

The Students Association of Natural Science. Upsala.

Geological Division.

Meeting January 26th 1922.

18 persons present.

The following officers were appointed:

S. ROSÉN, Secretary.

E. WIMAN, Treasurer.

N. G. HÖRNER and E. WIMAN, Reviewers.

Mr. J. EKLUND reviewed a paper by ROESLER »Iron ore resources of Europe».

Mr. S. ROSÉN read a paper on the Visingsö-formation and the tectonic of W. Östergötland.

Meeting February 9th 1922.

21 persons present.

Mr. I. HÖGBOM spoke on the results of a geological voyage in El Nevado de Famatina in Argentina.

Prof. C. WIMAN gave a lecture on the stratigraphical position of the Danien in Scania.

Meeting February 28th 1922.

22 persons present.

Mr. E. JUNGNER read a paper on bilobated witches' chaldrons and some other traits in the glacial sculpture.

Meeting March 16th 1922.

Prof. A. HAMBERG gave a lecture (illustrated by lantern slides) on the glacial erosion, especially in the higher mountains in Lappland.

Prof. A. G. HÖGBOM spoke on »Tunåsen, a good monument such as it is».

Meeting April 4th 1922.

19 persons present.

Prof. A. G. HÖGBOM read a paper on the scientific production of HJALMAR SJÖGREN. (See this Bulletin Vol. 18.)

Mr. J. EKLUND gave an account of the modern physical methods of searching for ores.

Meeting May 11th 1922.

13 persons present.

Mr. S. ROSÉN spoke on Markasit and Pyrite, the conditions of their formation, and new methods of their determination.

Meeting September 21th 1922.

12 persons present.

The following officers were appointed:

S. ROSÉN, Secretary.

G. LÖVGREN, Treasurer.

N. G. HÖRNER and J. EKLUND, Reviewers.

Prof. C. WIMAN gave an account of a scientific voyage to German museums and institutions.

Meeting October 26th 1922.

29 persons present.

Prof. A. G. HÖGBOM read a paper on the geographical distribution of the iron-meteorites. (See Verdandis småskrifter No. 259. 1922, and Geografiska Annaler. 1923.)

Prof. C. WIMAN spoke on the Tertiary of Spitzbergen.

Meeting November 9th 1922.

11 persons present.

Docent J. PALMGREN read a paper on the first mining-book in the Swedish language.

Meeting November 23th 1922.

22 persons present.

Docent G. EKHOLM spoke on an archaeological contribution to the question of the anomalies in the level-changes. (The lecture was illustrated by archaeological specimens and lantern-slides.)

Meeting January 29th 1923.

19 persons present.

The following officers were appointed.

S. ROSÉN, Secretary.

E. LJUNGNER, Treasurer.

N. G. HÖRNER and E. LINDSKOG, Reviewers.

Mr. S. ROSÉN spoke on some problems in the petrology of the un-metamorphic rocks.

Meeting February 15th 1923.

33 persons present.

Prof. A. G. HÖGBOM read a paper on the Cambrian bottom-layers at Råbäck, Kinnekulle. (See this Volume.)

Dr. ASTRID CLEVE-EULER delivered a lecture: »To the characterization of the boreal stage, its dating, and its history of colonisation».

Meeting March 22nd 1923.

18 persons present.

Mr. S. ROSÉN spoke on pigmentation and luminescence in natural and synthetical minerals. The lecture was illustrated by experiments.

Meeting April 19th 1923.

18 persons present.

Mr. B. H. ASKLUND read a paper on rift-valleys and rift-valley-tectonic in the Archaean region of Sweden.

Mr. S. ROSÉN delivered a lecture on the mobil libells as presumed epigenetic formations in the rocks of the Visingsö-formation and the Obolus-conglomerate in Östergötland.

Meeting May 17th 1923.

27 persons present.

Prof. C. WIMAN spoke on the Pterosauria and demonstrated the new acquisitions of the palaeontological museum. (See this Volume.)

Mr. T. RINGSTRÖM read a paper on *Sinotherium Lagrelii*. (See Palæontologia sinica. Ser. C. Vol. 1. Fasc. 4, Peking 1924.)

Meeting October 11th 1923.

23 persons present.

The following officers were appointed:

S. ROSÉN, Secretary.

E. LJUNGNER, Treasurer.

N. G. HÖRNER and E. WIMAN, Reviewers.

Prof. C. WIMAN gave an account of his impressions from a voyage in Germany and Austria.

Mr. J. EKLUND reviewed: J. BROMÉ. Nasafjäll silfververk.

Meeting October 25th 1923.

24 persons present.

Prof. A. G. HÖGBOM read a paper: »Some new observations on the subcambrian landsurface at Kinnekulle». (See this Volume.)

Prof. C. WIMAN spoke on the bats as a geological factor. (See Fauna och Flora 1923.)

Meeting November 8th 1923.

14 persons present.

Mr. E. WIMAN spoke on a resistance- and fold-region in the archæan of middle Upland.

Mr. C. SAMUELSSON spoke on his measurements of the decomposition of basalts used as buildingstone in 1881.

Meeting November 22th 1923.

22 persons present.

Prof. A. HAMBERG delivered a lecture on the glacial erosion.

Mr. C. SAMUELSSON gave an account of a voyage to Gotland and Öland in the summer of 1922.

Meeting December 6th 1923.

13 persons present.

Prof. C. WIMAN read a paper on the Homaeosauridae at Solnhofen.

Docent J. PALMGREN spoke on the Swedish-Finnish scientist and explorer SIGFRIDUS ARONUS FORSSIUS.

Meeting January 25th 1924.

21 persons present.

The following officers were appointed:

S. ROSÉN, Secretary.

E. LJUNGNER, Treasurer.

N. G. HÖRNER and E. WIMAN, Reviewers.

Doc. J. PALMGREN gave an account of his impressions from a voyage to different museums and institutions in Germany and Switzerland.

Prof. C. WIMAN read a paper on the life of the Pterosaurians. (See this Volume.)

Meeting February 7th 1924.

15 persons present.

Mr. E. WIMAN read a paper on the solidification of the crust of the earth.

Meeting February 21st 1924.

14 persons present.

Mr. S. ROSÉN read a paper on improvements in his method of determining the refraction through the microscoperefractometer, invented by himself in 1921, the construction and use of which has been described at the meeting April 8th 1921.

Dr. ASTRID CLEVE-EULER spoke on ice-lake discharges and shore-lines at Mt. Billingen. The lecture was illustrated by a map and diagrams.

The author having previously been lead to deny the existence of a dammed Baltic ice-lake (G. F. F. Vol. 45, p. 36), could not agree with Mr S. JOHANSSON in his referring the discharge phenomena — firstly observed at the N point of Mt. Billingen by Prof. HÖGBOM — to a lowering of the Baltic's level by »at least 35 metres», nor in his reconstruction of further details of the

alleged catastrophe, which, according to Mr. J., was accomplished in one year (G. F. F. Vol. 45, pp. 392—395). To that end, ca. 1 000 000 m³ pro sec. should have, on their way westward, passed through a channel, estimated to have finally reached a breadth of 700 m. At that distance from the mountain slope, Mr. JOHANSSON found what he assumed to be an »annual morain line», going straight for kilometres and limiting the barewashed channel bottom. Counting with an average breadth of the furrow half as great, we find, however, that it would take at least $32\frac{1}{3}$ years to lower a lake of 400 000 km² by 34 m through a sluice-gate of 34×350 m, and that such a sluice-gate would not be able to lower the level of the Baltic by more than 8,6 m in one year¹, no consideration being paid to the affluents, that strive to raise the level in the meantime. Consequently, the 700-m-line just mentioned must be interpreted in some other way, and it is likely that it marks the limit of some strong main-current in the discharging lake.

It is, on the other hand, not likely that a discharge of the Baltic has gone on for years, slowly lowering the water-level. This seems, for one thing, to be in discrepancy with the very abrupt transition from fine sand to overlying large boulders found in the esker at Horns church, some km E of the N point of Mt. Billingen.

The popular theory about the Baltic's damming up and later drainage at Mt. Billingen is further at variance with the rather insignificant marks left on and at the mountain (the Timmersdalavallen is a recessional moraine and cannot be accepted as a »current ridge») and with the fact, that there is no evidence of the Darsser threshold ever having been elevated 35 m above its present level, as would have been necessary for damming up the Baltic by 17 m only (ANTEVS). The erosion marks, caused by the drainage, on the slope of Billingen, are also found at a very low level — ca. 112 m — compared with that of the ponded ice-lake of 147—149 m, considered to be the Baltic. These difficulties will be got rid of, if the current belief in Mt. Billingen plunging into the Baltic, when parting with the ice-sheet, is dropped. This belief is, indeed, founded on the *postulated, but in no way proved thesis*, that All parts of Fennoscandia were subject to its maximal depression at the very moment, when they emerged from the ice-sheet.

My theory, on the contrary, requires, that land was oscillating at its strongest during the recession and that the great moraine district in Westergötland corresponds to a wave top in the oscillation curve. Although the elevation of land at that time cannot be but very roughly estimated as yet, it is not likely to differ from the actual one by more than some 50 metres, which clearly was enough to prevent the Baltic from reaching even the Vetter basin, not to mention Mt. Billingen. Furthermore, *local ice-lakes* must have been ponded up on both sides of that mountain, and, the recession line at the N point being drawn concentric with those indicated by moraine streaks 10 km southward, we find the pass-point of the eastern lake on the land ridge between the rivers Ösan and Tidån actually at 107 m (probably lowered

¹ For formulae, see e. g. »Hütte», 23 ed., Vol. I, p. 271; Vol. III, p. 573.

by postglacial abrasion); this lake had a surface of about 200 km². W of the mountain, a smaller lake was dammed up to some 135—132 m by the rocks of Klyftamon, W of a marked fault line, and was discharged into the Eastern lake, when the ice withdrew from the northernmost point of Mt. Billingen. A discharge of the united ice-lake staying at, say, 112 m, did not follow until a new pass-point on the Klyftamo, inferior to that level, was opened close to the SE corner of the lake Vristulven (ca. 100 m ab. S-leve). Here, indeed, a sudden change in the nature of the slope may be noticed; a slowly rising, cultivated passage with rounded grit replacing the steep and rocky, spruce-clad slope S of the pass. It should be remarked, that the said passage is situated *exactly in the prolongation of the line running SE—NW*, spoken of above, and found to limit the bare-washed area. The large Låstad esker, vanishing at that line, is cut through twice just above it, its material of large boulders being transported in a NW direction some 80 metres. Thus evidence is furnished, that several currents converged towards the Vristulven pass in the local ice-lake that washed the NE slope of Mt. Billingen, when this lake discharged, simultaneously with the ice-borders staying some km N of the mountain. This, of course, could not have happened, unless land was depressed considerably less than to the marine limit.

This interpretation is also apt to explain in a natural way the variations of the assumed marine limit on the W slope of Mt. Billingen. The M. L. lies at 131 m at N. Mösseberg and rises normally northward to Lerdala (138 m). From here, the values again sink notably and irregularly within a few km, 132 m being the level of the M. L. at the N point of the mount (G. LUNDQVIST). No doubt these latter shore-marks cannot be due to the ocean, since the sediments of Mt. Billingen do not display any evidence of having been disturbed in a similar way. They seem, on the contrary, to correspond to slight discontinual drainages of the W Billing ice-lake, that just reached to Lerdala. Now, such drainages *beneath* the M. L. give another evidence of the high position of the lithosphere. As a consequence, the M. L. at Mt Billingen must be a *transgression limit* and is probably represented near the northernmost point by the erosion hook, noticed by Mr. LUNDQVIST at 141 m. On the E side of the mountain, the author has found very distinct marks of that highest level of the Yoldia-Sea on a moraine slope at 135 m E of Sjøgerstad, and E of Skultorp there extends for miles a most imposing valley train at the same level, worked out by the (apparently) rising and then, again, sinking water of that same Yoldia-Sea.

Uppsala, February 1924 (Autoreferat).

Meeting March 13th 1924.

19 persons present.

Mr. N. G. HÖRNER gave an account of newer geochronological works.

Meeting April 10th 1924.

13 persons present.

Dr. ASTRID CLEVE-EULER opened the discussion deferred from the preceding meeting by reading a paper on the latest Swedish-Finnish geochronologic connections.

Meeting April 24th 1924.

15 persons present.

Dr. O. ZDANSKY gave an account of his palaeontological explorations in China. (See Bulletin of the Geological Survey of China, No. 5, October 1923, and Palaeontologia Sinica. Ser. C. Vol. 2. Fasc. 1, Peking 1924.)

Prof. C. WIMAN spoke on mineral-formation through mass-death of marine animals.

Meeting April 28th 1924.

40 persons present.

Dr. LAUGE KOCH gave a lecture, illustrated by lantern-slides, on his geological and geographical explorations of North-Greenland.

Meeting May 15th 1924.

14 persons present.

Mr N. G. HÖRNER read a paper on the ice-recession at the marine limit in E. Värmland.

Meeting September 25th 1924.

14 persons present.

The following officers were appointed:

N. G. HÖRNER, Secretary.

E. LJUNGNER, Treasurer.

E. WIMAN and N. G. HÖRNER, Reporters.

Mr. S. ROSÉN spoke on the mangan-occurrences at the lake Vettern.

Mr. E. WIMAN demonstrated a series of rocks collected in the Laxå- and Grythyttre-region during the surveying work the preceding summer.

Meeting November 13th 1924.

26 persons present.

Prof. C. WIMAN gave a lecture, illustrated by lantern-slides, on *Archaeopteryx*.

Meeting November 27th 1924.

16 persons present.

Dr. ASTRID CLEVE-EULER spoke on the ås-plane at Dals Ed.

Mr. E. LJUNGNER read a paper on the mechanics in the formation of breccias.

Meeting December 11th 1924.

28 persons present.

Docent I. HÖGBOM read a paper on cleavage and ice-recession. (See this Volume.)

Prof. E. STENSIÖ reviewed: J. KJAER. The Downtonian Fauna of Norway. I. Anaspida. Kristiania 1924.