The Alpine Notes of Leonardo da Vinci

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EXTRACT FROM THE ABOVE FIELD-BOOK, SHOWING THE TIME TAKEN BY BAGGAGE-CAMELS IN APRIL AND MAY, 1863, BETWEEN BERBER AND KOROSKO.

Dates.	On the March.	Time Taken. Hours.	Distances in Miles.	Stages or Camps.
1863. 27th April to 2nd May }		40 $\frac{1}{4}$	115	From Berber to Abu Hamed by route men- tioned on 24th, in eleven stages.
3rd and 4th	{ Halt at Abu Hamed.			
5th	12.30 to 5.30 P.M.	7	15	Desert.
5th and 6th	8.30 P.M. to 2.30 A.M.	6	18	Abu-Inteh-Shurrut.
6th	6.30 to 10.30 A.M.	4	12	Furrudh.
6th	2.30 to $\frac{1}{4}$ after sunset	3 $\frac{1}{2}$	10	Tabun.
6th and 7th	11.30 P.M. to 8.30 A.M.	9	23	Ipscha.
7th	1.30 to 6.30 P.M.	5	11	Desert.
7th to 8th	9.30 P.M. to 3.30 A.M.	6	17	Desert.
8th	6 to 9 A.M.	3	8	Wells of Morad.
9th	11 A.M. to 6.30 P.M.	7 $\frac{1}{2}$	18	Wady Marisha.
9th and 10th	8.30 P.M. to 2.45 A.M.	6 $\frac{1}{4}$	18	Desert.
10th	6 to 9.15 A.M.	3 $\frac{1}{4}$	9	Abu Rakib.
10th	3 to 7 P.M.	4	10	Desert.
10th and 11th	9 P.M. to 3.30 A.M.	6 $\frac{1}{2}$	16	Desert, "El Bab."
11th	6 to 9.30 A.M.	3 $\frac{1}{2}$	9	Ugab Ghowab.
11th	2.30 to 7 P.M.	4 $\frac{1}{2}$	11	Desert.
11th and 12th	8.30 P.M. to 3 A.M.	6 $\frac{1}{2}$	15 $\frac{1}{2}$	
12th	6 to 10 A.M.	4	10	Korosko on Nile.
	Total ..	89 $\frac{1}{2}$	230 $\frac{1}{2}$	Abu Hamed to Korosko.

The Alpine Notes of Leonardo da Vinci.

By DOUGLAS W. FRESHFIELD, A.C., Secretary R.G.S.

LEONARDO DA VINCI'S miscellaneous writings have lately been collected, translated into English, and annotated by the well-known German art-critic Dr. Paul Richter, and published in a sumptuous form with many facsimile illustrations from the great artist's sketches by Messrs. Sampson Low and Co.

This is not the place for any general criticism or appreciation of a labour of love, which, as a whole, has been carried out with great industry and intelligence. I cannot even attempt to summarise the many curious speculations in physical geography and geology which show Leonardo's extraordinary instinct as a scientific observer, or his minute and curious notes on mountain landscape, on the play of light and shadow among the folds of the hills, on the picturesque effects of storms and landslips. The combination of man of science and artist revealed in these pages is unique, and they will repay the most careful study.

My present object is a far humbler one; to take up the Alpine and a few of the Italian topographical memoranda of Leonardo da Vinci, and
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to show where in my opinion Dr. Richter has failed, or gone wrong, in his attempt to elucidate them.

Leonardo writing on aerial perspective, asserts that the blueness of the atmosphere arises from the sun's rays striking on the small particles of moisture floating in the lower regions and rendering them luminous against the immense darkness of space (for "black and white make blue," Note 304), and the less the extent of atmosphere between the eye and the outer void, the deeper the blueness (300*).

"And this," he says, "may be seen as I saw it, by any one going up Monboso, a peak (*giogo*) of the Alps which divide France from Italy. The base of this mountain (*qual montagna*) gives birth to the four rivers which flow in four different directions through the whole of Europe. And no mountain has its base at so great a height as this which lifts itself almost above the clouds, and snow seldom falls there, but only hail in the summer, when the clouds are highest. And this hail lies unmelted there, so that if it were not for the absorption (*retà*) of the rising and falling clouds, which does not happen twice in an age (*età*), an enormous mass of ice would be piled up there by the hail (*di li gradi di grandine*), and in the middle of July I found it very considerable (*grossissimo*), and the sun as it fell on the mountain (*montagnia*) was far brighter here than in the plains below, because a smaller extent of atmosphere lay between the summit of the mountain (*monte*) and the sun." [Dr. Richter's translation.]

This passage is repeated in 1060, where Dr. Richter in a footnote judiciously proposes to read *estate* for *età*. But this emendation will not by itself give meaning to the sentence: *retà* can hardly mean absorption, and if it did, what sense do we get? But if we also read *rarity* for *retà*, the passage becomes intelligible: "the rarity of clouds falling, or mounting, to it, which they do not do twice in a summer." This follows naturally on what has gone before on the mountain rising "almost above the clouds." Leonardo is only repeating the idea as old as Homer ('Odyssey,' Bk. vi. line 24) of eternal sunshine resting on the mountain's head. He may have got it directly from Pomponius Mela (ii. 2, § 120), who speaks of the top of Athos as reaching the supreme æther; or from Sir John Maundevile, whose book was, we know from another memorandum, in Leonardo's library.†

In a further footnote Dr. Richter states that he has "vainly inquired "of every available authority for a solution of the mystery of what "mountain is intended by Mon Boso. It seems most obvious to refer it

* The figures refer to the numbering of the notes in Dr. Richter's volumes.

† Here is Maundevile's story about Mount Athos: "And above at the top of the hill is the air so clear that men may find no wind there. And, therefore, may no beast live there, so is the air dry. And men say in these countries that philosophers sometime went upon these hills, and held to their nose a sponge, moistened with water for to have air, for the air above was so dry. . . . And therefore it seemeth well that these hills pass the clouds and join to the pure air."

“to Monte Rosa. *Rosa* is derived from the Keltic *ros* which survives in Breton and in Gaelic, meaning in its first sense, a mountain spur, but “which also, like *horn*, means a very high peak; thus Monte Rosa would mean literally the High Peak.”

To most of the statements in this note I must, I fear, take exception. The Royal Geographical Society and the Alpine Club may be outside the scope of art-critics, but on matters of mountain nomenclature they may I think be somewhat of authorities—at any rate contain some authorities! But let this pass. The “mystery” seems to me by no means hopelessly profound, when a little thought has been given to it.

Leonardo gives us an indication of where to look in telling us that the spot in question is a “*giogo*” (*jugum*, rather ridge or pass than “peak”) of the Alps that divide France and Italy. This disposes at once of Monte Rosa, which lay on the confines of the Bishopric of Sion.

What pass or peak is there in the Western Alps with a similar name? I recall the “Monveso” of local signboards, with the Passo di Monveso (or Col de la Traversette) on its northern flank. Dr. Richter’s key to Leonardo’s handwriting shows *b* and *v* to be very much alike in it. Note 1057 tells us that Leonardo was acquainted with the district, for he mentions the quarries of Monbracco near Paesana, at the foot of Monte Viso. The pass in question was renowned in Leonardo’s days from the boring of the first Alpine tunnel, a work likely to attract the great engineer’s curiosity; * and pass and peak were constantly confused by later writers than Leonardo. Thus for instance the Marquis de St. Simon takes the Carthaginians over the pass and Hannibal up the peak of Monte Viso, whence he makes him see Rome and shout down encouragement to his soldiers, some three “crow’s miles” off!

But how do we account for the four rivers: since only one, the Po, rises in Monte Viso? *Montagnia* properly means “a chain,” and in this passage refers to “Alpi,” and not to the particular peak or *monte*. Leonardo is only repeating a stock commonplace of medieval writers (see also Note 1063).

I do not of course suppose that Leonardo went up Monte Viso; he went *up to it*. This nice distinction was quite beyond the medieval mind. Indeed the modern does not always master it. I was myself soundly rated once by some German newspapers and the *Pall Mall Gazette* for claiming the first ascent of Kazbek to the neglect of a traveller who had previously ascended the mountain—up to the lower limit of eternal snow.

I tremble to enter on the treacherous ground of etymology; and I have no doubt that a dozen professors in their studies have settled that Monte Rosa comes “from the Keltic *ros*.” But if I am to give up my simple belief that Monte Rosa has been—since Simler in A.D. 1567 spoke of it as “Mons Rosæ”—the Rose of Dawn or Twilight to the shepherds of a thousand hills; if poetry is to yield to science, I shall prefer a science

* See ‘Alpine Journal,’ x. p. 411.

that consults maps, that walks in the daylight and on the spot, to one that broods in distant studies by the light of its own inner consciousness—and I have got, I think, a reasonable derivation. I have caught another snowpeak on the other side of Val d'Aosta in the act of transforming its name from the grub of commonplace to the butterfly of poetry. In Mr. King's 'Italian Valleys' (1858), we read of "a glacier which our guide called 'Ruise de Bonch'—*ruise* being the patois for glacier." *Ruise* has this meaning on both sides of Val d'Aosta. Now the peak in question (at the head of Val Champorcher) when it gets into the hands of the Italian Staff comes out as Monte Rosa dei Banchi. It bears this title both in the official report 'Le Alpi che cingono l'Italia' of 1845, and in the recent Government maps. In other maps it appears as Roisebanque. In Canton Valais there is a Rosablanche. The two mountains are alike in presenting broad, and comparatively pure, snow-fields.

In dealing with local names, students generally pay far too little attention to the variations introduced either by the rise and fall of tides of language, as in some recesses of the Valais, where German has overlapped Italian, or by the mistakes of military map-makers, who translate words of another tongue, as in Austro-Italian Tyrol, or of a patois, as in Val d'Aosta, into some shape which seems to them more reasonable.

In a recent volume of the 'Alpine Journal' (x. 280) I ventured, solely upon the internal evidence of his work, to surmise that Leonardo had studied round the lakelets of the Brianza and on the shores of Lago di Lecco. The notes published by Dr. Richter fully bear out this guess. The "Montagne di Mandello" (that is the Grigna behind Varenna on Lago di Lecco, elsewhere mentioned by name by Leonardo) are said to be "the biggest bare rocks" he knows. Val Sassina is rich in the "cose fantastiche" he delights in. The crest figured in the Windsor drawing (see vol. ii. p. 238) may be a recollection of the Resegone, or Saw Mountain of Lecco. Note the hillocks in the foreground in which Leonardo seizes the typical structure of ancient moraines such as abound round the mouths of the great Italian valleys.

The sketch made from some Madonna della Neve on August 2, 1473, reproduced by M. Ravaisson-Mollien in the *Gazette des Beaux Arts* and there assigned to the Maria zum Schnee of the Rigiberg, is clearly an Italian landscape and, I think, almost certainly a Tuscan landscape. The grounds on which it was assigned by the French critic to the Rigi will not bear even a moment's examination.

The "Val di Chiavenna" and Val Tellina, however, Leonardo knew about. In the former, he says, there are "deer, bouquetin, chamois, and terrible bears," but you must climb on hands and feet to catch them. "From mile to mile there are good inns," and up at the head of the valley—that is, on the ascent of the Splügen—"waterfalls of 700 feet in height, which it is a pleasure to see, and good living at four soldi the reckoning." Val Tellina makes much strong wine, and here too, living

is cheap. "At Bormio are the Baths." To these baths, fifty years later, Conrad Gesner, the Zurich naturalist, went to recover his health.

I cannot find any village of "San Gervagio" (1059) a quarter of a mile from Geneva, on the Arve. But there is an old church of St. Gervais near the railway station, which in the fifteenth century was outside the town.

The great landslip in Savoy, mentioned by Leonardo (1058), may be the fall of the Apremont, in the Isère valley, A.D. 1298.* But the description seems to refer to some more recent calamity. Another landslip mentioned (1092) Dr. Richter has rightly identified with the catastrophe in Val Blegno, on the way from Bellinzona to the Lukmanier Pass, which took place in A.D. 1512, when a great lake was formed and only the church steeples rose above its surface.

I may add a few corrections in detail:—

Note 1031. "Bellinzona" should clearly be Bellano, or Bellagio.

1030. "Rovine" should be translated landslips, not "ruins."†

933. If Leonardo wrote "Eurio lacho" (Lake of Uri), why translate it Lake of Lucerne? As to the lakes in the Apennines, "placed among the tops of high mountains," mentioned in the same note, there is some difficulty. "Pietra Pana," which Dr. Richter vaguely describes as a mountain near Florence, is of course Dante's famous "Pietra Pana," the modern Pania‡ della Croce, near Lucca, the southern and most conspicuous peak of the Alpi Apuane,§ and a glorious view-point. "Lago delle Sibylle a Norcia" must be looked for in the Monti della Sibylla, near Norcia, on the frontiers of the Abruzzi. Dr. Richter's guess of the Lago di Vico is too far-fetched, and that lake is not "placed on the top of a high mountain." But neither on the Pania nor the Monti Sibyllini is there now any basin of water worthy the name of lake. The largest can be no more than a pond.

Dr. Richter leaves us with another "lake question" on our hands. He says nothing to elucidate the Lake of "Fiesole" mentioned (987) in company with Trasimeno. The name may be faultily transcribed, and the lake referred to the now drained sheet of water which lay west of Arezzo, and is figured conspicuously in one of Leonardo's maps, and spoken of in his following note (988) as "adjacent to the Lake of Perugia."

* See 'Annuaire du Club Alpin Français,' 1883.

† Compare Dante's 'Inferno,' bk. xii. 4.

‡ Pania is a generic term here for high peaks, connected doubtless with Peña, Pen and Ben.

§ Many English readers, and even some of our critics of Italian literature, fail to notice that in Tuscany, both in common and literary usage, *Alpe* is a frequent term for the tops of the Apennines. In Italy, Switzerland, and Dauphiné, the term is applied to the part of the range which supplies common pasturage, in one case to the summits, in the others to the shoulders of the mountains. It is only given to snowy peaks by poets, tourists, and such-like inaccurate people.

In Note 933, and again in 1095, we find a strange liberty taken with Leonardo's geography. In both passages Leonardo makes a correct statement about the river Triton, that it flows through three lakes in Africa—Munace, Pallas, and Triton. "Trigon il quale passa per la Minore Africa" reads the original. "Tigri passa par l'Asia Minore" the editor twice amends with superfluous zeal, making out of sound sense nonsense. It is odd he should have done so just at the time the indefatigable M. de Lesseps has called attention by his inland-sea scheme to these African waters.

Of the series of illustrated letters—or drafts of a romance in the form of letters—to which Dr. Richter directs particular attention, and on which he founds an important theory, which has excited no little interest, I have spoken briefly in the remarks made before the Society at the conclusion of Sir Charles Wilson's paper, which will be found on a preceding page (p. 323).

GEOGRAPHICAL NOTES.

Our Anniversary Meeting.—The Fifty-third Anniversary of the Society was celebrated on Monday last, the 26th of May, the afternoon meeting and the dinner in the evening both passing off with the usual *éclat*. A full report will be given in our next issue; for the present it may suffice to note that the Royal Medals, Annual Grants, Prizes, &c., were awarded as follows:—The Founder's Medal to Mr. A. R. Colquhoun, for his journey from Canton to the Irawadi at Bhamo, in 1882, during which he executed surveys of the whole route, from Wu-chau (150 miles west of Canton) to Talifu, 1300 miles of which had never before been surveyed.—The Patron's Medal to Dr. Julius von Haast, in consideration of his systematic explorations of the Southern Island of New Zealand, in the course of which he ascertained the altitudes of 130 stations, and collected material for a map on the scale of four miles to an inch, the MS. of which he presented to the Royal Geographical Society. Also for his numerous contributions to our knowledge of New Zealand, made in the Society's publications and elsewhere.—In the absence of the Medallists, Sir Arthur Phayre attended to receive the medal for Mr. Colquhoun, and Sir Francis Dillon Bell, Agent-General for New Zealand, performed the like office for Dr. Julius von Haast.—The Murchison Grant for 1884 was awarded to Mr. W. W. McNair, for his adventurous journey into Kafiristan; the Back Bequest to Emil Boss, the Swiss guide, who for pure love of exploration and Alpine adventure, accompanied the Rev. W. S. Green to the New Zealand Alps and Mr. Graham to the Himalaya; the Cuthbert Peek Grant to Mr. McEwan, now on his way to Lake Nyassa to take up the work of