

simply chipped flints. The author mentions that he has “found some in the Crag, London Clay, Reading Beds, and in the Chalk below them”. From his descriptions we can form no opinion with regard to the particular flints found in Lake Lothing. Great part of the pamphlet is taken up with a discussion on topographic changes and the etymology of local names.

3. At the meeting of the Lake Superior Mining Institute, held on August 22, 1911, a paper on “A Diamond Drill Core-Section of the Mesabi Rocks”, in Minnesota, was read by Professor N. H. Winchell, of Minneapolis.

In the Proceedings of the Institute for the years 1908–10 the author presented evidence to show that in Minnesota volcanic igneous rock composes a large proportion of the strata usually termed ‘Animikie’, which also specifically may be designated *Mesabi*.

In 1899, towards the close of the Minnesota Geological Survey, some evidence of the nature of the iron-bearing rocks of the Mesabi range was met with, and it was presented in the final report (vol. v), where its purport was fully set forth. It was suggested that if a careful examination were to be made of the rocks of the Animikie, it might be found that detritus from igneous rocks was an important element in their composition. Reviewing what he wrote twelve years ago as to the igneous nature of the rock from which the Mesabi ore was derived, the author expresses satisfaction with the conclusions to which he then came, and now reaffirms and strengthens them, with the new evidence.

4. A NEW METHOD OF COAST SURVEYING is described by Dr. John Ball (Ministry of Finance, Egypt: Survey Departmental Paper, No. 21, 1911). The plan is to determine by triangulation the position of a relatively small number of stations on mountains or hills near the coast, and then by means of a theodolite and observation of the direction and depression angle to fix the position of sundry points on the coast. The necessary complex computations have been so far modified by the author that he has been able to make rapid progress with surveys, and he gives full particulars of his new method in the present work.

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## OBITUARY.

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EDWARD WHYMPER, F.R.S.E., F.R.G.S.

BORN APRIL 27, 1840.

DIED SEPTEMBER 16, 1911.

WE regret to announce the death of this well-known mountaineer, author, and explorer, on September 16, at Chamonix, in the midst of the peaks, passes, and glaciers with which, for more than fifty years, he had been so familiar and had so vividly portrayed in his sketches and descriptions. In early life Edward Whymper was for many years associated with his father and brother in Lambeth as one of the well-known firm of Whymper and Sons, wood-engravers, who flourished as high-class book illustrators in the pre-process

and pre-photographic hand-camera days, when the artists for *Punch*, the *Illustrated London News*, and other papers and journals drew their pictures *direct* upon the blocks on which they were afterwards engraved; the drawings and engravings being both extensively carried out by the Whympers, father and sons, assisted by a numerous staff of wood-engravers working under their personal superintendence and instruction. The introduction of process-engraving and the rapid and less costly methods of photo-processes of all kinds have, to a very great extent, swept away the engraver and his art, and they only survive in the illustrations to such luxurious works as are but little known save to the wealthy dilettanti who desire to maintain the now almost extinct wood-engraver's art.

In 1860 Edward Whymper commenced his career as an Alpine climber, and took a commission from a London publisher to make some sketches of the great Alpine peaks. "At this time," wrote Mr. Whymper afterwards, "I had only a literary acquaintance with mountaineering, and had not even seen—much less set foot upon—a mountain. Amongst the peaks which were upon my list was Mont Pelvoux in Dauphiné. The sketches that were required of it were to celebrate the triumph of some Englishmen who intended to make its ascent. They came, they saw, but they did not conquer. By a mere chance I fell in with a very agreeable Frenchman who accompanied this party, and was pressed by him to return to the assault. In 1861 we did so with my friend Macdonald [Mr. Reginald J. S. Macdonald] and we conquered. This was the origin of my *Scrambles amongst the Alps*." In those days Alpine climbing as a sporting pastime was only just beginning to come into vogue. Mr. Whymper fell a willing victim to its fascinations. He had been attracted to Mont Pelvoux by those mysterious impulses which impel men to peer into the unknown. He next set himself to conquer the Matterhorn, which was then regarded as wellnigh insurmountable, and which appealed to him by its grandeur. Repeated failure to scale its summit only stimulated the young enthusiast to fresh endeavours, and the history of these efforts occupies a large part of his first book, *Scrambles amongst the Alps in the years 1860-69*, which first appeared in 1871. Mr. Whymper's perseverance was crowned with success in July, 1865, but the triumph was marred by a terrible disaster. The ascent of the Matterhorn is not now considered as one of unusual difficulty or danger, but the great peak avenged itself on those who first violated its virgin summit by taking a heavy toll for their achievement. On that occasion the summit had been attained, and the descent was in progress, when one of the party lost his foothold, and falling against Croz, the leading guide, knocked him over; the two following members were dragged from their steps; the guide who followed next with Whymper endeavoured in vain to save them by planting themselves as firmly as the rocks would permit, but the rope broke midway between Lord Francis Douglas and the guide Taugwalder, and the four leading members of the party fell down the almost precipitous wall of rock to the Matterhornletscher below, a distance of nearly 4,000 feet.

During these years of *Scrambles amongst the Alps* Mr. Whymper paid two visits to Greenland, in 1867 and again in 1872. No Alpine peaks tempted him there, but at the instance of Mr. R. H. Scott, F.R.S., and entrusted with a grant from the British Association, he undertook to explore the Tertiary Leaf-beds and Coal-seams at Atanekerdluk, North Greenland, and he not only made sketches and photographs of the cliffs, but brought home a large collection of plant-remains, which was afterwards described by Professor Oswald Heer, of Zurich,<sup>1</sup> a part of that collection, and also the result of his later visit in 1872, being preserved in the Geological Department of the British Museum.<sup>2</sup>

But the achievement which brought him distinction as an explorer and gained for him the Patron's Medal of the Royal Geographical Society was an expedition in 1879–80 to Ecuador, where he made important ascents and investigations among the Great Andes of the Equator. Early in January, 1880, he attained the summit of Chimborazo, 20,498 feet, this being the highest climb hitherto placed to the credit of any mountaineer. He was accompanied by two Piedmontese guides, and camps were established at heights of 14,375 feet, 16,624 feet, and 17,285 feet. One of the guides was badly frostbitten, and all the members of the party suffered much inconvenience from mountain sickness. When, however, a second ascent of Chimborazo was successfully accomplished six months later no ill effects were felt from this cause. Nor were the climbers affected by mountain sickness when they scaled the volcano Cotopaxi, 19,613 feet high, though Mr. Whymper stayed for twenty-six hours near the crater in order to experience in his own person the action of the rarefied atmosphere on the human system. In this case, however, he and the guides were not weakened by having to contend against snow and frost, the ground on which they camped at the summit being so hot as almost to melt the indiarubber covering of their tent. The results of these researches were published in *Travels amongst the Great Andes of the Equator* (3 vols., 1891–2).

Climbers among the Alps in later years will remember Mr. Whymper by his two guide-books to Chamonix and Mont Blanc, the former of which reached this year its sixteenth edition and the latter its fifteenth edition.

For years he was well known at home as a lecturer on Alpine subjects, but even so lately as 1901–5 he explored and ascended the mountains of the 'Great Divide', the water-parting of the Rockies, where the primitive sources of the mountain streams separate, the western to join the Columbia River and the Fraser, and so ultimately reaching the Pacific, while the eastern add their contributions to the Bow River, which finally empties into Hudson's Bay. Here on Mount Field (5,000 feet) on the right bank, and Mount Stephen (8,000 feet) on the left bank, Mr. Whymper found Trilobites in the

<sup>1</sup> See Oswald Heer, "Contributions to the Fossil Flora of North Greenland, being a description of the plants collected by Mr. Edward Whymper during the summer of 1867": *Phil. Trans. Roy. Soc.*, vol. clix, pt. ii, p. 445, 1870.

<sup>2</sup> See also Professor Nordenskiöld's "Expedition to Greenland": *GEOL. MAG.*, Vol. IX, p. 419, 1872.

greatest abundance in shales of Middle Cambrian age forming the summit of Mount Field and resting on the flanks of Mount Stephen about 6,580 feet up; the 2,000 feet above the Trilobite shales have not yet been examined.

I gave an account of the fossils brought home by Mr. Whymper, with seven text-figures and Plate XXII in the *Geological Magazine*, 1902, pp. 502 and 529, and the collections made by him were subsequently presented to the Geological Department of the British Museum (*Nat. Hist.*). He was a keen observer and collector, and had Natural History been early instilled into his receptive mind he would have been a great Naturalist as well as a great Mountaineer.

[Taken in part from the *Morning Post*, September 18, 1911, the remainder by H. W.]

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#### PROFESSOR PAUL BOGUSLAV RICHTER.

BORN 1854.

DIED OCTOBER 9, 1911.

THIS eminent geologist of the Imperial Gymnasium at Quedlinburg, Germany, passed away on October 9, 1911, in his 57th year, deeply regretted.

Professor A. G. Nathorst, of Stockholm, writes us—"Palæobotanists had anticipated that Professor Richter might have lived many years to publish further important contributions to our knowledge of the Keuper Flora of Thale and the Cretaceous Flora of Quedlinburg, both of which he had studied for many years, and of which he had made such extensive and excellent collections.

"In addition to his minor contributions to Palæobotany he published—

1. In 1905, 'Beiträge zur Flora der oberen Kreide, Quedlinburgs.' Teil i: 'Die Gattung *Credneria* und einige seltene Pflanzenreste.' With six folio plates.
2. In 1906, 'Beiträge zur Flora der unteren Kreide, Quedlinburgs.' Teil i: 'Die Gattung *Hausmannia*, Dunker, und einige seltene Pflanzenreste.' With seven folio plates.
3. In 1909, 'Beiträge zur Flora der unteren Kreide, Quedlinburgs.' Teil ii: 'Die Gattung *Nathorstiana*.'
4. 'P. Richter und *Cylindrites spongioides* des Goeppert.' With six folio plates."

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#### JOHN GRIFFITHS.

THE death is announced (in *Nature*) of Mr. John Griffiths, the well-known fossil-collector of Folkestone. He rendered important service to Mr. F. G. Hilton Price, Mr. C. E. De Rance, and Mr. J. Starkie Gardner in their researches on the Gault and associated formations, and he discovered a large proportion of the most important Gault fossils now in the British Museum and the Museum of Practical Geology. So long ago as 1887 it was announced in the *Geological Magazine* (p. 140) that Griffiths had been permanently disabled by rheumatism.

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