains the further question whether peak XV (Everest) can be called a peak of the group of which peak XX (Gaurisankar) is the most conspicuous as seen from Katmandu or its neighbourhood.

Mr. Freshfield states that the point which he has been arguing throughout is "whether the 29,002 feet peak is among the snows visible from Kakani and known as Gaurisankar." This to my mind begs the question. General Walker was mistaken when he argued that Everest could not be visible from Kaulia. He did not allow for the deep gap in the range just to the right of peak XX (Gaurisankar). Through this gap the point of Everest just appears, as seen from Kaulia. This however in no way proves that Everest forms part of the group of which peak XX is such a prominent point.

Captain Wood took observations and photographs both from Kaulia hill 8 miles N.W. of Katmandu and also from Mahadeo Pokra hill 14 miles east of the town. Outlines of the Gaurisankar group from these two points carefully enlarged from photographs and on the same angular scale are herewith given. A comparison of these is instructive. In the view from Kaulia the top of Everest is shown just visible over the gap at the southern foot of peak XX. Turning to that from Mahadeo Pokra we find that the shift of point of view has had the effect of moving Everest (not very much larger although 18 miles nearer) a long way to the right and completely dissociating it from peak XX. How can this great shift be reconciled with the contention that Everest forms part of the Gaurisankar group?

The same fact could be anticipated from the study of the sketch map of eastern Nepal which is given herewith. Peak XX (Gaurisankar) is one of a great group of peaks the principal of which are XIX and XX between 23,000 and 24,000 ft. in height. Thirty-six miles to the east of peak XX, but separated from it by the upper end of the Dudh Kosi valley, stands Everest, which with peak XIII (Makalu) forms a separate group. The two groups are joined by a ridge running round to the north over which the road passes by the Pangua from the Dudh Kosi valley to Dingri, but to call these two groups one and the same is to my mind quite untenable.

As showing how difficult it is to identify mountains without careful instrumental observations and calculation it may be interesting to check Mr. Schlagintweit's identifications as entered by him on his panorama.

Schlagintweit's Identification.	True identification.	ERROR.	
		Direction.	Miles.
Gaurisánkar XV	XX	2°	36
Sankósi Peak XXI	XXI	Correct	...
Jibjíbia East Peak XXII	XXIV	7½°	3
" Central Peak XXIV	S ₃₁	5½°	5
Daibúng XXV	XXV	Correct	...
'Aku S. Peak XXVII	No such high peak exists where shown.		
Yássa N. Peak XXX	S ₁₂	34°	34
" S " XXVIII	S ₆	33°	20
Dhavalagíri XLII	M ₆	25°	74
Narayáni LI	XXX	24°	81
Machipúcha XLVIII	XXVIII	22°	83

I cannot account for the lofty peak which Mr. Schlagintweit drew and named 'Aku South peak. There is no trace of such a peak in reality.

It may be further noted that the peaks (XX and XIII) seen by Schlagintweit from Kaulia and Falut which he considered one and the same and named Gaurisankar are no less than 47 miles apart.

As to Dr. Boeck's photographs and identifications which Mr. Freshfield brings forward as giving additional evidence on the point of the visibility of Everest from Kaulia, a comparison of Captain Wood's photographs with the enlargement of Dr. Boeck's photograph published in the Geographical journal clearly shows that the peak he calls Gaurisankar, and which Mr. Freshfield thinks he can hardly be wrong in recognising as XVIII is in reality XXIV, a peak more than 30° to the left of the real direction of XVIII. If Dr. Boeck started on his identifications with this peak as Gaurisankar, it is not surprising that he found plenty of peaks more to his right to identify as Kanchinjanga, Kábru, etc.

I am afraid that those who trust to their appreciation of characteristic forms and their mountaineering instincts as a means of identifying peaks from widely different points of view are apt to be frequently misled.

The conclusion which, on consideration of all the evidence, I have arrived at is that while there is no ground whatever for giving the name Gaurisankar to Mount Everest, there seems to be perhaps sufficient accord in the Nepalese designations to warrant our acceptance of that name for peak XX.

ST. G. C. GORE.

10th January 1904.

THE IDENTIFICATION AND NOMENCLATURE OF THE HIMALAYAN PEAKS, AS SEEN FROM KATMANDU, NEPAL.

In 1856, when the then Surveyor-General Colonel (afterwards General Sir) A. Waugh proposed the name of "Mont Everest" for Peak XV of the Great Trigonometrical Survey of India's list of the great Himalayan Peaks, the suggestion gave rise in geographical circles to considerable discussion as to whether this peak had a native name, and if so what that name was, and this discussion has been renewed at intervals. Sir A. Waugh proposed first to the Government of India and then to the Royal Geographical Society in London to give to this peak the name of his predecessor in office, because, though he had always scrupulously adhered to the rule of assigning to every geographical object its true local or native appellation, the Survey officers had not been able to discover, nor were they likely to be able to do so, any local name, and that as it was probably the highest mountain in the world, he had decided to name it after his late chief and to show that it was the peak alone that was so named and not the range he prefixed the word Mont and not Mount.

Six months later Mr. Hodgson, who was for 20 years Political Resident in Nepal, informed the Asiatic Society and also the Royal Geographical Society that the peak was not nameless, but that it was known in Nepal as Devadhungha. The former Society accepted the name Devadhungha and repudiated Everest. Thereupon Sir A. Waugh convened a committee of four officers to report on the matter, and their decision was published in the Proceedings of the Royal Geographical Society, Vol. 2, 1858. They decided that the identity between Everest and Devadhungha was not only not established but was also far from probable, and that Mr. Hodgson had written under the belief that the peak was so remarkable a feature that it would not have been creditable to him after 20 years' residence in Nepal had he been unable to identify it, but remarkable as the peak was from some points of view, from the parts of Nepal where Europeans were permitted to visit, the peak would probably be hidden by an intervening mass of mountains. The discussion then dropped till 1862 when the Messrs. Schlagintweit published Vol. II. Hypsometry of their "Results of a Scientific Mission to India and High Asia." From this it appears that Hermann Schlagintweit from a point (Falut) on the Singhalila range (on the Sikkim Frontier) saw a very high snow peak in Nepal, and that in 1857 when he visited Nepal, he recognized this peak from a station Kaulia—a point on the Kukani range, a few miles north-west of Katmandu—and that in Nepal this peak was called Gaurisankar, its Tibetan name being Chingopamari. This peak he stated was the one called Everest. In Vol. III he further remarks that prior to his visit to Nepal, Mr. Hodgson had made enquiries for him in Darjeeling about the name of this peak, and that the Nepalese called it Devadhungha, Bairabthan, Bairablangur, and the Tibetans Gualham, Taghlo Gualham and Taghlo, but that when he saw it from Kaulia every one called it Gaurisankar, and when questioned as to the other names they had given Mr. Hodgson, they averred they had not clearly understood which peak was meant.

Thereupon General Walker, R.E. (late Surveyor-General), and, General Tennant, R.E., from Hermann Schlagintweit's panoramic profile of the snows from Kaulia and a chart of the geographical positions of the principal peaks and of Kaulia as given in Part II of the Schlagintweit Atlas, proved (assuming Schlagintweit's positions to be correct) by comparing the computed and observed azimuths that Everest and Gaurisankar were not one and the same peak. Their results were published by General Walker in the February Number of the Geographical Society's Journal for 1886 under the title "Notes on Mont Everest." At the same time Colonel Tanner, I.S.C. (of the Survey of India Department) published a paper in the Alpine Journal (February Number of 1886) on "The Highest Peak of the Himalayas". To this the Honorary Secretary of the Royal Geographical Society (Mr. D. W. Freshfield) added an appendix in which he decided that the peak called Everest was one and the same as seen by Hermann Schlagintweit and ascertained to be Gaurisankar and that the English designation Everest should be rejected. General Walker replied, but Mr. Freshfield remained unconvinced, and the matter remained unsettled as before.

In Petermann's Mitteilungen No. II of 1888 Emil Schlagintweit, (brother of Hermann) wrote an article "Uber den Namen des hochsten Berges der Erde," in which he gave a summary of the discussions which had taken place before this date and also a learned dissertation on the meanings of the various names that had been suggested for the highest snow peak of Nepal, and he ended by suggesting Gaurisankar-Everest as the name for it. This article was translated into English and published with a reply by Colonel Tanner, together with several panoramas, by the Survey of India as a departmental paper and entitled "A few lines on Mount Everest." In this paper Colonel Tanner again maintained that Gaurisankar and Everest cannot be the same peak. This was replied to by Emil Schlagintweit in Petermann's Mitteilungen No. 10 of 1890 under the same title as his previous article. Nothing new was brought forward by him but he still was unconvinced and again pressed that the name Gaurisankar be used by the Survey of India in lieu of Everest.

The controversy then dropped till 1898 when Major Waddell, I.M.S., in an article in the Royal Geographical Society's Journal, Vol. XIII, discussed the naming of Everest and suggested a Tibetan name for the peak. To this Emil Schlagintweit replied in Petermann's Mitteilungen No. 2 of 1901. He gave another learned dissertation on the meanings of the Tibetan names, and, though no new evidence was produced, he again repeated his proposals to call the peak Gaurisankar-Everest, though virtually admitting that the name of Gaurisankar is applied to the group and not to the peak.

No other article on this subject appears to have been written until March 1903, when in the Royal Geographical Society's Journal of that month Mr. Freshfield published an article "The Highest Mountain in the world." In this article a reproduction of a telephotograph from "Durch Indien im verschlossen Land Nepal" by Dr. Boeck is published. In this photo there is a peak which Mr. Freshfield identifies as No. XVIII, and over the northern flank of it appears a snowy mountain which he takes to be the peak XV (Everest). The highest point of this group was pointed out to Dr. Boeck as Gaurisankar, and Mr. Freshfield concludes by saying "I trust I have made it clear that the point I have been arguing throughout is whether the 29,002 ft. peak is among the snows visible from Kukani and known as Gaurisankar and not whether Schlagintweit or Major Wilson or other observers have identified rightly the particular summit.

This is hardly in accordance with Mr. Freshfield's previous writings as in Schlagintweit's note "Uber den Namen, etc.," published in Petermann's Mitteilungen No. II of 1888, he stated, referring to Mr. Freshfield's appendix to Colonel Tanner's article in the Alpine Journal, that Mr. Freshfield established that the peak named Everest was one and the same as the one seen by Hermann and ascertained to be Gaurisankar.

Previous to the publication of this article Colonel Gore, R.E., C.S.I., Surveyor-General of India, had interested His Excellency the Viceroy in the matter, and represented to him that the question could only be finally settled by sending an officer into Nepal with the necessary instruments for taking observations.

The Prime Minister of Nepal was therefore approached on the subject, and the Durbar having given permission for an officer of the Survey of India to visit the hills round Katmandu and to take the necessary observations I was deputed for the duty.

My instructions from the Surveyor-General were to first visit one of the Great Trigonometrical Survey Stations in the plains of Bengal to the immediate south of Katmandu, from which the higher snow peaks had been fixed (Batwair) T. S., Lat. $26^{\circ} 49' 51''$, Long. $84^{\circ} 59' 2''$, was the one selected), and from there to identify by means of their azimuths the various fixed peaks and to make sketches of them. I was then to march to Nepal watching the peaks when they were visible to notice the change in their appearance, and from Kaulia, or—if that hill could not be identified—from some other of the peaks on the Kukani range observe an azimuth and by interpolation with the theodolite from the peaks west of No. XXII, which I was able to recognize, obtain my position checking this by an observed latitude. With the co-ordinates of the point of observation thus obtained and those of all the Everest Group, I could work out the true azimuths of all and identify the peaks by means of setting the theodolite on the peaks in succession, and could check this identification by observing the vertical angles and working out their heights. I also was to make a panorama using the theodolite to plot all the prominent peaks, by measuring horizontal and vertical angles and filling in the detail by hand or, if permitted, by photographs. The names given by the country people to the groups or peaks were to be obtained if possible.

I left Mussooree on the 2nd October reaching Segowlie on the evening of the 4th, accompanied by 1 native sub-surveyor and 14 khalassis, and took the following instruments. One 6-inch theodolite with stand by Messrs. Troughton and Simms (the limbs were read by 2 micrometers graduated to $10''$ but which could be easily estimated to $1''$), one Telescope by Messrs. T. Cooke and Sons with 3-inch object glass and fitted with prismatic eyepiece, 2 sidereal chronometers, 2 plane tables with their fittings, 2 aneroids with 3" dials, 2 thermometers, 1 Zeiss binocular telescope (prismatic), 2 field glasses, 1 whole plate camera with lenses of varying focus, and the necessary materials for developing the negatives and taking rough prints—also drawing instruments, rulers, papers, etc.

Unfortunately, early in October, an unseasonable cyclone which visited the eastern and central parts of India, giving large amounts of rain, flooded the country between Segowlie and Batwair, breaching the road in several places and making it very difficult to traverse. Though I left Segowlie early on 5th October it was not till the 9th after many hardships and long marches that I arrived at Batwair, though in ordinary times the march can be done in one day. Owing to the cloudy weather it was not until the 13th October that any view of the snows was obtainable, and then for only about half an hour at sunrise when a few of the peaks to the north were visible. Again on the following day at

the same time they showed up but not very clearly. However I was able to identify on the two days peaks No. XXII—XXX and XXXIII—XXXV, and to make rough hand sketches of them so as to fix their appearance in my memory. Those peaks lying to the north and north-west did not alter much in appearance as I advanced into Nepal and were easily recognizable when seen from the hills round Katmandu. The delay at Batwaia re-acted on the work throughout as it was necessary that I should leave Nepal before the departure of the Resident about 15th November. Leaving Batwaia on the 14th October I reached Katmandu on the 21st, and after a halt of one day there to collect coolies and to discuss the best places to visit with the Resident I proceeded to Kaulia on the morning of 23rd. To understand the positions of the various places in the Nepal valley mentioned later on it is necessary here to make a short digression to describe the valley. The Nepal valley is roughly elliptical in shape, about 20 miles in length by 12 in width, with its longer diameter lying approximately in a east-west direction. Katmandu can be considered to lie at the western focus of the ellipse. The valley is surrounded by a chain of hills and for all practical purposes they can be considered as one range rising at places to peaks 7,000—8,000 feet high with low passes in between. Taking these peaks in order:—to the west lies Mount Nagarjun; to the north-west the Kukani range; to the north Sheopuri; north-east Manichur; east Mahadeo Pokra and south-east Phul Chowk (the highest of all the peaks surrounding the valley). The southern peaks do not come into this question and are not referred to here. The Kukani range consists of two peaks, the higher one Tokah lying to the east, and joining on to Sheopuri while the lower one to the west is called Kaulia. The lower slopes of Kaulia lie rather behind Nagarjun, and this hill cuts off the view from Kaulia of the western part of Katmandu. Kukani—the village from which the range takes its name and where a bungalow belonging to the Resident is situated—lies on a small elevation on the eastern slopes of the col connecting Kaulia and Tokah. This bungalow was built in 1869 or 1870 and replaced one situated almost on the summit of Kaulia, which was built during the time Mr. Hodgson was Resident—probably about 1824—and which was destroyed after the new bungalow at Kukani was built. The foundations of the walls of the old bungalow at Kaulia can still be traced, and it is most probably this bungalow which is mentioned by Hermann Schlagintweit as being close to his point of observation at Kaulia. With the view to occupying a position as near as possible to Schlagintweit's station I decided on observing from the highest point of the Kaulia hill, though this did not give the best view of the snows—Sheopuri being undoubtedly a better site. I had no difficulty with the aid of the sketches made at Batwaia in identifying peaks XXII, XXIV—XXVIII, XXX and the more western ones XXXIII—XXXVI with the aid of my projected plane-table. I took latitude and azimuth observations on 3 nights. For the latitude on each night 8 to 12 observations were taken both to Polaris and to a south star at transit and for the azimuth 4 observations on each of 2 different zeros were made each night to Polaris and to ζ Ursae Minoris when they were near their eastern and western elongations respectively. Time was obtained each night by observing stars to the east and west close to the prime vertical. The results of the observations are given in the appendix. In the early morning and evening, spread over 3 days, 4 measures were made on each of 4 zeros of the angles between the peaks XXII, XXIV, XXV, XXVII, XXVIII, XXX and the azimuthal referring mark; vertical angular measurements also were made to these peaks on the same days. These peaks were selected to interpolate

my position from as I had not the slightest doubt of their identification and their summits offered the best points for intersection.

On the completion of the observations the astronomical latitude and the azimuth of the referring mark were computed, and by applying the angle between the referring mark and the various peaks the azimuth of the peaks themselves obtained.

Then by taking from the plane-table the distances between the point of observation and the peaks, and using the astronomical latitude and azimuth, an approximate ΔA^* for each peak was computed, and thus the approximate azimuth of Kaulia (the point of observation) from each peak obtained.

As the distances between and the azimuths of each peak from the others had been already computed an approximate value of the angle subtended at any peak between Kaulia and any other peak could be obtained.

The 6 selected peaks were then divided into 2 groups—XXII, XXV, XXVIII and XXIV, XXVII, XXX, and from each group 3 sets of 2 triangles were formed to give a double value for each of the sides of the triangles—then using in successive triangles the approximate value of the angles subtended at each peak by Kaulia and the other peaks of the group, and the observed value of the angles at Kaulia between the peaks, values for the common sides were obtained. Considering the change in log-sine to be proportionate to the change in the angle, the approximate angles at the peak were corrected, so that the value of the common side obtained from each triangle should be the same. The computation was then made a second time, but the corrected angles were used in the places of the approximate ones and a second approximation was obtained and the angles again corrected. A double value of each angle was thus obtained (one obtained directly by the computation and the second by subtracting the sum of the other 2 angles of the triangle obtained in the duplicate triangle from 180°). The mean of these 2 angles was accepted as correct. The Spherical Excess of each triangle was then computed and applied to the angles of the triangle, and the 3 triangles of each group computed with these corrected angles, double values for each side being obtained; the mean being accepted as correct. With these values and the mean azimuth of Kaulia at each peak (obtained by applying the spherical angles (obtained from the computations) at any peak between Kaulia and the other 2 peaks to the azimuth of each of these peaks), the latitude and longitude of Kaulia was computed. Six values were obtained, each group of 3 being absolutely independent of the other, and the mean was accepted as correct. The close accord of the values (*vide* Appendix) prove that no mistake had been made in the identification of the 6 peaks employed. Using the measured vertical angles and the computed distances of the peaks, and taking the co-efficient of refraction as 0.75† the height of Kaulia was obtained, the mean of the 6 values being considered correct. With the computed co-ordinates of Kaulia and the co-ordinates of peaks XV, XVIII, XIX, XX, XXI (peaks XVI, XVII were undoubtedly not visible), the true azimuth of each was worked out. The theodolite was then set at the required azimuth and vertical angles taken to the peak to which the theodolite pointed. By these means peaks XV, XVIII, XX, and XXI were identified. Peak XIX was not visible. Subsequently further peaks were identified, for particulars *vide* Appendix I. While these

* If A is azimuth of peak B from peak A, and B is azimuth of peak A from peak B. Then $\Delta A = (B - 180^\circ + A)$.

† At midday the peaks were always obscured by clouds and therefore the vertical angles could not be measured at the time of minimum refraction, hence a somewhat large co-efficient was employed in the computations.

computations were being done, vertical and horizontal angles were measured on both faces with the theodolite to every snow peak visible, prominent or the reverse, and to most of their depressions and changes of slopes and on one face to all the peaks, knolls, depressions, changes of slopes, etc., of the intermediate ranges. Photographs had also been taken at various hours of the day, some before sunrise and some just at, or after sunset, and some during the middle of the day. The positions of all the peaks, etc., obtained by the theodolite over 500 in number were then plotted on a prepared sheet of drawing paper. The cylindrical projection was used and a scale of $2^{\circ}=1$ inch employed, and by means of the plotted positions of the principal peaks, etc., and of the photographs, a panorama of all the snows visible was drawn. This was then studied on the spot and, with the aid of the large telescope, the outline examined, and where necessary, re-drawn. Enlarged panoramas of the Gaurisankar group and peak XXIV were also made on the scale of $1^{\circ}=2$ inches.

The work at Kaulia was finished on 5th November and the hill left that day. I then proceeded to Mahadeo Pokra from which point, I was informed by the Resident, the best view of the snows was obtainable, and similar observations to those taken at Kaulia were made and reduced. The only difference being that the observations were made on 2 days in place of 3, and that peak XXVI was used in place of XXII. The groups were arranged thus:—XXIV, XXVI, XXX, XXV, XXVII, XXVIII. This formed an entirely different grouping to that employed at Kaulia and was done as an additional proof of the correct identification, as, Kaulia being visible from Mahadeo Pokra, the observed azimuth of it could be compared with the one computed from the accepted positions of the 2 points.

From the value obtained for the place of observation, at Mahadeo Pokra, the following peaks were identified, XV, XVII, XVIII, XIX, XX, XXI, XXIII, etc. (*vide* Appendix 2).

The points of observation at Kaulia and Mahadeo Pokra were both marked with piles of stones and rock 6 ft. in diameter and 6 ft. high.

A panorama on a scale of $2^{\circ}=1$ inch was also made at Mahadeo Pokra of all the snow peaks visible and one on the scale of $1^{\circ}=2$ inches of the peaks near XV.

His Excellency Maharaja Chandra Shamsher very kindly wrote on a photo taken from Mahadeo Pokra, from which the view to the east is very nearly the same as that from Katmandu, (after having pointed out the hill to me from the window of his palace), which peak was known to the inhabitants of the valley as Gaurisankar. From this it appears that the name Sankar is given to that identified as peak XX and Gauri or Parbati to a lower peak not fixed by the Survey of India. His Excellency particularly told me the name was applied to these 2 peaks and not to the range. Peak XV (Everest) is invisible from Katmandu, or at least I was unable to identify it from any position in the valley at which I erected the telescope, and I tried at 3 or 4 different places. Nor from Chandragirhi or Seishagarhi, the 2 passes crossed on the way from Katmandu to Segowli, could I identify the peak even with the aid of a very good pair of field glasses, and at the former I should add that the place where I expected to see the peak (Chandragirhi-Katmandu, Mahadeo Pokra are all approximately on the same bearing) was hidden by a small cloud when I crossed the pass on my return journey.

As regards the naming of the various peaks, I could discover nothing. The name Gaurisankar appears to be one given (by the nobles at Katmandu only)

to the 2 highest peaks of the group which is the only conspicuous one seen from the city (the one marked as Gaurisankar on Schlagintweit's panorama is peak XX), and I very much doubt if they could recognize it if seen from a slightly different point of view. At least the officer His Excellency Maharaja Chandra Shamsher sent up to Kaulia to point out this peak to me failed to recognize it, and said it was not visible from there; and even after I had pointed out the peak to him he said it was not Gaurisankar but a peak something like it. Every lower class native of the valley I asked did not know the peak by that or any other name, nor did they appear to give names to any of the snows at all. At Kaulia and at Mahadeo Pokra I had several, about ten in all, hill men brought to me who were supposed to know the names of the hills, and every one, without exception, gave different names to the same peaks, and none called the peak known in the valley as Gaurisankar by that name. Very nearly every other peak visible was pointed out as Gaurisankar when asked, but with the exception of 2 men, both at Kaulia, none gave the name Gaurisankar to any peak until they were asked which was Gaurisankar. My method of questioning was to lay a straight stick (I found they could use that better than the plane-table sight ruler) on the plane-table, and tell them to point it in succession to the hills whose names they knew. At first I took down the names they gave, but as each gave a different one, I did not think any reliance could be put in them, and discontinued doing so. The 2 men mentioned above gave the name Gaurisankar, one to peak XXIV and the other to peak XXVIII. Peak XXIV is undoubtedly the one reproduced in the March Journal of the R. G. S. of 1903 from Dr. Boeck's work and identified by Mr. Freshfield as peak XVIII. The peak appearing over the northern shoulder, which he fancies is peak XV, is most probably one of the minor peaks fixed by the Survey of India and known as S 33 (43 miles from Kaulia and 2 miles beyond peak XXIV, height 23,360 feet), but its identification is not perfect. It disappears behind peak XXIV, when seen from Machdeo Pokra. A comparison between the telephotograph in the Journal and the enlarged panorama made by me, or my photographs, shows conclusively that they are views of one and the same point; possibly, the man who pointed out this peak to me as Gaurisankar was the same man who pointed it out to Dr. Boeck. Though from the parade ground at Katmandu, Gaurisankar (peak XX) is undoubtedly the most prominent peak visible, and from Mahadeo Pokra (about 800 ft. below the summit on the same range is Nagarkot, where the Maharaja has some bungalows which he visits during the hot months), it is an imposing mass but by no means the most striking from Kaulia, seen as it is across a mass of intervening hills, it is rather an insignificant looking peak, and peaks XXII, XXIV, the group containing XXVI and XXVII, and XXVIII are by far more striking and imposing. Everest, as can be seen from the photos both from Kaulia and Mahadeo Pokra, is the least imposing of all and, standing as it does quite apart from, and a long way behind the main range, to call it a peak of the Gaurisankar group is absurd, and there appears to be not the slightest grounds for giving it that name. From no peak on the hills surrounding the Nepal Valley would any native select Everest as being the highest in the world, or even as any thing like as high as the big masses visible, and it is hopeless to expect to obtain a name for this peak from the inhabitants of the valley when they are content to allow so many masses, which are far more conspicuous, to remain nameless.

Appendix No. 1.

CO-ORDINATES OF SNOW PEAKS USED IN FIXING KAULIA h.s.

Name of Peak.	Latitude.			Longitude.			Height in feet.
	°	'	"	°	'	"	
Peak XXII	28	7	40'97	85	54	43'01	21,840
" XXIV	28	10	25'06	85	49	18'48	22,880
" XXV	28	15	21'52	85	33	35'92	23,750
" XXVII	28	20	43'29	85	7	24'46	23,300
" XXVIII	28	26	2'99	84	41	0'89	25,800
" XXX	28	33	0'29	84	36	10'25	26,660

MEAN VALUES OF ANGLES MEASURED AT KAULIA, h.s. BETWEEN THE SNOW PEAKS.

Name of Peak.	Horizontal Angle.			Vertical Angle.		
	°	'	"	°	'	"
R. M.	0	0	0	—	—	—
Peak XXII	32	39	7'7	E	3	20 43
" XXIV	40	10	38'2	E	3	53 46
" XXV	64	3	11'9	E	4	58 16
" XXVII	108	5	58'0	E	4	26 39
" XXVIII	133	51	6'0	E	3	17 14
" XXX	132	33	27'8	E	2	51 46

RESULTS OF OBSERVATIONS FOR LATITUDE AND AZIMUTH.

Date 1903.	LATITUDE.		AZIMUTH OF REFERRING MARK.			
	Star.	Latitude N.	Polaris.	ζ Ursae Minoris.	Mean of Day.	
Oct. 24th	Polaris	27 48 29'6	93 26 48'0	93 26 36'4	} 93 26 43'43	
	α Gruis	21'3	52'0	37'3		
" 26th	Polaris	25'3	45'6	44'2	} 45'77	
	γ Gruis	23'8	52'0	41'3		
" 27th	Polaris	26'9	37'1	49'3	} 41'75	
	α Piscis Aust.	27'6	34'1	46'5		
	Means	27° 48' 25'8"	93° 26' 44'8"	93° 26' 42'5"	93° 26' 43'65"	

Azimuth of R. M. from h. s. = 273° 26' 43'7".

MEAN COMPUTED DISTANCES AND AZIMUTHS.

Object.	DISTANCE.		Azimuth.
	Log feet.	Miles.	
To Kaulia h. s. from Peak XXII	5'3678987	44'184	61 4 22
" " XXIV	5'3381499	41'259	53 31 38
" " XXV	5'2638645	34'772	29 30 28
" " XXVII	5'2984811	37'657	345 16 47
" " XXVIII	5'4708605	56'005	319 18 0
" " XXX	5'5372321	65'253	320 34 41

RESULTING CO-ORDINATES FOR KAULIA h. s.

Computed from.		Latitude.			Longitude.			Height in feet.
		°	'	"	°	'	"	
Peak	XXII	27	48	58.31	85	16	48.78	7,088
"	XXIV			58.87			47.34	7,069
"	XXV			58.31			48.75	7,085
"	XXVII			58.79			47.16	7,033
"	XXVIII			58.39			48.50	7,026
"	XXX			58.82			46.89	7,005
Mean.	. . . . .	27°	48'	58.6"	85°	16'	47.9"	7,051

Observed Latitude = 27° 48' 25.8"
 Computed " = 27° 48' 58.6"
 ∴ O-C = -32.8

RESULTS OF IDENTIFICATION OF SNOW PEAKS.

Name of Peak.	Latitude.	Longitude.	AZIMUTH.				HEIGHT.	
			Computed.		Observed.		Computed.	Observed.
			°	'	"	°	'	"
Peak	XV	27 59 16.22	86 58 7.09	263 4 51	263 4 14	29,002	28,764	
"	XVIII	27 52 59.52	86 31 58.62	266 23 49	266 23 10	21,980	21,870	
"	XX	27 57 51.97	86 22 43.27	261 6 44	261 6 18	23,440	23,386	
"	XXI	27 57 28.83	86 9 3.85	259 26 8	259 25 52	19,550	19,501	
"	XXIII	28 21 6.74	85 49 21.76	221 49 7	221 49 24	26,290	26,266	
"	XXXIII	28 29 23.77	84 13 57.42	126 13 2	126 12 15	22,920	22,845	
"	XXXIV	28 32 4.99	84 9 52.78	126 16 48	126 16 51	26,040	25,993	
"	XXXV	28 32 11.32	84 7 32.13	125 25 22	125 26 0	24,600	24,665	
"	XXXVII	28 29 40.71	83 59 22.12	120 58 40	120 59 20	22,940	22,940	
"	XXXVIII	28 29 53.64	83 59 20.56	121 6 10	121 6 41	22,960	22,911	
"	XXXIX	28 35 44.31	83 51 46.52	122 10 12	122 10 33	26,492	26,413	
"	XL	28 31 5.21	83 50 55.72	119 17 52	119 17 52	23,607	23,539	
"	XLVII	28 40 26.10	83 19 7.02	116 44 41	116 44 55	23,539	23,474	
"	S 12	28 15 51.0	85 14 10.3	175 3 15	175 5 13	19,130	19,101	
"	Bi 7	28 22 45.3	85 6 0.9	164 14 12	164 13 35	23,310	23,180	
"	B 484	28 6 14.6	85 56 35.7	243 48 5	243 46 7	19,740	19,893	
"	S 31	28 10 10.0	85 43 17.7	227 52 40	227 54 12	...	...
"	T 8 or S 30	28 14 59.1	85 47 32.0	226 14 11	226 14 44	...	...
"	Ma	28 23 27.3	84 49 55.2	145 27 5	145 27 21	...	...
"	S 7	28 19 55.1	85 12 7.2	172 22 49	172 22 5	...	...
"	S 8	28 19 53.8	85 12 22.0	172 46 22	172 45 56	...	...

Note on Captain Wood's identifications.

The "computed" azimuth is the true azimuth of each peak from the point of observation (Kaulia or Mahadeo Pokra), obtained by computation, using the co-ordinates of the point of observation as determined by Captain Wood and those of each peak as previously fixed by triangulation. The "observed" azimuth is that measured by Captain Wood with the theodolite from his point of observation to the peak. Similarly the "computed" height is that of each peak as previously determined by triangulation at the time the peaks were fixed, the "observed" height being that determined by Captain Wood by theodolite from his point of observations. On the agreement of these computed and observed azimuths and heights the identification of the peaks rests. Absolute agreement is not to be expected, as the observations were taken to the more or less indefinite summits of the peaks which renders it very probable that in many cases Captain Wood did not observe exactly the same spot on each peak which was taken when the peak was originally fixed. In the case of heights no close agreement is to be expected on account of the uncertainty of the effects of refraction at these high altitudes. The agreement of the figures in Captain Wood's tables are quite sufficiently close to enable us to accept the identifications with perfect confidence.

ST. G. C. GORE.

Appendix No. 2.

CO-ORDINATES OF SNOW PEAKS USED IN FIXING MAHADEO POKRA h. s.

Peak	Name of Peak.	Latitude.			Longitude.			Height in feet
		°	'	"	°	'	"	
XXIV	28	10	25'06	85	49	18'48	22,880
XXV	28	15	21'52	85	33	35'92	23,750
XXVI	28	23	29'89	85	10	12'63	24,300
XXVII	28	20	43'29	85	7	24'46	23,300
XXVIII	28	26	2'99	84	41	0'89	25,800
XXX	28	33	0'29	84	36	10'25	26,660

MEAN VALUES OF ANGLES MEASURED AT MAHADEO POKRA h. s. BETWEEN THE SNOW PEAKS.

Peak	Name of Peak.	Horizontal Angle.			Vertical Angle.		
		°	'	"	°	'	"
R. M.	0	0	0	—	—	—
XXIV	63	59	33'1	E.	4	25 9
XXV	89	42	38'9	E.	4	23 28
XXVI	115	50	8'3	E.	3	8 2
XXVII	120	10	12'8	E.	3	1 34
XXVIII	135	39	29'6	E.	2	16 30
XXX	133	59	19'1	E.	2	2 30

RESULTS OF OBSERVATIONS FOR LATITUDE AND AZIMUTH.

Date 1903.	LATITUDE.		AZIMUTH OF REFERRING MARK.			
	Star.	Latitude N.	Polaris.	ζ Ursae Minoris.	Mean of day.	
		° ' "	° ' "	° ' "	° ' "	° ' "
Nov. 7th	Polaris	27 40 54'3	89 25 64'1	89 25 46'8	} 89 25 56'55	
	β Gruis	... 52'1	... 55'2	... 60'1		
8th	Polaris	... 57'2	... 56'6	... 52'2	} ... 56'60	
	α Gruis	... 52'1	... 60'3	... 57'3		
	Mean	27° 40' 53'9"	89° 25' 59'1"	89° 25' 54'1"	89° 25' 56'6"	

Azimuth of R. M. from h. s. = 269° 25' 56'6"

MEAN COMPUTED DISTANCES AND AZIMUTHS.

Object		DISTANCE.		Azimuth.
		Log feet.	Miles.	
To Mahadeo Pokra h. s. from Peak	XXIV .	5'2876466	36'729	25 33 42
"	XXV .	5'3117720	38'828	359 43 0
"	XXVI .	5'4535631	53'818	333 24 58
"	XXVII .	5'4419195	52'394	329 3 22
"	XXVIII .	5'5926676	74'137	313 22 3
"	XXX .	5'6428863	83'224	314 59 39

RESULTING CO-ORDINATES FOR MAHADEO POKRA h. s.

Computed from.		Latitude.			Longitude.			Height in feet.
		°	'	"	°	'	"	
Peak	XXIV	27	41	31'80	85	33	47'56	7,109
"	XXV . . . . .	...	...	31'54	...	...	47'20	7,133
"	XXVI . . . . .	...	...	31'58	...	...	47'25	7,070
"	XXVII . . . . .	...	...	31'29	...	...	46'92	7,091
"	XXVIII . . . . .	...	...	31'08	...	...	46'50	7,072
"	XXX . . . . .	...	...	31'53	...	...	47'06	...
Mean		27°	41'	31'5"	85°	33'	47'1"	7,095

NOTE.—Height of Mahadeo Pokra h. s. computed from Peak XXX is 7,009 feet. As this is so discordant it has been rejected.

$$\begin{aligned} \text{Observed Latitude} &= 27^{\circ} 40' 53.9'' \\ \text{Computed} &= 27^{\circ} 41' 31.5'' \\ \therefore \text{O.-C.} &= -37.6'' \end{aligned}$$

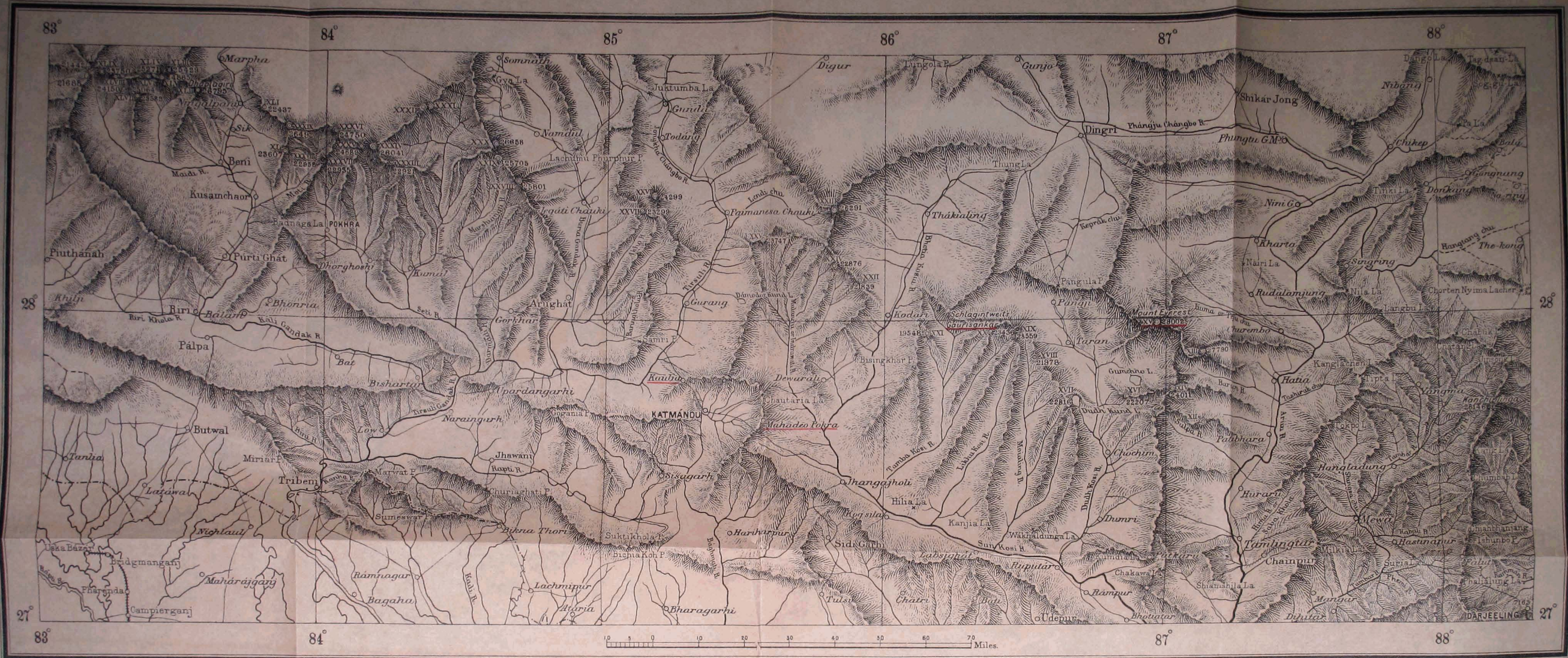
RESULTS OF IDENTIFICATION OF SNOW PEAKS.

Name of Peak.	Latitude.	Longitude.	AZIMUTH.				HEIGHT.		
			Computed.		Observed.		Computed.	Observed.	
	°	'	"	°	'	"	°	'	"
Peak XV	27 59 16'22	86 38 7'09	256 21 14	256 20 40	29,002	28,029			
" XVIII	27 45 15'54	86 36 58'10	265 57 22	265 56 43	22,820	22,763			
" XVIII	27 52 50'52	86 31 58'62	257 26 30	257 25 26	21,980	21,933			
" XIX	27 58 17'82	86 28 33'08	250 46 42	250 45 41	23,560	23,538			
" XX	27 57 51'07	86 22 43'27	249 13 17	249 13 54	23,440	23,392			
" XXI	27 57 28'83	86 9 8'85	242 57 16	242 56 38	19,550	19,477			
" XXIII	28 21 6'74	85 49 81'76	199 11 18	199 10 50	26,290	26,339			
" XXXIII	28 29 23'77	84 13 57'42	124 22 53	124 21 53	22,920	23,021			
" XXXIV	28 32 4'99	84 9 52'78	124 31 51	124 31 46	26,040	...			
" XXXV	28 32 11'32	84 7 32'33	123 51 56	123 52 56	24,690	24,835			
" XXXVII	28 29 40'21	83 59 22'12	120 16 30	120 17 25	22,940	23,057			
" XXXVIII	28 29 53'64	83 59 20'56	120 22 46	120 22 26	22,960	23,084			
" XXXIX	28 35 44'31	83 51 46'52	121 20 52	121 21 2	26,492	26,563			
" XL	28 31 5'21	83 50 55'72	118 55 31	118 55 33	23,607	23,776			
" XLVII	28 40 26'10	83 19 7'02	116 48 23	116 47 54	23,539	23,766			
" B 439	27 57 11'2	86 25 18'2	250 55 17	250 54 45	...	...	
" B 522	28 16 20'3	85 35 48'9	182 57 19	182 57 12	22,010	22,148			
" B 495	28 10 36'4	85 31 41'7	208 36 21	208 36 0	21,760	21,755			
" B 484	28 6 14'6	85 36 35'7	219 15 22	219 14 55	19,740	19,901			
" S 31	28 10 10'0	85 43 17'7	196 23 35	196 23 11	...	...	
" Kaulia h. s.	27 48 58'6	85 16 47'9	116 18 54	116 18 28	7,051	7,024			

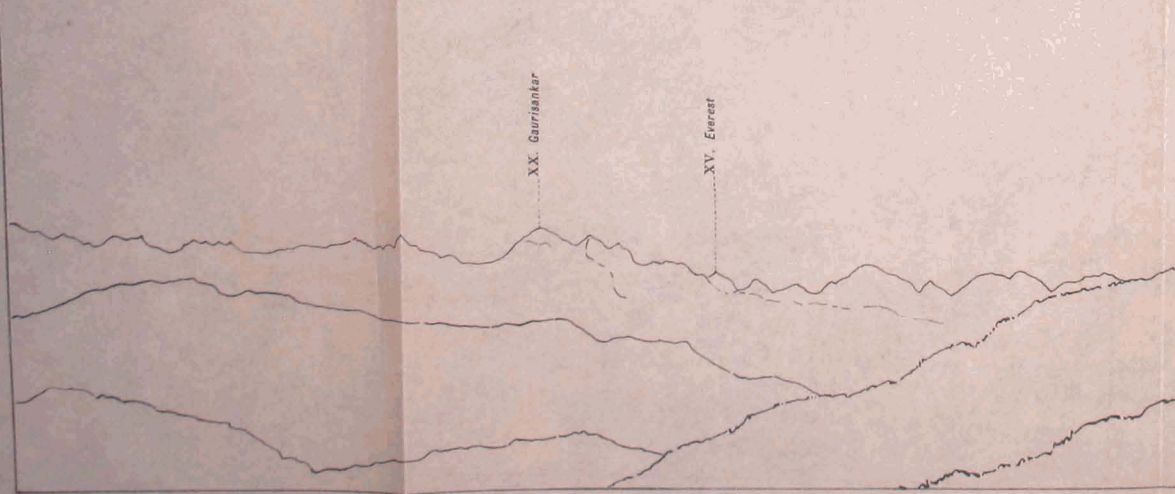
H. WOOD, CAPTAIN, R.E.

Sketch map of part of Nepal

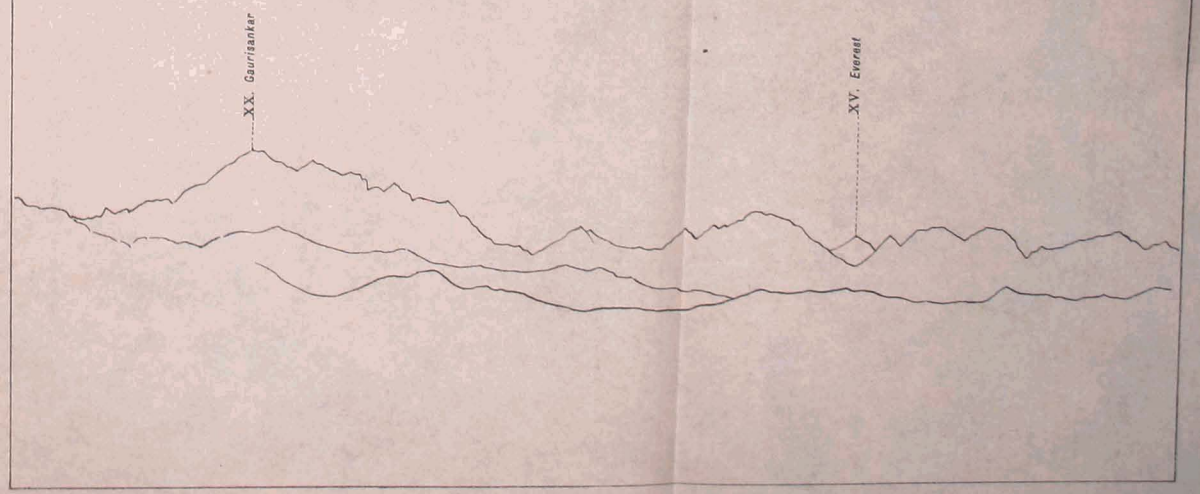
Scale 1 Inch = 16 Miles.



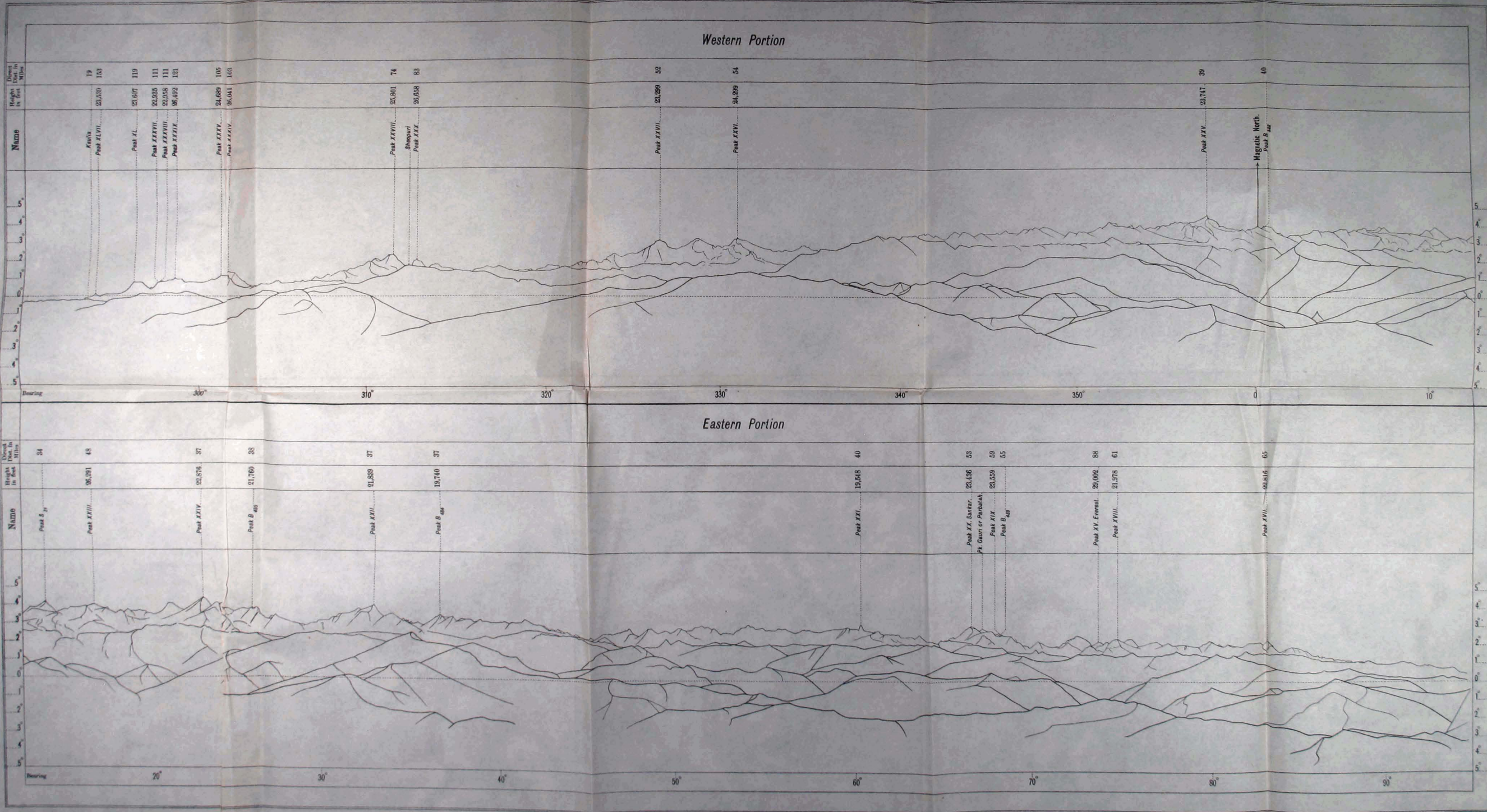
Profile of the Gaurisankar Group taken from Kaulia.



Profile of the Gaurisankar Group taken from Mahadeo Pokra.



PANORAMIC PROFILE OF THE HILL RANGES OF NEPAL
 from Mahadeo Pokra Hill near Katmandu, Lat: 27°-42' Long: 85°-34' Height 7,095 feet.



Published under the direction of Lieut. Colonel F. B. Longe, B.E., Surveyor General of India, March 1904.

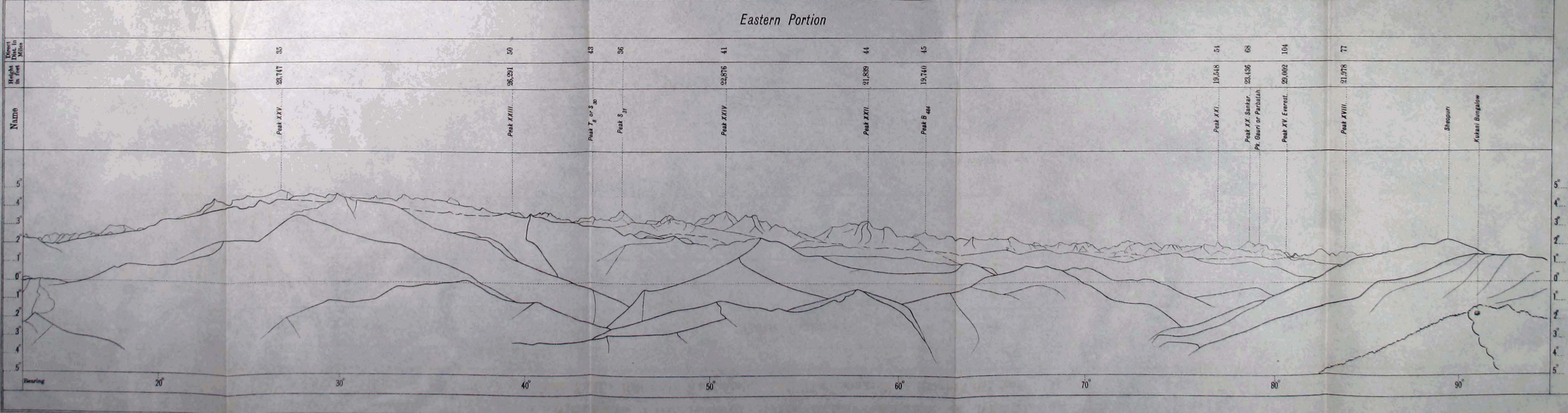
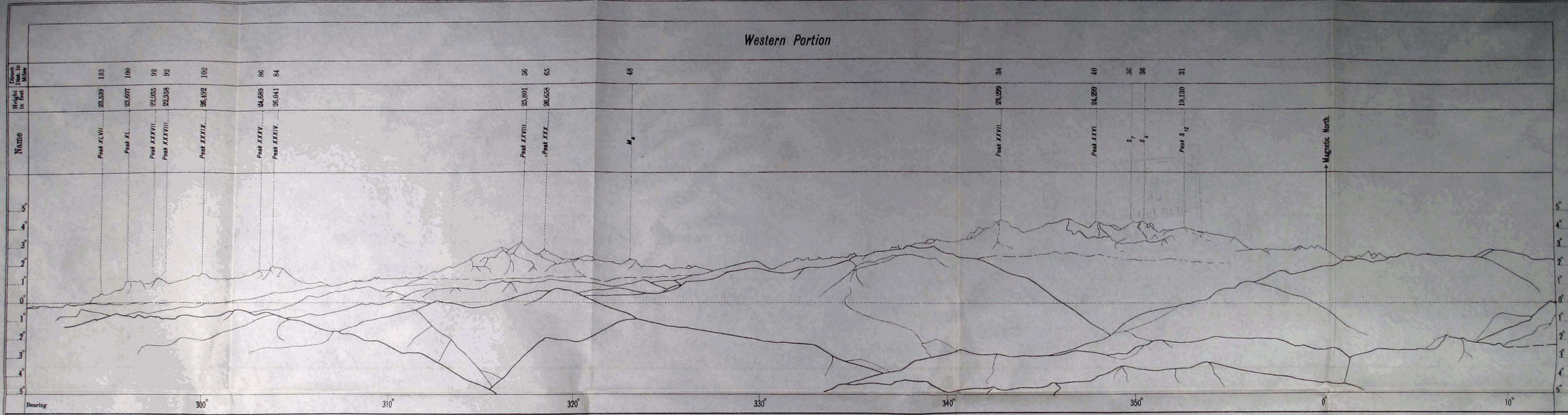
Heliostereographed at the Survey of India Office, Calcutta.

Price One Rupee.

Reg. No. 679-S. 04.

PANORAMIC PROFILE OF THE HILL RANGES OF NEPAL

from Kaulia Hill near Katmandu, Lat: 27°49' Long: 85°17' Height 7,051 feet.



Published under the direction of Lieut. Colonel F. B. Longo, R.E., Surveyor General of India, March 1904.

Rephotographed at the Survey of India Office, Calcutta.

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