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GEOLOGY

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On the Lower Barremian of the Southern Limb of the Racha-Lechkhumi Syncline (Western Georgia)

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ABSTRACT. **On the Southern limb of the Racha-Lechkhumi syncline, within the lower Barremian sediments, ammonites of Holcodiscidae family have been identified for the first time. An attempt of zonal subdivision of the Lower Barremian of the section in v. Nikortsminda outskirts in correlation with the Lower Barremian the Northern limb of the mentioned structure is made. Now on these grounds we can affirm that Holcodiscidae occurs not only on the Northern limb of the Racha-Lechkhumi syncline, as it was supposed earlier, but also in the section of Nikortsminda outskirts on the Southern limb, i. e. both in deepwater and shallow water parts of a neritic region of the sea. Recent data specify the spreading areal of "ammonitic facies of the Barremian".**

Key words: Barremian, biostratigraphic, Nikortsminda, ammonitic facies.

Barremian deposits of Georgia have been studied since long. Interesting information on diverse investigations of this stage are reflected in numerous publications [1-9]. The upper substage of the Barremian was studied thoroughly. As for the lower one, it became the subject of detailed investigations recently. In the end, new unified scheme of biostratigraphic subdivision was worked out for the Upper Barremian of Georgia [4, 5, 7, 8] as well as for the Lower Barremian [10, 11]. The latter should be investigated in detail not only in the Khidikari section, but also in other sections, especially on the Southern limb of the Racha-Lechkhumi syncline. One of such sections is fixed in the vicinity of v. Nikortsminda. Lateral changes of Lower Cretaceous sediment facies from Okriba towards the Racha-Lechkhumi syncline was first paid attention by A. Djanelidze [1]. He noted that the urgonian massive limestones with chamidae, spread in the vicinity of Kutaisi, northwards in Nikortsminda region (Southern limb of the Racha-Lechkhumi syncline) are substituted by similar massive limestones without chamidae, but with silicified nodular concretions in the upper part, and with the so-called transitive fauna in its uppermost horizons. In the Northern limb of the mentioned syncline (Khidikari section) the urgonian facies is utterly absent, here in the Barremian it is represented by laminated limestones with flinty concretions comprising rather abundant ammonitic fauna, according to which A. Djanelidze distinguished the "Barremian ammonitic fauna" It is the "stratigraphic equivalent of the Okriba urgonian" [I, p.80]. Later this issue was broached repeatedly by many investigators [2-6, etc.]. Urgonian biosedimentary system of Georgia is studied very precisely by E. Kotetishvili [5]. At present, with appearance and storage of recent actual data, it is necessary to reconsider principles concerning the spreading and living condi-

tions of some populations of ammonitic family Holcodiscidae Spath, 1924 and presence or absence of "ammonite facies" While describing the section in the vicinity of Nikortsminda, we are speaking about the massive and laminated limestones of the Lower Barremian, occupying stratigraphic interval between the analogues of the Upper Barremian zone Ancyloceras vandenheckii and Upper Hauterivian limestones.

On the Southern limb of Racha-Lechkhumi syncline, North-Westwards of v. Nikortsminda, the authors of the paper (with the participation of M. V. Topchishvili and N. N. Kvakhadze), constructed the section on the road leading to v. Khonchiori, here the Hauterivian sediments with *Simbirskites* sp. [9] upwards are conformably followed by:

K_1h_2 1. Medium- and thick-bedded massive crystalline limestone with concretions of grey flints, where thick valved shells of amphidonts often occur 65m

$K_1br_1^1$ 2. Clayey-arenaceous medium-bedded limestones with abundant and diverse fauna in its lower part - amphidonts, brachiopods, bevalves, gastropods and ammonites - *Spitidiscus* cf. *seunesi* (Kil.), *S.* sp. *Barremites cassidoides* (Uhl.), *Protetragonites crebrisulcatus* (Uhl.) ~10m.

$K_1br_1^2$ 3. The same sediments, but more loose and without fauna ~10m.

K_1br_1 4. Compact grey limestones with breccia limestone parting (0.25-0.30m) in the uppermost part comprising sparce ammonitic fauna - *Holcodiscus* cf. *caillaudianus* (d'Orb.) ~10m

$K_1br_2^1$ 5. Sandy marls without fauna 5m

$K_1br_2^2$ 6. Sandy marls, but more compact, wherein N. N. Kvakhadze [9] found ammonite species - *Heinzia ouachensis* (Coq.), *H. provincialis* (d'Orb.), *H. matura* Hyatt, *Barremites difficilis* (d'Orb.), *B. charrierianus* (d'Orb.), *B. rebouli* Kil., *Lytoceras subsequens* Kar., *L.* cf. *liebigi* Opp 2-3m

Stratigraphically higher follow marlaceous limestones with ammonites of Hemihoplites feraudianus zone.

In the described section transition from one layer to another is completely gradual. Band 1, by its stratigraphic position - interbedded between the layers with the Upper Hauterrivian *Simbirskites* sp. and Band 2 with Lower Barremian fauna, should correspond to the Upper Hauterivian zone Pseudothurmannia angulicostata auct. Band 2 comprises typical Lower Barremian ammonitic species - *Spitidiscus* cf.*seunesi* (Kil.), which to our data accompany the index species - *Spitidiscus hugii* of the lower zone of the Lower Barremian. In this interval of the section limestones from Band 3 are rather loose, due to it here was formed a ravine one of the Sharaula river heads. The greater part of the ravine is covered with recent sediments and vegetation disguishing the bedrocks but nevertheless here and there they crop out. True thickness of Band 3 is about 10m. By stratigraphic position, located between two faunistically well founded zones of the Lower Barremian, it corresponds with the Pulchellia compressissima zone, distinguished in the Northern limb of Racha-Lechkhumi syncline within the Khidikari section [10, II; see correlation scheme]. Ammonites from Band 4 represent index-species of the next, third zone of the Lower Barremian Holcodiscus caillaudianus. Though band 5 doesn't comprise fauna, its stratigraphic position can be identified faultlessly - it corresponds to the zone Ancyloceras vandenheckii (see Bands 4 and 6). And finally Band 6 - this is Heinzia sartousiana zone.

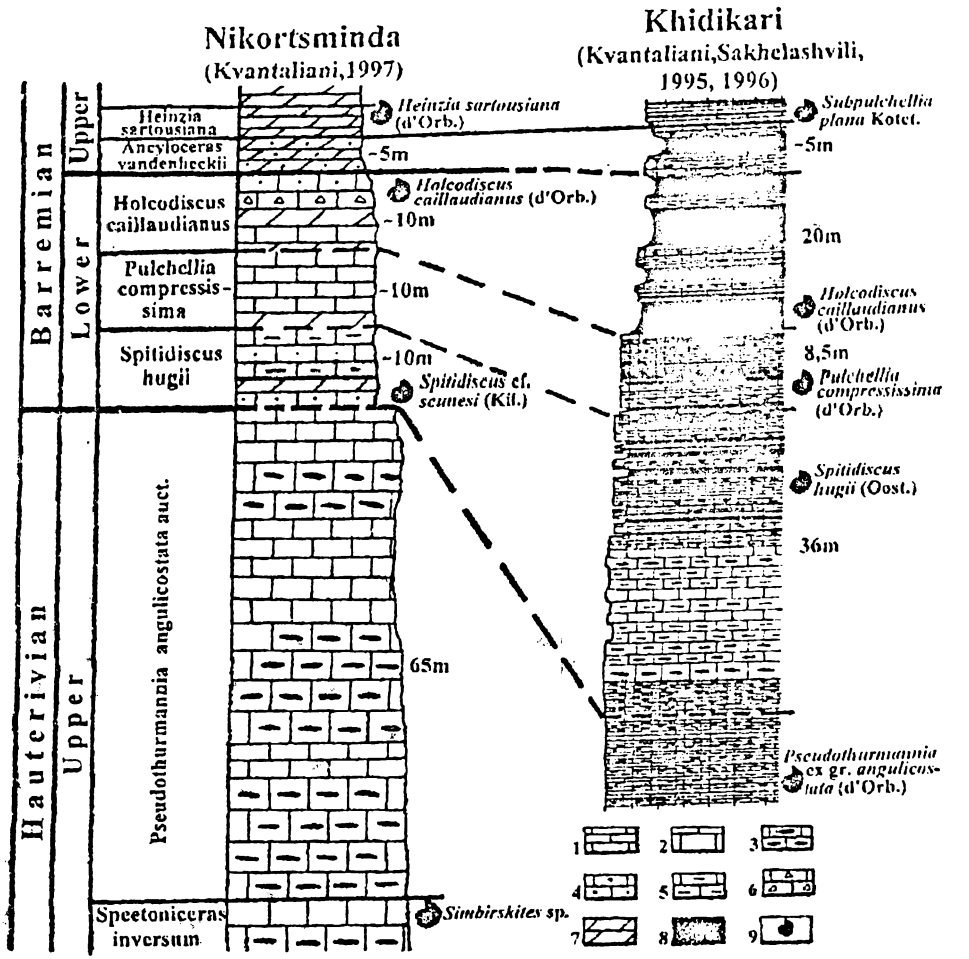

Fig. Correlation scheme of Lower Barremian sediments of the Northern (Khidikari river-gorge) and Southern (v. Nikortsminda) limbs of the Racha-Lechkhumi syncline (Western Georgia).

1 - laminated limestones; 2 - thick-bedded limestones; 3 - limestones with flint concretions; 4 - arenaceous limestones; 5 - clayey limestones; 6 - breccia limestones; 7 - marls; 8 - clays, marls; 9 - stratigraphic level of fauna selection (ammonites predominantly).

Ammonites from this Band [9] defined as *Heinzia ouachensis, H. provincialis* and *H. matura* are regarded as synonymous with *Heinzia sartousiana* species. Therefore, we attribute Band 6 to Heinzia sartousiana zone. As for the rest of ammonites from this Band, their presence in the indicated list is not quite clear (N. N. Kvakhadze's oral information). Upwards follow other zones of the Upper Barremian-Hemihoplites feraudianus, etc.

Thus, we can come to quite a number of conclusions. In the Southern limb of the Racha-Lechkhumi syncline, in Nikortsminda section Lower Barremian ammonites - representatives of Holcodiscidae family have been fixed for the first time. Zonal subdivision

of the Lower Barremian on these grounds is also the first attempt. Available actual material enables us to apply the term "Barremian ammonitic facies" to some other sections of the Southern limb of the structure under consideration. Earlier, representatives of Holcodiscidae family were considered as deepwater inhabitants, widerspread on the Northern limb of Racha-Lechkhumi syncline, while on the Georgian Block they are entirely absent. These differences were explained by different geotectonic features, and presence of ammonites in the northern zone of the given syncline, towards the deep of the marine basin were considered as a common phenomenon [4,5]. On the contrary new actual material indicates that ammonites of Holcodiscidae family were the inhabitants of shallow water as well as of deepwater parts of the neritic sea. Further investigations will ascertain range of spreading of the "Lower Barremian ammonitic facies" in the Southern limb of Racha-Lechkhumi syncline.

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