

The Association of Natural Science at the University of Upsala.

Section for Geology.

(Redacted by C. WIMAN.)

Meeting on Jan. 25th, 1895.

The following Officers were appointed; namely,
for the term: CARL WIMAN, Secretary.

{ K. J. WINGE, Reporter.
 M. HULTH, »

for the year: HENR. MUNTHE, Redactor.

Meeting on Feb. 8th, 1895.

I. Herr RUTGER SERNANDER lectured on »Some Archæological Finds in Peat-Mosses». (Cfr *Antiqvarisk Tidskrift för Sverige*, XVI, 2).

After giving an account of the attempts that have been made to parallel archæological times with series of the postglacial epoch, the lecturer spoke about some of the most important South-Scandinavian discoveries. These proved, he said, that one part of the stone-age is older than the maximum extension of the Litorina-sea, consequently dates from the Ancyclus-time or from the first stage of the Litorina-time; and that another part of it covers a great part of the land-upheaval during the Litorina-time.

The lecturer had, he said, on a previous occasion shown that the Atlantic period of BLYTT began with the Litorina-subsidence, and that this period occupied a great part of the Litorina-time; as a consequence, in Atlantic peat-layers, one ought to be able to make discoveries dating from the stone-age.

A direct proof of that the reporter believed he had got in a curious pilework discovered in a peat-moss in the parish of Hällestad in Östergötland. Under peat and mud there was a layer of strunks, covering a stratum of Phragmites-peat, which surrounded an open chest, made of poles, partly lying in and partly rammed down into the bottom of the moss. This chest was filled with earth and remains from a fir-wood and a strand-thicket. The structure

of the moss was described in more detail and partly judging from the situation of the strata and partly from the nature of the plant-remains in the chest (*fir*, *Alnus glutinosa*, *Calluna*, *Betula verrucosa*, *Carex pseudocyperus* etc.) the lecturer said he thought it had its origin in the Atlantic time.

The lecturer spoke of the importance, from a geological point of view, of being able to parallel different layers of the mosses with the definite epochs of the archæologists, and showed how several favourable opportunities for doing so had been neglected owing to unsatisfactory examination of the peat-moss-finds, even though undertaken by scientific archæologists. As a special instance he mentioned a peat-moss found at Lärbro in Södermanland. The circumstances communicated in connection with these finds led one, he said, to suppose that the fifth period of the MONTELI bronze-age began at the end of the subboreal period.

As comment on the lecture Herr MUNTHE mentioned that he had found a bone-implement in Ancylus-clay near Norsholm in Östergötland.

2. Herr CARL WIMAN read a paper on a *Conularia* and showed specimens of the precambrian fossils from »Visingsö-serien». Cf. a paper in this Bulletin Vol. II Part. 1 N:o 3, 1894, page 109.

3. Herr HENR. MUNTHE reviewed M. L. CAYEUX: »Les preuves de l'existence d'organismes dans le terrain précambrien». Bull. de la soc. géol. de France. Ser. 3, Tome 22, N° 1, 1894.

Meeting on March 1st, 1895.

1. Herr OTTO NORDENSKJÖLD read a paper on »Crystalline slates» among the Swedish »hällefinta».

2. Herr KNUT WINGE reviewed J. W. RETGER's: »Über die mineralogische und chemische Zusammensetzung der Dünenande Hollands, und über die Wichtigkeit von Fluss- und Meeressanduntersuchungen im Allgemeinen». Neues Jahrbuch 1895, Bd. I, S. 16.

Meeting on March 15th, 1895.

1. Herr HENR. MUNTHE read a paper on »Fyndet af ett benredskap i Ancyluslera nära Norsholm i Östergötland» (The discovery of a bone-implement in Ancylus-clay near Norsholm in Östergötland). The paper was published in Öfvers. af K. Vetenskaps-Akademiens i Stockholm Förhandl. 1895, N:o 3.

2. Herr OTTO NORDENSKJÖLD gave a lecture, entitled »Ueber postarchaischen Granit von Sulitelma in Norwegen und über das Vorkommen von s. g. Corrosionsquarz in Gneisen und Graniten». It is printed in this Bulletin, Vol. II, Part. 1, N:o 3, 1894, page 118.

Meeting on April 5th, 1895.

I. Herr HAMPUS v. POST lectured on the structure of the different layers of the Eskers. In NATHORST'S Geology of Sweden (1894) there is not a word said on this question. The lecturer said he had studied carefully the Eskers at Norrköping, Enköping and Upsala, at Reijmyra and Ås (in Södermanland) and those he had met with on journeys in the middle and south of Sweden; furthermore those at Kjöge in Seeland and at Lundörren and in the south of Norway.

The lecturer had never, he said, been fortunate enough to find any basis for the Eskers except here and there some projecting summit rocks, which had the same rounded and striated appearance as those under the bottom-moraine (boulder-clay).

In cases where a bottom-layer has been found existing at the side of the Eskers, this layer consisted of boulder-clay. Hence it appears that the bottom-layer of the Eskers is younger than the bottom-moraine.

The Eskers consist of three different layers:

- I. The nucleus or the boulder-layer.
- II. The gravel-layer.
- III. The sand-layer.

I. The *nucleus* of the Eskers consists of a boulder layer washed clear from sand and gravel. If a cut through the ridge is made, the nucleus will generally be found to have a conical shape of from 40 to 60 degrees, and hence, very steeply sloping sides. In the bottom of this layer the blocks sometimes reach 0,5—1 foot in diameter, sometimes even, as is the case at Enköping and Heby (West-Upland), 5—6 feet. The size of the stones usually diminishes upwards. Oval and flat stones are often found standing edgeways. Angular stones never occur.

It is evident, that great and powerful water-floods have been the motive force in the forming of this stratum; also that the power of the flood has decreased, seeing that the material becomes smaller in size upwards.

The stones of the Eskers differ as regards shape from the pebbles on the sea-shore. The former tend towards the globular form, the latter are on the contrary more elliptical. The stones of rocks in the vicinity has been hurt only at the edges and angles.

The material of the Eskers is, generally speaking, transported further than that of the bottom-moraine in the same region. An angular block has never been found in the nucleus of the ridges, which proves that it (the nucleus)

has been formed, while the land-ice entirely covered the surface of land in our country.

II. The *gravel*-layer exists alone in several parts and forms the Eskers, sometimes giving rise to gravel-fields. The material consists of water-worn gravel mixed with boulders of varying size but not greater than a man's head; it shows an apparent stratification. The strata are 0,5—1 foot thick, and the pebbles are found scattered everywhere indicating that the force of the stream has varied.

The plane side of the flat stones here rests on the stratum previously formed. The gravel-layer contains still more of the neighbouring rocks than the nucleus. The line of demarcation from the nucleus is often extremely sharp, but can only be observed when the strata are frozen. This layer contains no blocks either.

III. The *sand*-layer differs from the gravel as regards the size of the grains; they approximate but do not exceed one mm. The sand is also less mixed with gravel and boulders, though layers of both appear here and there. The stratification is more equal, but the clay is washed away here too. It is sometimes intermingled at the top with layers of clay. Angular blocks appear only in the uppermost layer of this sand, but they are often deposited rather numerously directly on this sand. From this the reporter concluded, that the ice at the end of the sand-formation had disappeared. The deposit of angular stones continues up to the very time of the formation of the lower »mosand». This sand contains both in Södermanland and in the neighbourhood of Upsala not only angular stones but also great blocks of stratified clay, which proves, that a transportation by floating ice must have taken place at this time.

2. Herr P. T. CLEVE reported on the examination that has been made of the element Helium in »*Cleveite*».

3. Herr HENR. MUNTHE showed some geological photographs from Gotland.

Meeting on April 19th, 1895.

1. Herr HAMPUS v. POST read a paper on »the probable formation of the 'ellipsoids of anthraconite'».

2. Herr OTTO NORDENSKJÖLD lectured on: »Bossmo grufvors geologi». Cf. Geol. Fören:s i Stockholm Förhandl., Bd. 17, H. 5, 1895.

Meeting on May 10th, 1895.

Herr GUNNAR ANDERSSON read a paper on »Öländska raukar». Cf. Bi-hang till K. Vet.-Akad. Handl., Bd. 21, Afd. II, N:o 4.

Meeting on Sept. 20th, 1895.

Officers were appointed for the term; namely,

CARL WIMAN, Secretary.

{ P. J. HOLMQUIST, Reporter.
 { J. GUNNAR ANDERSSON, »

Meeting on Oct. 4th, 1895.

1. Herr J. GUNNAR ANDERSSON reviewed MATTHEW, G. F.: The Protolenus Fauna. Transact. New York Acad. of Science XIV p. 101—153. 1895.

2. Herr HENR. MUNTHE reviewed VICTOR MADSEN: Istdens foraminiferer i Danmark og Holstein. Meddel. fra Dansk Geolog. Forening Nr. 2, Köpenhamn 1895.

3. Herr J. GUNNAR ANDERSSON gave an account of the construction and manipulation of an instrument devised for the calculation of smaller declivities.

Meeting on Oct. 25th 1895.

1. Herr P. J. HOLMQUIST spoke on the principles upon which a natural crystal system might be based.

2. Herr J. GUNNAR ANDERSSON reviewed HUTCHINSON: Extinct Monsters 1893, and CHAMBERLIN: Recent Glacial Studies in Greenland. Bull. of the Geol. Soc. of America. Vol. 6, 1894—1895.

Meeting on Nov. 15th, 1895.

1. Herr P. J. HOLMQUIST lectured on the Geotektonic of Sulitelma.

2. Herr HENR. MUNTHE showed some bones of *Halichoerus grypus*, found in Ancyclus-clay from »Skattmansö». Cf. a paper in Geol. Fören:s i Stockholm Förhandl. Bd. 17, H. 6, 1895.

