Some Account of Two Visits to the Mountains in Essex County, New York, in the Years 1836 and 1837: With a Sketch of the Northern Source of the Hudson.

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Some account of two visits to the Mountains in Essex County, New York, in the years 1836 *and* 1837*; with a Sketch of the Northern Sources of the Hudson;* by W. C. REDFIELD.

NOTWITHSTANDING the increase of population, and the rapid extension of our settlements since the peace of 1783, there is still found, in the northern part of the state of New York, an uninhabited region of considerable extent, which presents all the rugged characters and picturesque features of a primeval wilderness. This region constitutes the most elevated portion of the great triangular district which is situated between the line of the St. Lawrence, the Mohawk, and Lake Champlain. That portion of it which claims our notice in the following sketches, lies mainly within the county of Essex, and the contiguous parts of Franklin, and comprises the head waters of the principal rivers in the northern division of the state.

In the summer of 1836, the writer had occasion to visit the new settlement at McIntyre, in Essex County, in company with the proprietors of that settlement, and other gentlemen who had been invited to join the expedition. Our party consisted of the Hon. Archibald McIntyre of Albany, the late Judge McMartin of Broadalbin, Montgomery county, and David Henderson, Esq. of Jersey City, proprietors, together with David C. Colden, Esq. of Jersey City, and Mr. James Hall, assistant state geologist for the northern district.

First Journey to Essex.

We left Saratoga on the 10th of August, and after halting a day at Lake George, reached Ticonderoga on the 12th; where at 1 P. M. we embarked on board one of the Lake Champlain steamboats, and were landed soon after 3 P. M., at Port Henry, two miles N. W. from the old fortress of Crown Point. The remainder of the day, and part of the 14th, were spent in exploring the vicinity, and examining the interesting sections which are here exhibited of the junction of the primary rocks with the transition series, near the western borders of the lake, and we noticed with peculiar interest the effect which appears to have been produced by the former upon the transition limestone at the line of contact; the latter being

here converted into white masses, remarkably crystaline in their structure, and interspersed with scales of plumbago.

On the evening of the 13th we were entertained with a brilliant exhibition of the Aurora Borealis, which, between 7 and 8 P. M., shot upward in rapid and luminous coruscations from the northern half of the horizon, the whole converging to a point apparently fifteen degrees south of the zenith. This appearance was succeeded by luminous vertical columns or pencils of the color, alternately, of a pale red and a peculiar blue, which were exhibited in great beauty.

On the 13th we left Port Henry on horseback, and, after a ride of six miles, left the cultivated country on the borders of the lake and entered the forest. The road on which we traveled is much used for the transportation of sawed pine lumber from the interior, there being in the large township of Moriah, as we were informed, more than sixty saw-mills. Four hours of rough traveling brought us to Weatherhead's, at West Moriah, upon the Schroon river, or East Branch of the Hudson, thirteen miles from Lake Champlain. An old state road from Warren County to Plattsburgh passes through this valley, along which is established the line of interior settlements, in this part of the county. Our further rout to the westward was upon a newer and more imperfect road, which has been opened from this place through the unsettled country in the direction of the Black River, in Lewis County. We ascended by this road the woody defiles of the Schroon mountain-ridge, which, as seen from Weatherhead's, exhibits, in its lofty and apparently continuous elevations, little indications of a practicable rout. Having passed a previously unseen gorge of this chain, we continued our way under a heavy rain, till we reached the dwelling of Israel Johnson, who has established himself at the outlet of a beautiful mountain lake, called Clear Pond, nine miles from Schroon river. This is the only dwelling house upon the new road.

To travel in view of the log fences and fallen trees of a thickly wooded country, affords a favorable opportunity for observing the specific spiral direction which is often found in the woody fibre of the stems of forest trees, of various species. In a large proportion of the cases which vary from a perpendicular arrangement, averaging not less than seven out of eight, the spiral turn of the fibres of the stem in ascending from the ground, *is towards the left*, or in popular language, against the sun. It is believed that no cause has

been assigned for this by writers on vegetable physiology. The direction, in these cases, coincides with the direction of rotation in our great storms, as well as with that of the tornado which visited New Brunswick in 1835 and other whirlwinds of like character, the traces of which have been carefully examined.

We resumed our journey on the morning of the 15th, and at 9 A. M. reached the Boreas branch of the Hudson, eight miles from Johnson's. Soon after 11 A. M., we arrived at the Main Northern Branch of the Hudson, a little below its junction with the outlet of Lake Sanford. Another quarter of an hour brought us to the landing at the outlet of the lake, nine miles from the Boreas. Taking leave of the "road," we here entered a difficult path which leads up the western side of the lake, and a further progress of six miles brought us to the Iron Works and settlement at McIntyre, where a hospitable reception awaited us.

Settlement at McIntyre.—Mineral Character of the Country.

At this settlement, and in its immediate vicinity, are found beds of iron ore of great, if not unexampled extent, and of the best quality. These deposits have been noticed in the first report of the state geologists, and have since received from Professor Emmons a more extended examination. Lake Sanford is a beautiful sheet of water, of elongated and irregular form, and about five miles in extent. The Iron Works are situated on the north fork of the Hudson, a little below the point where it issues from Lake Henderson, and over a mile above its entrance into Lake Sanford. The fall of the stream between the two lakes is about one hundred feet. This settlement is situated in the upper plain of the Hudson, and at the foot of the principal mountain nucleus, which rises between its sources and those of the Au Sable.

A remarkable feature of this mountain district, is the uniformity of the mineral character of its rocks, which consist chiefly of the dark colored and sometimes opalescent feldspar, known as *labradorite*, or Labrador feldspar. Towards the exterior limits of the formation, this material is accompanied with considerable portions of green augite or pyroxene, but in the more central portions of the formation, this feldspar often constitutes almost the only ingredient of the rocks. It seems not a little repugnant to our notions of the primary rocks, to find a region of this extent which is apparently destitute of mica, quartz, and hornblende, and also, of any traces of

stratified gneiss. This labradoritic formation commences at the valley of the Schroon river, and extends westerly into the counties of Hamilton and Franklin, to a limit which is at present unknown. Its northern limit appears to be at the plains which lie between the upper waters of the Au Sable and Lake Placid, and its southern boundary which extends as far as Schroon, has not been well defined. It appears probable that it comprises an area of six or eight hundred square miles, including most of the principal mountain masses in this part of the state. So far as is known to the writer, no foreign rocks or boulders of any size or description are found in this region, if we are not to except as such, the fragments of the dykes, chiefly of trap, by which this rock is frequently intersected.

The surface of the rock where it has been long exposed to the weather, has commonly a whitened appearance, owing to its external decomposition. Blocks and boulders of this rock are scattered over the country in a southerly and westerly direction, as far as the southern boundary of the state, as appears from the Report of Professor Emmons* and other observations, and they are often lodged on the northern declivity of hills, high above the general level of the country. The most eastern of these transported boulders known to the writer, is one of about one hundred tons weight, at Cocksackie, on the Hudson, one hundred and thirty miles south from the labradoritic mountains. This block is found on a hill, three hundred feet above the river, and one hundred and fifty feet above the general level of the adjacent country.

First Expedition to the Mountains.—Encampment.

It has been noticed that the north branch of the Hudson, after its exit from Lake Sanford, joins the main branch of the river, about seven miles below the settlement at McIntyre. Having prepared for an exploration up the latter stream, we left McIntyre on the 17th of July, with three assistants, and the necessary equipage for encampment. Leaving the north branch, we proceeded through the woods in a southeasterly direction, passing two small lakes, till, at the distance of three or four miles from the settlement, we reached the southern point of one of the mountains, and assuming here a more easterly course, we came, about noon, to the main branch of the river. Traces of wolves and

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* Geological Report, p. 110.

deer were frequently seen, and we discovered also the recent tracks of a moose deer or the American elk. We had also noticed on the 16th, at the inlet of Lake Sanford, the fresh and yet undried footsteps of a panther, which apparently had just crossed the inlet.

The beaches of the river, on which, by means of frequent fording, we now traveled, are composed of rolled masses of the labradoritic rock, and small opalescent specimens not unfrequently showed their beautiful colors in the bed of the stream. As we approached the entrance of the mountains, the ascent of the stream sensibly increased, and about 4 P. M., preparations were commenced for our encampment. A comfortable hut, of poles and spruce bark, was soon constructed by the exertions of our dexterous woodsmen. The camp-fire being placed on the open side, the party sleep with their heads in the opposite direction, under the lower part of the roof.

On the morning of the 18th we resumed the ascent of the stream by its bed, in full view of two mountains, from between which the stream emerges. About two miles from our camp, we entered the more precipitous part of the gorge through which the river descends. Our advance here became more difficult and somewhat dangerous. After ascending falls and rapids, seemingly innumerable, we came about noon to an imposing cascade, closely pent between two steep mountains, and falling about eighty feet into a deep chasm, the walls of which are as precipitous as those of Niagara, and more secluded. With difficulty we emerged from this gulf, and continued our upward course over obstacles similar to the preceding, till half past 2 P. M., when we reached the head of this terrific ravine. From a ledge of rock which here crosses and obstructs the stream, the river continues, on a level which may be called the Upper Still Water, for more than a mile in a westerly and northwesterly direction, but continues pent in the bottom of a deep mountain gorge or valley, with scarce any visible current. To this point the river had been explored by the proprietors on a former occasion.

Lake Colden.—Mountain Peaks.

Emerging from this valley, we found the river to have a meandering course of another mile, in a northwesterly and northerly direction, with a moderate current, until it forks into two unequal branches. Leaving the main branch which here descends from the east, we followed the northern tributary to the distance of two hundred yards

from the forks, where it proved to be the outlet of a beautiful lake, of about a mile in extent. This lake, to which our party afterwards gave the name of Lake Colden, is situated between two mountain peaks which rise in lofty grandeur on either hand. We made our second camp at the outlet of this lake, and in full view of its interesting scenery.

Previous to reaching the outlet, we had noticed on the margin of the river, fresh tracks of the wolf and also of the deer, both apparently made at the fullest speed, and on turning a point we came upon the warm and mangled remains of a fine deer, which had fallen a sacrifice to the wolves; the latter having been driven from their savage repast by our unwelcome approach. There appeared to have been two of the aggressive party, one of which, by lying in wait, had probably intercepted the deer in his course to the lake, and they had nearly devoured their victim in apparently a short space of time.

The great ascent which we had made from our first encampment, and the apparent altitude of the mountain peaks before us, together with the naked condition of their summits, rendered it obvious that the elevation of this mountain group had been greatly underrated; and we were led to regret our want of means for a barometrical measurement. The height of our present encampment above Lake Sanford was estimated to be from ten to twelve hundred feet, and the height of Lake Colden, above tide, at from one thousand eight hundred, to two thousand feet, the elevation of Lake Sanford being assumed from such information as we could obtain, to be about eight hundred feet. The elevation of the peaks on either side of Lake Colden, were estimated from two thousand, to two thousand five hundred feet above the lake. These conclusions were entered in our notes, and are since proved to have been tolerably correct, except as they were founded on the supposed elevation of Lake Sanford, which had been very much underrated.

August 19th. The rain had fallen heavily during the night, and the weather was still such as to preclude the advance of the party. But the ardor of individuals was hardly to be restrained by the storm; and during the forenoon, Mr. Henderson, with John Cheney, our huntsman, made the circuit of Lake Colden, having in their course beaten up the quarters of a family of panthers, to the great discomfiture of Cheney's valorous dog. At noon, the weather being more favorable, Messrs. McIntyre, McMartin and

Hall, went up the border of the lake to examine the valley which extends beyond it in a N. N. E. and N. E. direction, while the writer, with Mr. Henderson, resumed the ascent of the main stream of the Hudson. Notwithstanding the wet, and the swollen state of the stream, we succeeded in ascending more than two miles in a southeasterly and southerly direction, over a constant succession of falls and rapids of an interesting character. In one instance, the river has assumed the bed of a displaced trap dyke, by which the rock has been intersected, thus forming a chasm or sluice of great depth, with perpendicular walls, into which the river is precipitated in a cascade of fifty feet.

Before returning to camp, the writer ascended a neighboring ridge for the purpose of obtaining a view of the remarkably elevated valley from which the Hudson here issues. From this point a mountain peak was discovered, which obviously exceeds in elevation the peaks which had hitherto engaged our attention. Having taken the compass bearing of this peak, further progress was relinquished, in hope of resuming the exploration of this unknown region on the morrow.

Avalanche Lake.—Return to the Settlement.

On returning to our camp, we met the portion of our party which had penetrated the valley north of the lake, and who had there discovered another lake of nearly equal extent, which discharges by an outlet that falls into Lake Colden. On the two sides of this lake, the mountains rise so precipitously as to preclude any passage through the gorge, except by water. The scenery was described as very imposing, and some fine specimens of the opalescent rock were brought from this locality. Immense slides or avalanches had been precipitated into this lake from the steep face of the mountain, which induced the party to bestow upon it the name of Avalanche Lake.

Another night was passed at this camp, and the morning of the 20th opened with thick mists and rain, by which our progress was further delayed. It was at last determined, in view of the bad state of the weather and our short stock of provisions, to abandon any further exploration at this time, and to return to the settlement. Retracing our steps nearly to the head of the Still Water, we then took a westerly course through a level and swampy tract, which soon brought us to the head waters of a stream which descends nearly in a direct course to the outlet of Lake Henderson. The distance

from our camp at Lake Colden to McIntyre, by this rout, probably does not exceed six miles. Continuing our course, we reached the settlement without serious accident, but with an increased relish for the comforts of civilization.

This part of the state was surveyed into large tracts, or townships, by the colonial government, as early as 1772, and lines and corners of that date, as marked upon the trees of the forest, are now distinctly legible. But the topography of the mountains and streams in the upper country, appears not to have been properly noted, if at all examined, and in our best maps, has either been omitted or represented erroneously. Traces have been discovered near McIntyre of a rout, which the natives sometimes pursued through this mountain region, by way of Lakes Sanford and Henderson, and thence to the Preston Ponds and the head waters of the Racket. But these savages had no inducement to make the laborious ascent of sterile mountain peaks, which they held in superstitious dread, or to explore the hidden sources of the rivers which they send forth. Even the more hardy huntsman of later times, who, when trapping for northern furs, has marked his path into the recesses of these elevated forests, has left no traces of his axe higher than the borders of Lake Colden, where some few marks of this description may be perceived. All here seems abandoned to solitude; and even the streams and lakes of this upper region are destitute of the trout, which are found so abundant below the cataracts of the mountains.

Whiteface Mountain.—The Notch.

At a later period of the year, Professor Emmons, in the execution of his geological survey, and accompanied by Mr. Hall, his assistant, ascended the Whiteface Mountain, a solitary peak of different formation, which rises in the north part of the county. From this point, Prof. E. distinctly recognized as the highest of the group, the peak on which the writer's attention had been fastened at the termination of our ascent of the Hudson, and which he describes as situated about sixteen miles south of Whiteface. Prof. E. then proceeded southward through the remarkable Notch, or pass, which is described in his Report, and which is situated about five miles north from McIntyre. The Wallface mountain, which forms the west side of the pass, was ascended by him on this occasion, and the height of its perpendicular part was ascertained to be about twelve hundred feet, as may be seen by reference to the geological Report

which was published in February last, by order of the legislature. It appears by the barometrical observations made by Prof. Emmons, that the elevation of the table land which constitutes the base of these mountains at McIntyre, is much greater than we had been led to suppose.

Second Journey to Essex County.

The interest excited in our party by the short exploration which has been described, was not likely to fail till its objects were more fully accomplished. Another visit to this alpine region was accordingly made in the summer of the present year. Our party on this occasion consisted of Messrs. McIntyre, Henderson and Hall, (the latter at this time geologist of the western district of the state,) together with Prof. Torrey, Prof. Emmons, Messrs. Ingham and Strong of New York, Miller of Princeton, and Emmons, Jr. of Williamstown.

We left Albany on the 28th of July, and took steamboat at Whitehall on the 29th. At the latter place an opportunity was afforded us to ascend the eminence known as Skeenes' mountain, which rises about five hundred feet above the lake. Passing the interesting ruins of Ticonderoga and the less imposing military works of Crown Point, we again landed at Port Henry and proceeded to the pleasant village of East Moriah, situated upon the high ground, three and a half miles west of the lake. This village is elevated near eight hundred feet above the lake, and commands a fine view of the western slope of Vermont, terminating with the extended and beautiful outline of the Green Mountains.

We left East Moriah on the 31st, and our first day's ride brought us to Johnson's at Clear Pond. The position of the High Peak of Essex was known to be but a few miles distant, and Johnson informed us that the snow remained on a peak which is visible from near his residence, till the 17th of July of the present year. We obtained a fine view of this peak the next morning, bearing from Johnson's, N. 20° West, by compass, a position which corresponded to the previous observations; the variation in this quarter being somewhere between 8° and 9° West.

Descending an abrupt declivity from Johnson's, we arrive at a large stream which issues from a small lake farther up the country, and receiving here the outlet of Clear Pond, discharges itself into the Schroon river. The upper portions of these streams and the

lakes from which they issue, as well as the upper course of the Boreas and its mountain lakes, are not found on our maps. From the stream last mentioned, the road ascends the Boreas ridge or mountain chain by a favorable pass, the summit of which is attained about four miles from Johnson's. Between the Boreas and the main branch of the Hudson, we encounter a subordinate extension of the mountain group which separates the sources of the two streams, through the passes of which ridge the road is carried by a circuitous and uneven route.

We reached the outlet of Lake Sanford about noon on the 1st of August, and found two small boats awaiting our arrival. Having embarked we were able fully to enjoy the beauty and grandeur of the lake and mountain scenery which is here presented, all such views being, as is well known, precluded by the foliage while traveling in the forests. The echoes which are obtained at a point on the upper portion of this lake, are very remarkable for their strength and distinctness. The trout are plentiful in this lake, as well as in lake Henderson and all the neighboring lakes and streams. We arrived at McIntyre about 4 P. M., and the resources of the settlement were placed in requisition by the hospitable proprietors, for our expedition to the source of the Hudson.

Barometrical Observations on the Rout.

The following table shows the observations made with the barometer at different points on our rout, and the elevation above tide water as deduced from these observations and others made on the same days at Albany, by Matthew Henry Webster, Esq. No detached thermometer was used, the general exposure of the attached thermometers to the open air being such as to indicate the temperature of the air, at both the upper and lower stations, with tolerable accuracy. In the observations with the mountain barometer a correction is here made for variation in the cistern, equal to one fiftieth of the depression which was found below the zero adjustment at thirty inches.

It is proper also to state, that the two mountain barometers made use of, continued in perfectly good order during our tour, and agreed well with each other in their zero adjustment, which is such as will give a mean annual height of full thirty inches at the sea level; but, like other barometers which have leather bottomed cisterns, are liable to be somewhat affected by damp and warm weather when

in the field, and it is possible that this hygrometric depression may have slightly affected some of the observations which here follow.

Date.	Place of observation.	Hour.	Upper station.—Barom. corrected 1-50 for variation of cistern.		Lower station.—60 feet above tide at Albany.		Corrected height in feet, above tide.
			Att. Th.	Barom.	Att. Th.	Barom.	
July 29,	Lake Champlain at White Hall, - - -	9 A. M.	72°	29.91	-	-	90
"	Summit of Skeenes' Mountain at Do.* -	8.40 "	71	29.39	-	-	588
"	Lake Champlain at Port Henry, - - -	5 P. M.	73	29.91			
"	East Moriah, Four Corners,† - - -	5.45 "	71	29.09	-	-	880
July 31,	Road summit, 9 miles from Lake Champlain,	10.45 A. M.	71	28.42	72°	29.94	1.546
"	West Moriah, at Weatherhead's, Schroon valley,	1.15 P. M.	75	28.86	75	"	1.117
"	Road summit, pass of Schroon Mountain,	4 "	69	28.57	73	29.93	1.375
"	Johnson's, at Clear Pond, - - - - -	5.50 "	67	27.93	72	"	2.012
Aug. 1,	Do. Do. Second observation,‡	6.20 A. M.	62	28 03	70	30.04	1.991
"	Road summit, ridge west of Johnson's, -	8 "	64	27.45	71	"	2.592
"	Boreas River bridge, - - - - -	9.45 "	69	28.01	73	30.02	2.026
"	Hudson River bridge, - - - - -	12.30 P. M.	78	28.19	79	29.95	1.810
"	Lake Sanford inlet, - - - - -	4 "	76	28.17	78	"	1.826
"	Iron Works at McIntyre, - - - -	4.20 "	76	28.11	77	"	1.889
"	Lake Henderson outlet, - - - -	4.40 "	75	28.06	76	"	1.936

Lake Champlain is about ninety feet above tide water.

It appears from the above that the two principal depressions in the section of country over which this road passes, west of the Schroon valley, is in one case two thousand and in the other eighteen hundred feet in elevation.

Second Expedition to the Mountains.

We left the settlement on the 3d of August, with five woodsmen as assistants, to take forward our provisions and other necessaries, and commenced our ascent to the higher region in a northeasterly direction, by the rout on which we returned last year. We reached our old camp at Lake Colden at 5 P. M. where we prepared our quarters for the night. The mountain peak which rises on the eastern side of this lake and separates it from the upper valley of the main stream of the Hudson, has received the name of Mount McMartin, in honor of one now deceased, who led the party of last year, and whose spirit of enterprise and persevering labors contributed to establishing the settlement at the great Ore Beds, as well as other improvements advantageous to this section of the state.

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* Four hundred and ninety eight feet above Lake Champlain.

† Seven hundred and ninety feet above do.

‡ Mean of the two setts of observations two thousand feet, nearly.

On the 4th we once more resumed the ascent of the main stream, proceeding first in an easterly direction, and then to the southeast and south, over falls and rapids, till we arrived at the head of the Great Dyke Falls. Calcedony was found by Prof. Emmons near the foot of these falls. Continuing our course on a more gradual rise, we soon entered upon unexplored ground, and about three miles from camp, arrived at the South Elbow, where the bed of the main stream changes to a northeasterly direction, at the point where it receives a tributary which enters from south-southwest. Following the former course, we had now fairly entered the High Valley which separates Mount McMartin from the High Peak on the southeast, but so deeply enveloped were we in the deep growth of forest, that no sight of the peaks could be obtained. About a mile from the South Elbow we found another tributary entering from south-southeast, apparently from a mountain ravine which borders the High Peak on the west. Some beautifully opalescent specimens of the Labradorite were found in the bed of this stream.

High Valley of the Hudson.

Another mile of our course brought us to a smaller tributary from the north, which from the alluvial character of the land near its entrance is called the High Meadow fork. This portion of our rout is in the center of this mountain valley, and has the extraordinary elevation of three thousand and seven hundred feet above tide. We continued the same general course for another mile, with our rout frequently crossed by small falls and cascades, when we emerged from the broader part of the valley and our course now became east-southeast and southeast, with a steeper ascent and higher and more frequent falls in the stream. The declivity of the mountain which incloses the valley on the north and that of the great peak, here approximate closely to each other, and the valley assumes more nearly the character of a ravine or pass between two mountains, with an increasing ascent, and maintains its course for two or three miles, to the summit of the pass. Having accomplished more than half the ascent of this pass we made our camp for the night, which threatened to be uncommonly cold and caused our axemen to place in requisition some venerable specimens of the white birch which surrounded our encampment.

Phenomena of Mountain Slides.

A portion of the deep and narrow valley in which we were now encamped, is occupied by a longitudinal ridge consisting of boulders and other *debris*, the materials, evidently, of a tremendous slide or avalanche, which at some unknown period has descended from the mountain; the momentum of the mass in its descent having accumulated and pushed forward the ridge, after the manner of the late slide at Troy, beyond the center of the valley or gorge into which it is discharged. It appears indeed that the local configuration of surface in these mountain valleys, except where the rock is in place, ought to be ascribed chiefly to such causes. It seems apparent, also, that the Hudson, at the termination of its descent from the High Valley, once discharged itself into Lake Colden, the latter extending southward at that period to the outlet of the Still Water, which has been noticed in our account of the former exploration. This portion of the ancient bed of the lake has not only been filled and the bed of the stream as well as the remaining surface of the lake, raised above the former level, but a portion of the finer *debris* brought down by the main stream, has flowed northwardly into the present lake and filled all its southern portions with a solid and extensive shoal, which is now fordable at a low stage of the water. The fall of heavy slides from the mountains appears also to have separated Avalanche Lake from Lake Colden, of which it once formed a part, and so vast is the deposit from these slides as to have raised the former lake about eighty feet above the surface of the latter. In cases where these slides have been extensive, and rapid in their descent, large hillocks or protuberances are formed in the valleys; and the denudation from above, together with the accumulation below, tends gradually to diminish the extent and frequency of their occurrence. But the slides still recur, and their pathway may often be perceived in the glitter of the naked rock, which is laid bare in their course from the summit of the mountain towards its base, and these traces constitute one of the most striking features in the mountain scenery of this region.

Main Source of the Hudson.—Fall of the Au Sable.

On the morning of the fifth we found that ice had formed in exposed situations. At an early hour we resumed our ascending course to the southeast, the stream rapidly diminishing and at length becom-

ing partially concealed under the grass-covered boulders. At 8.40 A. M. we arrived at the head of the stream on the summit of this elevated pass, which here forms a beautiful and open mountain meadow, with the ridges of the two adjacent mountains rising in an easy slope from its sides. From this little meadow, which lies within the present limits of the town of Keene, the main branch of the Hudson and a fork of the east branch of the Au Sable commence their descending course in opposite directions, for different and far distant points of the Atlantic ocean. The elevation of this spot proves by our observations to be more than four thousand seven hundred feet above tide water; being more than nine hundred feet above the highest point of the Catskill mountains, which have so long been considered the highest mountains in this state.

The descent of the Au Sable from this point is most remarkable. In its comparative course to Lake Champlain, which probably does not exceed forty miles, its fall is more than four thousand six hundred feet! This, according to our present knowledge, is more than twice the entire descent of the Mississippi proper, from its source to the ocean. Water-falls of the most striking and magnificent character are known to abound on the course of this stream.

High Peak of Essex.

Our ascent to the source of the Hudson had brought us to an elevated portion of the highest mountain peak, which was also a principal object of our exploration, and its ascent now promised to be of easy accomplishment by proceeding along its ridge in a W. S. W. direction. On emerging from the pass, however, we immediately found ourselves entangled in the zone of dwarfish pines and spruces, which with their numerous horizontal branches interwoven with each other, surround the mountain at this elevation. These gradually decreased in height, till we reached the open surface of the mountain, covered only with mosses and small alpine plants, and at 10 A. M. the summit of the High Peak of Essex was beneath our feet.

The aspect of the morning was truly splendid and delightful, and the air on the mountain-top was found to be cold and bracing. Around us lay scattered in irregular profusion, mountain masses of various magnitudes and elevations, like to a vast sea of broken and pointed billows. In the distance lay the great valley or plain of the St. Lawrence, the shining surface of Lake Champlain, and the extensive mountain range of Vermont. The nearer portions of the

scene were variegated with the white glare of recent mountain slides as seen on the sides of various peaks, and with the glistening of the beautiful lakes which are so common throughout this region. To complete the scene, from one of the nearest settlements a vast volume of smoke soon rose in majestic splendor, from a fire of sixty acres of forest clearing, which had been prepared for the "burning," and exhibiting in the vapor which it embodied, a gorgeous array of the prismatic colors, crowned with the dazzling beams of the midday sun.

The summit, as well as the mass of the mountain, was found to consist entirely of the labradoritic rock, which has been mentioned as constituting the rocks of this region, and a few small specimens of hypersthene were here procured. On some small deposits of water, ice was also found at noon, half an inch in thickness. The source of the Hudson, at the head of the High Pass, bears N. 70° E. from the summit of this mountain, distant one and a quarter miles, and the descent of the mountain is here more gradual than in any other direction. Before our departure we had the unexpected satisfaction to discover, through a depression in the Green Mountains, a range of distant mountains in nearly an east direction, and situated apparently beyond the valley of the Connecticut; but whether the range thus seen, be a portion of the White Mountains of New Hampshire or the mountains of Franconia, near the head of the Merrimack, does not fully appear. Our barometrical observations on this summit show an elevation of five thousand four hundred and sixty seven feet. This exceeds by about six hundred feet, the elevation of the Whiteface Mountain, as given by Prof. Emmons; and is more than sixteen hundred and fifty feet above the highest point of the Catskill Mountains.

Wear of River Boulders.

The descent to our camp was accomplished by a more direct and far steeper rout than that by which we had gained the summit, and our return to Lake Colden afforded us no new objects of examination. The boulders which form the bed of the stream in the upper Hudson, are often of great magnitude, but below the mountains, where we commenced our exploration last year, the average size does not much exceed that of the paving stones in our cities;—so great is the effect of the attrition to which these boulders are subject in their gradual progress down the stream. Search has been made by the writer, among the gravel from the bottom and shoals of the

Hudson near the head of tide-water, for the fragmentary remains of the labradoritic rock, but hitherto without success. We may hence infer that the whole amount of this rocky material, which, aided by the ice, and the powerful impulse of the annual freshets, finds its way down the Hudson, a descent of from two thousand to four thousand seven hundred feet, is reduced by the combined effects of air, water, frost, and attrition, to an impalpable state, and becomes imperceptibly deposited in the alluvium of the river, or continuing suspended, is transferred to the waters of the Atlantic.

Great Trap Dyke.

On the 7th of August we visited Avalanche Lake, and examined the great dyke of sienitic trap in Mount McMartin, which cuts through the entire mountain in the direction from west-northwest to east-southeast. This dyke is about eighty feet in width, and being in part broken from its bed by the action of water and ice, an open chasm is thus formed in the abrupt and almost perpendicular face of the mountain. The scene on entering this chasm is one of sublime grandeur, and its nearly vertical walls of rock, at some points actually overhang the intruder, and seem to threaten him with instant destruction. With care and exertion this dyke may be ascended, by means of the irregularities of surface which the trap rock presents, and Prof. Emmons by this means accomplished some twelve or fifteen hundred feet of the elevation. His exertions were rewarded by some fine specimens of hypersthene and of the opalescent labradorite, which were here obtained. The summit of Mount McMartin is somewhat lower than those of the two adjacent peaks, and is estimated at four thousand nine hundred and fifty feet above tide.

The distance from the outlet of Lake Colden to the opposite extremity of Avalanche Lake is estimated at two and a quarter miles. The stream which enters the latter at its northern extremity, from the appearance of its valley, is supposed to be three-fourths of a mile in length, and the fall of the outlet in its descent to Lake Colden is estimated, as we have seen, at eighty feet. The head waters of this fork of the Hudson are hence situated farther north than the more remote source of the Main Branch, which we explored on the 4th and 5th, or perhaps than any other of the numerous tributaries of the Hudson. The elevation of Avalanche Lake is between two thousand nine hundred and three thousand feet above tide, being undoubtedly the highest lake in the United States, east of the Rocky Mountains.

The mountain which rises on the west side of this lake and separates its valley from that of the Au Sable, is perhaps the largest of the group. Its ridge presents four successive peaks, of which the most northern save one, is the highest, and is situated immediately above the lake and opposite to Mount McMartin. It has received the name of Mount McIntyre, in honor of the late Controller of this state, to whose enterprise and munificence, this portion of the country is mainly indebted for the efficient measures which have been taken to promote its prosperity.

Ascent of Mount McIntyre.

On the morning of the 8th, we commenced the ascent of Mount McIntyre through a steep ravine, by which a small stream is discharged into Lake Colden. The entire ascent being comprised in little more than a mile of horizontal distance, is necessarily difficult, and on reaching the lower border of the belt of dwarf forest, we found the principal peak rising above us on our right, with its steep acclivity of naked rock extending to our feet. Wishing to shorten our rout, we here unwisely abandoned the remaining bed of the ravine, and sustaining ourselves by the slight inequalities of surface which have resulted from unequal decomposition, we succeeded in crossing the apparently smooth face of the rock by an oblique ascent to the right, and once more obtained footing in the woody cover of the mountain. But the continued steepness of the acclivity, and the seemingly impervious growth of low evergreens on this more sheltered side, where their horizontal and greatly elongated branches were most perplexingly intermingled, greatly retarded our progress. Having surmounted this region we put forward with alacrity, and at 1 P. M. reached the summit.

The view which was here presented to us differs not greatly in its general features from that obtained at the High Peak, and the weather, which now began to threaten us with a storm, was less favorable to its exhibition. A larger number of lakes were visible from this point, and among them the beautiful and extensive group at the sources of the Saranac, which are known by the settlers as the "Saranac Waters." The view of the Still Water of the Hudson, lying like a silver thread in the bottom of its deep and forest-green valley, was peculiarly interesting. The opposite front of Mount McMartin exhibited the face of the great dyke and its passage through the summit, near to its highest point, and nearly parallel

to the whitened path of a slide which had recently descended into Avalanche Lake. In a direction a little south of west, the great vertical precipice of the Wallface Mountain at the Notch, distinctly met our view. Deeply below us on the northwest and north, lay the valley of the west branch of the Au Sable, skirted in the distance by the wooded plains which extend in the direction of Lake Placid and the Whiteface Mountain.

Mount McIntyre is also intersected by dykes, which cross it at the lowest points of depression between its several peaks, and the more rapid erosion and displacement of these dykes has apparently produced the principal ravines in its sides. The highest of these peaks on which we now stood, is intersected by cracks and fissures in various directions, apparently caused by earthquakes. Large blocks of the same labradoritic rock as the mass of the mountain, lay scattered in various positions about the summit, which afforded nearly the same growth of mosses and alpine plants as the higher peak visited on the 5th. Our barometric observations show a height of near five thousand two hundred feet, and this summit is probably the second in this region, in point of elevation. There are three other peaks lying in a westerly direction, and also three others lying eastward of the main source of the Hudson, which nearly approach to, if they do not exceed, five thousand feet in elevation, making of this class, including Mount McMartin, Whiteface, and the two peaks visited, ten in all. Besides these mountains there are not less than a dozen or twenty others that appear to equal or exceed the highest elevation of the Catskill group.

Visit to the Great Notch.—Return to the Settlement.

The descent of the mountain is very abrupt on all sides, and our party took the rout of a steep ravine which leads into the valley of the Au Sable, making our camp at night-fall near the foot of the mountain. The night was stormy, and the morning of the 9th opened upon us with a continued fall of rain, in which we resumed our march for the Notch, intending to return to the settlement by this rout. After following the bed of the ravine till it joined the Au Sable, we ascended the latter stream, and before noon arrived at this extraordinary pass, which has been described by the state geologists, and which excites the admiration of every beholder. Vast blocks and fragments have in past ages fallen from the great precipice of the Wallface Mountain on the one hand, and from the south-

west extension of Mount McIntyre on the other, into the bottom of this natural gulf. Some of these blocks are set on end, of a height of more than seventy feet, in the moss-covered tops and crevices of which, large trees have taken root, and now shoot their lofty stems high above the toppling foundation. The north branch of the Hudson, which passes through Lakes Henderson and Sanford, takes its rise in this pass, about five miles from McIntyre, and the elevation of its source, as would appear from the observations taken by Prof. Emmons last year, is not far from three thousand feet above tide.

Following the course of the valley, under a most copious fall of rain, we descended to Lake Henderson, which is a fine sheet of water of two or three miles in length, with the high mountain of Santanoni rising from its borders, on the west and southwest. It is not many months since our woodsman, Cheney, with no other means of offense than his axe and pistol, followed and killed a large panther, on the western borders of this lake. Pursuing our course along the eastern margin of this lake, we arrived at the settlement about 3 P. M., having been absent on our forest excursion seven days.

Elevation of the Mountain Region.

The following table of observations, as also the preceding one, is calculated according to the formula given by Bowditch in his Navigator, except for the two principal mountain peaks, which are calculated by the formula and tables of M. Oltmanns, as found in the appendix to the Geological Manual of De la Beche, Philadelphia edition. For the points near Lake Champlain, the height is deduced from the observations made at the lake shore, instead of those at Albany, adding ninety feet for the height of Lake Champlain above tide. The barometrical observations made at Syracuse, N. Y., at the same periods, by V. W. Smith, Esq., (with a well adjusted barometer, which has been compared with those of the writer,) would give to the High Peak an elevation of five thousand five hundred and ten feet. The observations at Albany have been taken for the lower station, because the latter place is less distant, and more nearly on the same meridian. Perhaps the mean of the two results may with propriety be adopted. In most of the other cases, the results deduced from the observations at Albany agree very nearly with the results obtained from the observations made at Syracuse.

Date.	Place of observation.	Hour.	Upper station.—Barom. corrected 1-50 for variation of cistern.		Lower station.—60 feet above tide at Albany.		Corrected height in feet, above tide.
			Att. Th.	Barom.	Att. Th.	Barom.	
Aug. 3,	Lake Colden outlet,	5.30 P. M.	70°	27.00	74°	29.78	2.851
Aug. 4,	Hudson River, above the Dyke Falls,	12.30 "	74	26.72	72	29.97	3.356
"	Do. in High Valley, E. of Mt. McMartin,	2.30 P. M	72	26.37	73	29.96	3.711
"	Do. one third mile above camp, in the High Pass,	4.30. "	52	25.66	72	29.97	4.344
Aug. 5,	Head of the High Pass, source of the main branch of the Hudson and a fork of the east branch of the Au Sable,	8.40 A. M.	47	25.43	64	30.20	4.747
"	Summit of the High Peak of Essex, one and a quarter miles S. 70° W. from the source of the Hudson,	1 P. M.	47	24.83	69	30.24	5.467
Aug. 8,	Summit of Mount McIntyre, between Lake Colden and West branch of the Au Sable,	1.30 P. M.	60	25.11	73	30.14	5.183
Aug. 12,	Summit of Bald Peak,* on the west shore of Lake Champlain, six miles N. 29° W. from Crown Point,	11 A. M.	65	27.99			
"	Lake Champlain at Port Henry,	4 P. M.	75	30.02	-	-	2.065
	Do. corrected as for 11 A. M.	- -	73	30 03			

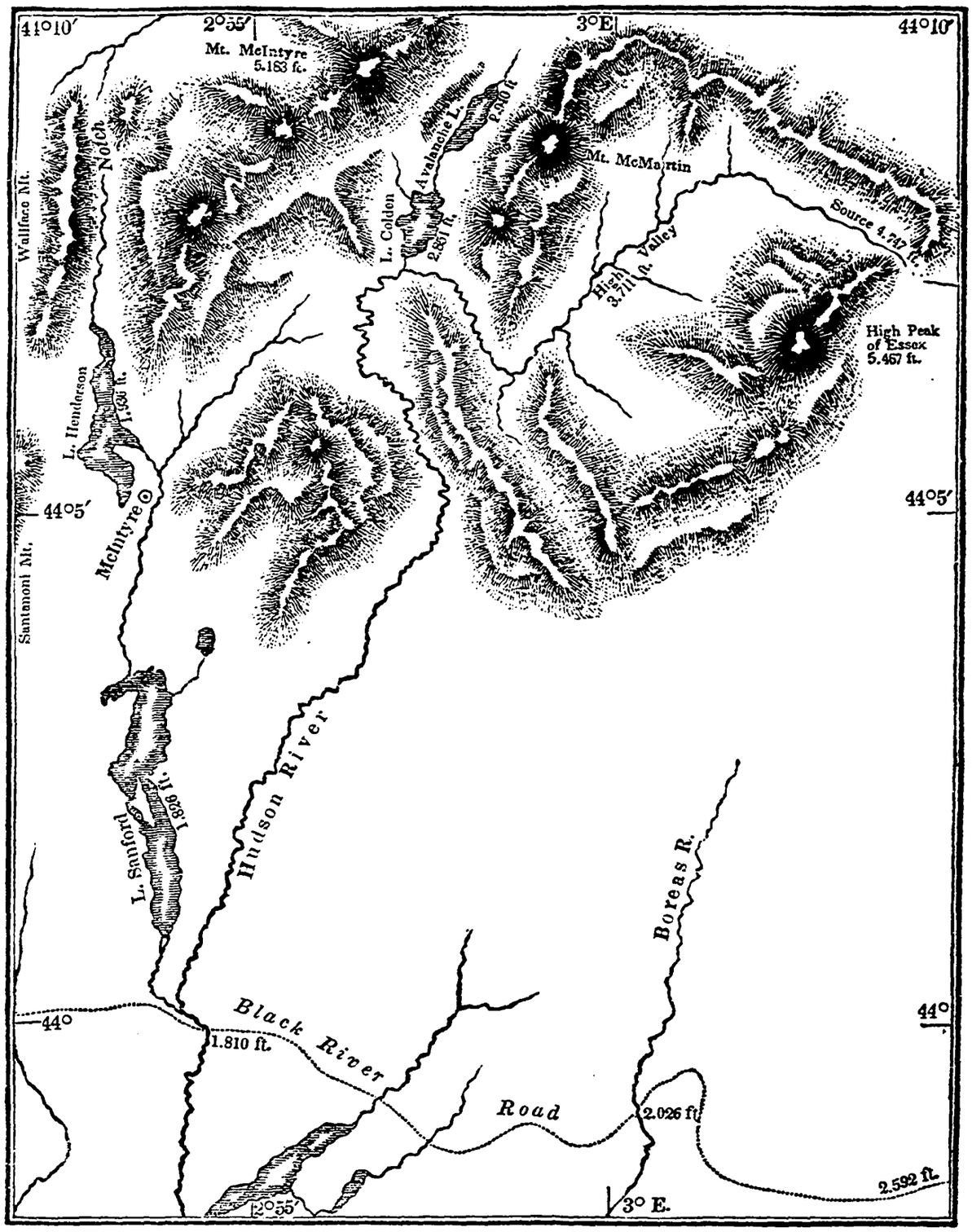
View of Lake Champlain.—Routs to the Head of the Hudson.

Bald Peak is the principal eminence on the western shore of Lake Champlain, about seven miles N. N. W. from Crown Point, and was ascended by the writer on our return to the lake. A good carriage road leads from East Moriah nearly to the foot of the peak, from whence the ascent by a footpath is not difficult, and may be accomplished even by ladies, without hazard. The summit commands a good view of some of the principal peaks in the interior, and the prospect of the prolonged basin of Lake Champlain, which is obtained from this point, is well worth the trouble of the ascent, and is worthy the attention of tourists who can find it convenient to land either at Port Henry or Westport.

The source of the Hudson and the High Peak of Essex, can be most conveniently reached from Johnson's, at Clear Pond, by a course N. 20° W.; or by landing at Westport, or Essex and proceeding to the nearest settlement in Keene. By landing at Port Kent, and ascending the course of the Au Sable to the southeast part of Keene, and from thence to the Peak, the most interesting chain of waterfalls and mountain ravines that is to be found, perhaps, in the United States, may be visited. At Keene, Mr. Harvey Holt, an able woodsman, who was attached to our party, will cheerfully act as guide and assistant, in reaching the mountain. From the valley which lies southward of the peak, and near to the head waters of the Boreas and Au Sable, may be obtained, it is said, some of the best mountain views which this region affords. But travelers in these wilds, must be

* 1975 feet above Lake Champlain.

provided with their own means of subsistence, while absent from the settlements.



The above sketch must be considered only as an approach to correctness of topography, and is based in part upon the survey lines, as found on the County map; but the geographical position is approximated to Burr's Map of the State of New York, by means of bearings from known objects on the borders of Lake Champlain.

Mountains of New Hampshire.

The only point east of the Mississippi which is known to exceed this group of mountains in elevation, is the highest summit of the White Mountains in New Hampshire; the elevation of which is given by Prof. Bigelow from barometrical observations, reduced by Prof. Farrar, at six thousand two hundred and twenty-five feet.* Prof. Bigelow adduces the observations of Capt. Partridge, made several years since, as giving an elevation of only six thousand one hundred and three feet. But the writer is indebted to Dr. Barratt for a memorandum of observations made by Capt. Partridge in August, 1821, which gives the height of the principal peaks of the New Hampshire group, as follows:

Mount	Washington,	above the sea,	6.234 feet.
"	Adams,	"	" 5.328
"	Jefferson,	"	" 5.058
"	Madison,	"	" 4.866
"	Franklin,	"	" 4.711
"	Monroe,	"	" 4.356

From this it appears most probable that there are a greater number of peaks in the Essex group that exceed five thousand feet, than in New Hampshire; although the honor of the highest peak is justly claimed by the latter.

Imperfect State of Geographical knowledge—Resources of the Mountain District.

It appears unaccountable, that the elevation of this region at the sources of the Hudson should have been, hitherto, so greatly underrated. Even Darby, in his admirable work on American geography, estimates the fall of the rivers which enter Lake Champlain from the west, as similar to those on the east, which he states to be from five hundred to one thousand feet.† The same writer also estimates the height of the table land from which the Hudson flows, at something more than one thousand feet!‡ The mountains of this region, appear to have almost escaped the notice of geographical wtiters, and in one of our best Gazetteers, that of Darby and Dwight, published in 1833, the elevation of the mountains in Essex county, is stated at one thousand two hundred feet. In Macauley's History of New York, published in Albany in 1829, there is, however, an attempt to describe the mountains of the Northern district of the State, by

* New England Journal of Medicine and Surgery, Vol. V., p. 330.

† Darby's View of the U. S. p. 242. ‡ Ib. p. 140.

dividing them into six distinct ranges. This description is necessarily imperfect, as regards the central portion of the group; but this author appears to have more nearly appreciated the elevation of these mountains than any former writer. He states the elevation of Whiteface at two thousand six hundred feet, and the highest part of the most westerly or Chateaugua range at three thousand feet. To the mountains near the highest source of the Hudson, including probably the High Peak, he has given the name of the Clinton range, and has estimated their elevation from six hundred, to two thousand feet!* He also describes the West Branch of the Hudson which rises near the eastern border of Herkimer county, as being the principal stream. The Northwest Branch, which unites with the main North Branch, a few miles below Lake Sanford, he describes as rising on the borders of Franklin and Essex counties and as pursuing a more extended course than the North Branch. Perhaps this description may be found correct, although information received from other sources does not seem to confirm this position.

It is understood that Prof. Emmons, in pursuing his geological explorations, has ascended another of the principal peaks situated easterly of the highest source of the Hudson, and made other observations which will be of value in settling the geography of this region. The Professor finds the northern district of the state, to be one of great interest to the geologist, and although from the deficiencies of our maps, he is constrained to the performance of duties which pertain to the geographical, rather than to the geological department of science, yet all that can be accomplished in either branch, with the means placed at his disposal, may be confidently expected from his discriminating zeal and untiring perseverance.

Owing, perhaps, to the soda and lime which are constituents of the labradoritic rock, and its somewhat easy decomposition when exposed to the action of the elements, the soil of this region is quite favorable to the growth of the forests as well as the purposes of agriculture. The beds of iron ore which are found on the waters of the Hudson, at McIntyre, probably surpass in richness and extent, any that have been discovered in other countries. In future prospect, this region may be considered as the Wales of the American continent, and with its natural resources duly improved, it will, at no distant period, sustain a numerous and hardy population.

New York, November 1, 1837.

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* Macauley's History of New York, Vol. I., pp. 2 to 9 and 20, 21. Albany, 1829.