

## **The Students Association of Natural Science. Upsala.**

### **Geological Division.**

#### **Meeting October 12th 1916.**

24 persons present.

The following officers were appointed:

N. SUNDIUS, Secretary.

A. REUTERSKIÖLD, Treasurer.

R. LOOSTRÖM and E. ANDERSSON, Reviewers.

Prof. A. HÖGBOM spoke on some isostatic features of the Alps.

Mr K. SANDLER read a paper on »Marginal fluvioglacial plateaus of Ångermanland». (See G. F. F. Bd 39, 1916.)

Amanuensis J. V. ERIKSSON related some observations on the Archean of Dalarne.

#### **Meeting October 27th 1916.**

19 persons present.

Prof. C. WIMAN read a paper on »Transport of stones (gastrolites) by Saurians». (See G. F. F. Bd 38, 1916.)

Dr B. HÖGBOM spoke on »Fluvioglacial erosion-valleys in the northernmost parts of Lappland». (See this Bull. Vol. XV.)

#### **Meeting November 16th 1916.**

21 persons present.

Doc. N. SUNDIUS read a paper »On the relation between chemical composition and optical characters of the scapolites». (See this Bull. Vol. XV.)

Mr B. HALDEN gave a brief account of his researches upon »Shelbeds and their influence on the vegetation». (See Sveriges Geol. Undersökn. Årsbok 1917.)

Mr E. ANDERSSON gave a relation of his last expedition to Spitzbergen.

**Meeting November 30th 1916.**

20 persons present.

Mr H. ENGBERG spoke on the Åreschists E. of Kallsjön in Jämtland.

Mr R. LOOSTRÖM read a paper on »The rocks of the Loos-complex as forming the substratum of the porphyries of Dalarne». (See this Bull. Vol. XV.)

**Festival meeting January 13th 1917.**

arranged on account of the 60th anniversary of prof. A. G. HÖGBOM.

About 70 persons present.

The secretary, on behalf of the Section, bade the guest of honour, and also the numerous attending members welcome.

Prof. HJ. SJÖGREN addressed prof. HÖGBOM and then, in the name of the Section, presented to him an ornamentally bound copy of Vol. XV of this bulletin, especially dedicated to prof. HÖGBOM.

The secretary recited a deed of gift by which owing to the anniversary of prof. HÖGBOM, were donated to the Section by Possessor R. OTTERBORG 100 shares in the Swedish Sugar Company. The return of this capital might be given as travelling-studentships to the members of the Section.

Dr. P. GEIJER read a paper »On the intrusion mechanism of the Archean granites of Central Sweden». (See this Bull. Vol. XV.)

Docent S. ODÉN read a paper »On clays». (See this Bull. Vol. XV.)

**Meeting January 25th 1917.**

9 persons present.

The following officers were appointed:

N. SUNDIUS, Secretary,

A. REUTERSKIÖLD, Treasurer,

T. HENSCHEN and E. ANDERSSON, Reviewers.

**Meeting February 8th 1917.**

17 persons present.

Mr S. ROSÉN spoke on the tectonics and stratigraphy of the neighbourhood of Motala.

Mr. B. HALDEN gave an account of the occurrences of »black clay» (ooze) and tried to make out their origin.

#### Meeting February 22nd 1917.

32. persons present.

Dr P. GEIJER read a paper »On the recession of the inland-ice in the district of Nautanen (in the vicinity of Gellivare)».

Docent F. ENQUIST spoke on the extension and thickness of the inland-ice in north-western Scandinavia.

#### Meeting March 12th 1917.

35 persons present.

Prof. A. G. HÖGBOM spoke on »Glacial relics in the Aralo-Caspian basin, a problem of geographical biology». (See this Number of Bull. Geol. Inst. Upsala.)

#### Meeting March 22nd 1917.

35 persons present.

Docent G. FRÖDIN read a paper on »Some remarks on the sparagmites in Jämtland and on the highland-problem».

Last summer the lecturer entered upon an investigation of the district N. of Ströms Vattudal, in which are occurring red sandstones, on the geol. maps commonly classed among the precambrian sparagmites. Judging from the localities hitherto visited, one might rather interpret the rocks in question as a concordantly superimposed continuation to the west of the (probably silurian) quartzites and shales, occurring immediately in the east (»Ströms quartzite»). Among the transitional layers is also found a locally occurring limestone with well preserved fossils, the paleontological position of which is not yet fixed. The hitherto current interpretation of the red sandstones as of algonkian age is contradicted *inter alia* by the fact that no marked unconformability within the sedimentary complex of N. Jämtland can be pointed out; this complex as a whole presents itself as a homogeneous formation, though with prominent variations in facies. The red sandstone has yet been found neither as substratum of the silurian in normal position, nor as pebbles in the conglomerates of this formation. On the other hand one finds not seldom in the red sandstones and shales pebbles and sharp edged fragments of crystalline schists analogous with the not far away in the west occurring Åre-schists, which

in caledonian time were metamorphosed. As moreover the red sediments exhibit only feeble traces of metamorphism, the lecturer believed it more proper to look at this rocks as caledonian and (possibly) devonian. They are probably river-accumulations of detritus from a land with a dry and warm climate, while on the other hand the grey and white quartzites in the east (bearing witness of a principally analogous mode of decay) possibly are the corresponding marine and lacustrine sediments.

Irrespective of the stratigraphy (above related) in N. Jämtland, and basing his opinion only on facts previously published by other geologists, the lecturer gave some remarks about the red sparagmite-sandstones of Härjedalen, by TÖRNEBOHM and HÖGBOM unanimously indicated as of algonkian age. Not taking into account the dubious locality of Råndalen, this determination of age is founded only on the stratigraphy in Norway. In this connection it may still be noticed that the fossiliferous silurian E. of Glommen rests either on archean or on older (precambrian) sparagmite, whereas certainly the superimposed red sparagmite can be interpreted as overthrust algonkian, but, on the other hand, it also can be sediments of siluro-devonian age. It seems therefor at present impossible to found any binding conclusions on these norwegian localities. The observations of HÖGBOM and TÖRNEBOHM being compared, one obtains indeed a very remarkable result. If one keeps in mind the opinion of H. that the quartzite of Vemdalen is of silurian age and at the same time considers the fact evidently held forth by T. (Centr. Scand. p. 45), that this rock upwards concordantly changes into red sparagmite, also the last named sediment (as well as the limestone of Hede) must be of silurian or devonian age. This fact again may bring on that the hitherto as overthrust precambrian rockcomplexes considered Åre-schists in the district adjacent to the north are in main situated in their normal position to the subjacent silurian, though more or less changed by differential movements in caledonian time. Looking in this way at the problem one also avoids the difficulties arising when interpreting the sparagmites as algonkian, namely that these rocks are completely wanting in Central Jämtland, though they both in the north and the south thereof show a considerable thickness and extension. Without (in the present state of the question) expressing any decided opinion about these problems the lecturer found it not improbable that certain parts at the least of the sparagmites of Härjedalen are younger than algonkian.

Finally the lecturer held forth that the archean rockground in the central part of W. Jämtland, as compared with its high situation in N. Jämtland and Härjedalen, forms a marked depression (taken as a whole). Since the extension of the coarse-grained sediments (either of caledonian or of pre

cambrian age) quartzites, sparagmites, and their metamorphic derivates (sparagmite-schists and related mica-schists), broadly speaking, is attached to these archean highlands; when on the contrary the depression of Central Jämtland is occupied by essentially more clayey and finegrained sediments, it seems probable that the arrangement above mentioned is a very old feature of the rockground, at least partially referable to the subcambrrian peneplane though later on strongly influenced by the caledonian deformation. These archean highlands and other already upraised parts of the mountainchain seem to have been the main source from which derived all the coarse-grained sediments accumulated along the eastern foot of the highlands in there existing depressions.

Mr S. ROSÉN spoke on same fossils found by Docent FRÖDIN in a limestone from N. Jämtland (see above).

#### Meeting April 13th 1917.

40 persons present.

Mr W. WRÅK gave a lecture (illustrated with many pictures) on the age of the erosion-valleys of Scandinavia.

Mr A. WALLÉN spoke on »The influence of temperature and rainfall on the crops of Sweden».

#### Meeting May 17th 1917.

12 persons present.

Prof. C. WIMAN spoke on »*Tertrema acuta*» — a stegocephalian from Spitzbergen. (See this Number of the Bull. of the Geol. hist.)

Prof. A. G. HÖGBOM gave same complementary notices to his lecture of March 12.

