tischen eozänen Nummulinenkalk diapyrartig aufwölbt. Die Bewohner berchen hier von oben den Dolomitreibsand und von der Seite den Nummulinenkalk, so dass dieser vorteilhafte Aufschluss gut zu beobachten ist. Derselbe Platz hat noch eine andere Merkwürdigkeit. Ein ca. 8 m langer Block des Hauptnummulinenkalkes, der den Dolomit mantelförmig bedeckt, ist in horizontaler Richtung verschoben. In der Spalte ist eine Brekzie zu finden, und die Gleitfläche ist dicht gefurcht.

Übrigens wird es sehr der Mühe wert sein, hier detaillierte mikrotektonische Aufnahmen zu machen

Die Höhlen dieser Gegend sind nicht nur vom hydrologischen und paläontologischen Gesichtspunkt beachtenswert, sondern auch als archäologische Fundstellen. In der einem meiner älteren Aufsätze beschriebene Höhle des Ördögárok (Teufels-Graben) fanden die Forscher des Veszprémer Museums in neuester Zeit die Reste 3000 jähriger Tongefässe.

ON THE CAUSES AND DOUBLE BIOLOGICAL SIGNIFICANCE OF THE GLACIAL PERIODS.

By Dr. Mária *Mottl*

(Abstract of a lecture hold in the 1934. october session.)

The solution of the problem of glacial periods is chiefly a biological question from the paleontologist's point of view and puts quite a lot of cosmic and telluric causes in the centre of various ingenious theories Pleistocenic glacialisation was already a quaternary periodical reiteration of a general phenomenon of different intensities caused after all by cosmical forces. Glacialisations appeared always just at the end of a cycle of Earth history acting somewhat as closing facts of the periods. At the evolution of the Earth. It is similiarly characteristical that at the same ends of the cycles appear the groups of plants and animals which became dominating, i. e. of a superior rank, in the subsequent cycles of Earth history. The first condition of true knowledge of Pleistocenic is to see it as the closing period of the 4th development cycle of the Earth, i. e. of the Cainozoic. Our present period is namely not the mammal period but much more the period of *Man* as dominating mammal of higher rank acting as a beginning or first period of a quite new cycle, the Anthropozoic. The theories explaining the glacial periods have the fault that they do not differentiate between high-mountain and polar glacialisation within the same glacial periods although this difference even nowadays exists. I think natural facts can only be obtained by clearing the causes of these phenomena first. These important chief causes on base of both astrophysical and physical geographical data are the differences of intensity of solar radiation in first line and the phenomenon of dilution of air (as air density constantly diminishes with the

height). Supposing these chief causes as origin of present glacialisation it is quite logical to believe in the hypothese that the large glacialisation of the glacial period was chiefly caused by an extraordinarily powerful event of one of the previously mentioned factors. This hypothesis emphasizes the significance of air dilution as a general atmospheric change. If by some reason or other a quantitative (and not qualitative) change, I mean decrease of air density takes place within the atmosphere which serves as an important defending cover of our Earth, even a phenomenon of relatively smaller dimensions can be the origin of serious changes since if the defending cover becomes thinner thus the irradiation of warmth will be quicker and gradually a general cooling or glacialisation follows. The theory of *Arrhenius* affirms that the decrease of the content of air of carbonic acid would lead to a new glacial period. This decrease of carbonic acid content is after all the logical consequence of the decrease of density of air layers. We do not yet know exactly which force is the origin of this periodical decrease of air density. Probably attraction is this. The supposition of changes in air density and decreases of it is affirmed by several facts especially by the evolution and improvement of the living world. The first glacialisation the first atmospherical changes led to the formation of life possibilities on Earth. Fishes are yet bound to the biocycle of Paleozoic, to the sea water. Mezozoic already produced such atmospherical circumstances which made possible a pulmonary aeration. The most important characteristic of the mammals of Cainozoic is the constant body temperature which means an independence the extern temperature. Man as the organism of the highest rank of the present cycle has its intellect as most powerful weapon against the unfavourable influences of nature especially those of the temperature. Fish, amphibia, mammals, mark each a step of the high grade evolution and each serves as a biological characteristic of a cycle of Earth history. As the first units of a higher group always appear at the end of the previous cycle already, e. g. reptilia in Permic, Man in Pleistocenic we may conclude that the important atmospherical changes on the end of the previous cycles afford the possibilities of living for higher grade organisms and at the same time take away those wanted by lower grade organisms e. g the change and cooling down on the end of the Mesozoic led to the appearence of mammals with a constant body temperature and the disappearance of reptilia. The phenomenon of decrease of air density gets thus an Earth historical and biological significance being the origin of both a coolig down (glacialisation) and the appearence of higher grade organisms. The periods of glacialisations are subsequently each a milestone of the general evolution.

The second important biological significance of the Pleistocenic is besides the appearence of *Man* as a higher grade organism the dying of many genuses characteristic to it. For the evolutionist the periodes of Earth history are quite as important as the

cycles since they are the characteristic grades of the types of the higher organisms (e. g. elephant in case of mammals) signing thus the true evolution of types. The periods become independent on base of the dominating more perfect forms only. The biological borders of the Pleistocenic should be placed in the time when the genera characteristic to the Pleistocenic (Elephas, Ursus, Equus, Rhinoceros) begin to dominate against the dying out races of the Miocenic. This point of view would count the actual Upper Pliocenic to the Pleistocenic already. It is erroneus to speak of type evolution during the same period, e. g. the Pleistocenic since not the mammal type (e. g. Elephant) but its one single genus (e. g. Elephas) is observed from the point of view of the evolution of genera. The evolution of the Elephant type during the Cainozoic is charakterized by the orthogenetic series: Moeritherium (Eocenic) — Mastodon (Miocenic) — Elephas (Pleistocenic). The genera characteristical for each period appear without any transition abruptly beside the dying out species of genera of the previous period. This fact approves that these genera were not at all developed of each other but out of the hereditary *gen* stock which characterizes e. g. the Elephant type as a biological unit. Thus the Mastodon and Elephas are also the periodically activated forms, let us say the ever improving genera of the same type activations of the latent components of this characteristic *gen* stock. During the same period genus evolution should mean the domination respectively dying out, in different times of genera living under the same period but in different geographic regions according to their velocity of evolution and to the climatic conditions. Genera living at the same time (as also nowadays) cannot be ancestors or descendants of each other nor can they form descending lines. The stratigraphic series of the single genera within the same and biologically well confined period is actually the natural consequence of dying out caused by the orthogenetic evolution of genera combined chiefly with climatic changes. The milder climate of early Pleistocenic was e. g. advantageous for the propagation of the southern genera (Elephas meridionalis, Rhinoceros etruscus, Hyppopotamus and Zebra). The immediately following cooler period compelled these genera to die out or migrate to south and at the same time made the propagation and domination of nothern genera easier. As the succession of dying out within the same period always began by the southern genera we can conclude in the biological fact that always the northern genera have the future on the course of the general evolution!

The problems of paleontology should thus be dissolved not on base of adaptation capacity and descendence but on those of hereditary characteristics and the evolution of orthogenetic types and genera. The same point of view should be used when examining the dying out genera as the second biological significance of the Pleistocenic. This much discussed phenomenon can without doubt

be found on the end of each period. The factor of glacialisation cannot be counted from this point of view. Generally speaking we may state that each period had a relative cooling down when compared with the previous one. The difference observable between the dying out of genera of the last periods of cycles of Earth history on one hand and that of genera of other periods on the other hand can be understood on base of the natural evolution of types and genera. During the Eocenic and Miocenic namely single genera only of the type of elephants began to die out e. g. of the several mammals characteristic to Cainozoic. The dying out of Miocenic Mastodons originated the orthogenesis of the genus of Pleistocenic Elephas as a newer grade of type evolution. The type of elephants thus did not die quite out with the Mastodonts. The disappearence of Elephas genera in the Pleistocenic, on the contrary, signs not only the end of a genus but also that of the whole type of elephants since the Elephas forms the highest and last grade of the evolution of the type of elephants. The role and evolution of the whole type of elephants shall be finally closed by the death of the African and Indian elephants the last genera saved for the present. This dying out process had taken place not only in case of the genus of Elephas but also in case of other Pleistocenic genera. Since the single types form properly speaking the whole ordo of mammals characteristic for the Cainozoic we can conclude in stating that the dying out of genera at the end of the Pleistocenic signed the disappearence of the whole ordo of mammals to give place to the higher grade of organism, to *Man*

SZFEROSZIDERIT ÉS SZIDERIT FELSŐBÁNYÁRÓL.

Irta: Dr. *Koch Sándor* és Dr. *Zombory László*

Egy ábrával.

SPHÄROSIDERIT UND SIDERIT VON FELSŐBÁNYA.

von Dr. A. *Koch* und Dr. L. v. *Zombory*.

Es wurden zwei Karbonate von Felsőbánya analysiert, ein Sphärosiderit (I) und ein Siderit (II.). Letzteres ist das erste bisher bekannte kristallisiertes Siderit-Vorkommen von Felsőbánya (Siehe Figur 2.)

(Mineralogisch-Paleontologische Abteilung des Magyar Nemzeti Múzeum.)

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A felsőbányai Főtelérnek régen ismert másodlagos ásványa a sötétbarna, gömbös-vesés szferosziderit. Elsőül M. v. Lill közölte analizisét 1869-ben[1], utána G. Dittrich[2] készített három elemzést

[1] Berg u. Hutteum. Jahrb. Bd. XVIII. 1869. p. 343.

[2] Verhandl. Geol. R. A. Wien. 1877. p. 114.