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ON THE VERTICAL DISTRIBUTION OF NUMMULITES IN THE PALEOGENE DEPOSITS OF GEORGIA

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О вертикальном распределении нуммулитов в палеогеновых отложениях Грузии

The Nummulites are well represented in the Paleocene and Eocene deposits of the Georgian Soviet Socialist Republic (GSSR).

Nummulite limestones are widely spread in the west part of the GSSR (Racha, Lechkumi, Guria, Abkhasia). In the east part of Georgia they are replaced by the sandy-argillaceous and volcanic formations, in which the mentioned group of fossils occurs sporadically. On the southern slope of the Great Caucasus the terrigenous flysch exposed along the northern part of the Kartalinian depression also contains the mentioned fauna.

The Adjaro-Thriaethian folded system, situated southwards, consists of Paleocene and Lower Eocene flysch, Middle Eocene volcanic series and Upper Eocene sandy-argillaceous formation. The latter is replaced to the west by the volcanic deposits of the Adigeni suite. Nummulites were found at different levels of these deposits. They occur also in the deposits of the Akhaltsikhe depression and in the rocks of the Somkhithi Block, which is situated in the south-eastern part of Georgia.

In the above mentioned deposits, from the bottom to the top one can distinguish: 1. the horizon with *Nummulites fraasi* de la Harpe. This form has been discovered as yet in the argillaceous part of the section (4—5 m), exposed in the Somkhithi Block below the transgressive volcanic formation with the Middle Eocene Nummulites near the district centre Thethri-Tskaro.

These clays were dated earlier as Montian by N. Mrevlishvili (1965) and the present writer on the assumption that the deposits with this fauna follow conformably the light-grey limestones and marls of the Danian Stage.

But detailed investigation of the mentioned section (1967) proved that a gap exists between the Danian and the Paleocene. It appears now that the dark clays of the Paleocene here begin with coarse grained sand, while the clays immediately above contain redeposited Upper Cretaceous microforaminifers. The Nummulites appear still higher, in the thinnest intercalations of arenaceous clays. And the clays themselves contain only the microforaminifers of the *Globorotalia pseudomenardii* zone, that is to say, the upper part of the Paleocene (Ilerdian).

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The stratigraphical position of *Nummulites fraasi* is more exactly defined in Austria where according to G o h r b a n d t (1964) *Nummulites* cf. *fraasi* was found in the deposits exactly above the beds with rich Thanetian molluscs.

This Nummulite has a similar position in the east part of Egypt (the district of Faraphrah Oasis), where dark Esnah shales are developed. The mentioned Nummulite was for the first time found and described in the lower part of these shales. According to the recent data (S c h a u b, 1964) the Esnah shales, unconformably overlying the Maestrichtian limestones, contain besides the Nummulites Alveolina fauna of the Ilerdian and microforaminifers of the *Globorotalia pseudomenardii* zone (Upper Palaeocene). Thus, the Upper Palaeocene age of *Nummulites fraasi* is beyond doubt. The Palaeocene Nummulites are small-sized and represented by megaspheric forms.

2. The horizon with *Nummulites planulatus* L a m a r c k. In the upper part of the Thriaethian flysch above the beds with *Discocyclina* cf. *seunesi* D o u v. of the Palaeocene a more abundant fauna of Nummulites is observed (*N. planulatus*, *N. exilis*, *N. lucasi*, etc.). The first two forms are more frequent and, moreover, both megaspheric and microspheric forms are present.

3. The horizon with *Nummulites laevigatus* B r u g u i è r e. The typical form of this species has been known since long in Lutetian volcanic deposits of the northern slope of Thriaethi.

In the upper parts of the volcanic series in the districts of the villages Dzegvi and Akhalkalaki a mixture of some Lutetian (*Nummulites millecaput*) and Upper Eocene-Oligocene forms (*N. incrassatus*) was found together with *N. aff. laevigatus* L a m k. and species of Nummulites of a wider vertical range. These deposits correspond to the Biarritzian stage (the upper part of the Middle Eocene) of Western Europe.

A similar fauna was found also in the equivalent beds of the western part of the Adjaro-Thriaethi in Guria (K a c h a r a v a, 1964). In the carbonate deposits of the Middle Eocene of our Republic nongranulated species of Nummulites are represented (*N. purchisoni*, *N. irregularis*, *N. distans*, etc.). They are rockforming in Western Georgia, but in the volcanic deposits of the southern part of the Republic (Adjaro-Thriaethi, Somkhiti Block) granulated representatives of this fauna prevail (*N. partschi*, *N. laevigatus*, *N. gallensis*, etc.) widespread in the equivalent deposits of Armenia and southern Azerbaijan.

The Middle Eocene Nummulites are larger and more variable.

4. The horizon with „*Nummulites fabianii*”. North of the Dzirula massif, in the upper course of the Kvirila-river Nummulite limestones of small thickness with *N. fabianii* (type), *N. incrassatus*, etc., are exposed overlain by the Maikop beds of the Oligocene, but southwards above the Biarritzian deposits of Thriaethi the *Lyrolepis* beds are developed (the lower part of the Upper Eocene) which in some places (Gori) cover discordantly the Cretaceous. Above follow sandstones interbedded with clays. From the sandstones *N. fabianii* ssp. n., *Discocyclina sella*, etc., have been determined. However, in some places (e.g. the southern slope of the Caucasus in Kartalinia) these deposits overlap directly beds of different ages. Probably, the mentioned unconformities are of the same age, because in the Tskhanari syncline (Racha) *N. fabianii* ssp. n. was found in the deposits of the *Lyrolepis* horizon. *N. fabianii* ssp. n. takes its place above the rocks with *N. fabianii* Prev. In

comparison with the type — species this subspecies is smaller and thinner, with thin granules on the surface. *N. fabianii* ssp. n. does not fully coincide with *N. retiatus*. On the surface of the latter the granules are scarcely noticeable. *N. fabianii* ssp. n. and *N. praefabianii* M e n n e r (= *N. problematicus* T e l l i n i?) belong to the same species. „*N. praefabianii*” is mentioned by the West European authors in the upper part of the Middle Eocene. It has nothing in common with *N. praefabianii* M e n n e r (= *N. fabianii* ssp. n.), neither by its structure nor by its stratigraphical position.

Thus, the initial form of the series — „*N. praefabianii*” of the West European authors — is of Middle Eocene age (S c h w e i g h a u s e r, 1953—1954). More exactly, it is a form of the uppermost part of the Middle Eocene. Stratigraphically above it is replaced by *N. fabianii* (type).

Nummulites fabianii ssp. n. is found in the highest part of the Upper Eocene (beds with *Bolivina*).

Stratigraphically higher Nummulites are unknown in the deposits of Georgia, but in the equivalent deposits of West Europe *N. retiatus* occurs. It is described from the lowest part of the Oligocene, or from the Uppermost part of the Upper Eocene (R o v e d a, 1959).

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REFERENCES

- G o h r b a n d t K. (1964), Aperçu sur la subdivision du Paléocène et de l'Eocène le plus inférieur dans l'Helvéticum au nord de Salzbourg (Autriche), basé sur des Foraminifères planctoniques. *Mém. Bureau rech. géol. min.* Colloque sur le Paléogène, 2.
- К а ч а р а в а I. V. — К а ч а р а в а И. В. (1964), Вопросы стратиграфии средне-эоценовых отложений северной периферии Средиземноморского бассейна. *Вопр. геол. Грузии, АН ГССР, к XXII сессии МГК.*
- М р е в л и ш в и л и N. I. — М р е в л и ш в и л и Н. И. (1965), Палеоценовые нуммулиты Юго-Восточной Грузии. *Изв. Геол. общ. Грузии, т. IV, вып. 2.*
- R o v e d a V. (1959), Nummulites retiatus nouvelle espèce de Nummulite réticulée des Abruzzes (Italie). *Rev. Micropaléont.*, nr 4.
- S c h a u b H. (1964), Les bassins paléogènes suisses. Colloque paléogène, Bordeaux, *Mém. BRGM.*
- S c h w e i g h a u s e r I. (1953—1954), Mikropaläontologische und stratigraphische Untersuchungen im Paleocaen und Eocaen des Vicentin (Norditalien). *Schweiz. paleont. Abh.*, 70.

РЕЗЮМЕ

На основе данных нуммулитовой фауны в палеоценовых и эоценовых отложениях республики выделяются следующие горизонты: 1. Горизонт с *N. fraasi* верхнего палеоцена, 2. Горизонт с *N. planulatus* ипрского яруса, 3. Горизонт с *N. laevigatus* лютета; в кровле среднего эоцена наблюдается фауна, характерная для биаррицкого яруса, 4. Горизонт с „*N. fabianii*”; типичная форма данного вида обнаружена в нижней части отложений, выше же появляется *N. fabianii* ssp. n. (= *N. problematicus* T e l l i n i (?)).

В олигоценных слоях республики нуммулиты не были обнаружены.