

ПАЛЕАНТАЛОГІЯ І СТРАТЫГРАФІЯ • ПАЛЕОНТОЛОГІЯ
И СТРАТИГРАФІЯ • PALEONTOLOGY AND STRATIGRAPHYUDC 563.3; 551.734.5 (476.6)
https://doi.org/10.65207/1680-2373-2026-1-39-49Received: 06.02.2026
Accepted: 20.03.2026A ZOOGENIC BUILDUP FROM THE MIDDLE FRASNIAN (UPPER DEVONIAN)
OF THE ZHLOBIN SADDLE (EAST OF BELARUS)Yury V. Zaika¹, Semyon A. Kruchek¹State Enterprise "GEOSERVICE"
53 Yanki Maura St, 220015, Minsk, Belarus
E-mail: cyrtophyllum@gmail.com

The article provides a brief description and reconstruction of a Middle Frasnian coral-stromatoporoid buildup, uncovered by the Rahachouskaya-742 borehole. The buildup is preserved as a xenolith in younger Devonian volcanic formations of a volcanic pipe in the Zhlobin Saddle. The buildup, at least several tens of meters in diameter, could have represented a bioherm or part of a more complex framework structure. The main rock-forming organisms were *Tabulata* and *Rugosa* corals, as well as *Stromatoporoidea*. The organogenic limestones and secondary dolomites of the buildup are characterized by noticeable porosity, indicating their potential for high reservoir properties. Paleogeographically, this structure is confined to the proposed East Belarusian Reef Belt of the Semiluki time (Middle Frasnian).

Keywords: zoogenic buildup, *Stromatoporoidea*, *Tabulata*, *Rugosa*, Middle Frasnian, Devonian, Zhlobin Saddle, Belarus.

INTRODUCTION

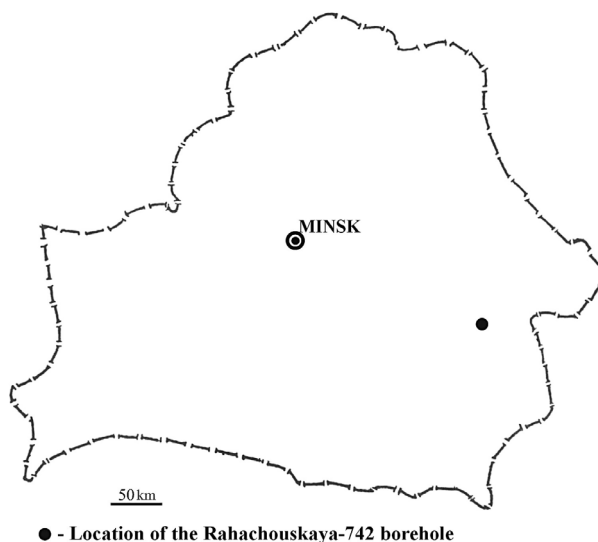
Numerous indications have been published to date of the presence of zoogenic formations and framework structures (buildups) in the Middle Frasnian (Semiluki) deposits of Belarus, including various coral-stromatoporoid biostromes, bioherms, reefogenic coral limestones, etc. [1, 4–6, 8, 13]. However, most of the publications provide little paleontological information, thus leaving an incomplete understanding of the architecture and structure of these formations.

Recently, new material of significant importance for the study of this topic was obtained during exploration of the Mastkouskaya volcanic pipe within the theoretical Rahachou diatreme field (Zhlobin Saddle, eastern Belarus), where the Rahachouskaya-742 borehole penetrated a thick interval of biogenic limestones and dolostones, occurring within the Upper Frasnian volcanic rocks. Study of the core material revealed that the carbonate rocks represent a coral-stromatoporoid framework structure of the Middle Frasnian (Semiluki) age, buried as a large xenolith, presumably as a result of a volcanic explosive event. In 2002, the authors of this paper examined the core and collected samples. They briefly reported on this find previously [10], and a more detailed description of this object is given below.

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MATERIAL AND METHODS

Exploration borehole No. 742, which is the source of the material for this study, was drilled approximately 16 km southeast of the city of Rahachou in eastern Belarus (Fig. 1) to study Upper Devonian volcanic pipes. At a depth of 156,0 to 205,0 m within the volcanic rocks, the borehole penetrated organogenic limestones and secondary dolostones of a large carbonate xenolith.



● - Location of the Rahachouskaya-742 borehole

Figure 1 — Schematic map of Belarus showing the location of the Rahachouskaya-742 borehole

The authors conducted an initial field survey of the xenolith at the core repository of the State Enterprise «Scientific and Practical Center of Geology», where they documented the composition of the predominant rock-forming organisms, as well as the main visually distinguishable features of the rock. Furthermore, based on macroscopic features, a general rough estimate was made of the nature and distribution of porosity and cavernosity.

To further refine the taxonomy of the rock-forming fauna, core samples were collected throughout the xenolith section. Some of this material was subsequently studied using thin and polished sections. It should be noted that the current location of most of the sampled material, previously housed at the Institute of Geology branch of the «Scientific and Practical Center for Geology» (Minsk, Belarus), is unknown, which does not allow for a more detailed study. Some samples are stored in the Zoological Museum of the Belarusian State University (Minsk, Belarus) and are on display in the museum's paleontological exhibition.

The authors were initially guided by L.B. Rukhin's classification of carbonate rocks [9], supplementing it with an indication of the predominant organic remains. Subsequently, the most typical organogenic rocks were also interpreted according to R.J. Dunham's classification [2, 3].

RESULTS OF THE STUDY

Lithology. A significant portion of the considered carbonate sequence consists of frame- and/or bafflestones, in which the rock-forming elements are the coralla of ramose Tabulate and fasciculate Rugose corals. They alternate with grainstones formed by invertebrate and presumably algal debris. The framestones with a predominance of stromatoporoids and massive corals also constitute a large part. Some intervals of recrystallized, cavernous, dolomitized limestones and dolostones without visible organic remains may be the result of intense diagenetic alteration of any of the above-mentioned rock varieties.

Framework organisms include Stromatoporoids, Rugose and Tabulate corals.

Stromatoporoids are represented by massive and lamellar forms. In addition, recrystallized branched or finger-like structures have been observed, which may be either stromatoporoids or highly recrystallized Rugose corals. The taxonomic composition of stromatoporoids has not been studied.

Rugose corals are apparently represented by a single species of the genus *Disphyllum* Fromentel, characterized by a variable colony shape — from fasciculate, with cylindrical corallites, to subcerioid,

in which the corallites are closely spaced and become subprismatic (Plate 1, fig. 1–4). This species of *Disphyllum* is likely identical to those described from the Semiluki Formation of the Orsha Depression [12]. It has previously been suggested that all Frasnian representatives of the genus *Disphyllum* of the East European platform belong to the species *Disphyllum emsti* (Wedekind) (*sensu lato*) [12], which is also supported in the present publication.

Tabulate corals. Of rock-forming significance are massive coralla of *Alveolitidae*, ramose *Scoliopora* and *Thamnopora* (Plate 2, fig. 1–4). At least some of the massive *Alveolitidae* belong to *Crassialveolites* Sokolov. Coralla of *Scoliopora* sp. (presumably *Scoliopora denticulata* (Milne-Edwards et Haime)) are found almost throughout the borehole section, forming clusters of closely spaced branches. In dolomitized intervals, these coralla are often leached. Digitate coralla of *Thamnopora* belong entirely or predominantly to *Thamnopora cervicornis* (Blainville). They occur almost throughout the borehole section, forming various aggregations.

In general, the systematic composition of corals typical in this area for the Semiluki Formation [10–12] leaves little doubt about the attribution of the described deposits to this stratigraphic interval.

Other organisms found alongside the framework invertebrates include *pelecypods*, *brachiopods*, *gastropods*, *crinoids* and presumably *cephalopods*. The carbonate matrix filling the spaces between the framework skeletons likely contains *algal* remains in addition to invertebrate debris.

Carbonate sequence in Rahachouskaya-742 borehole. From top to bottom, the following deposits represent the section, with the predominant rock-forming organisms indicated.

156,0–156,5 m — light-colored cavernous limestone with remains of Rugosa (*Disphyllum*) and Tabulata (*Thamnopora*, *Alveolitidae*), and Stromatoporoida.

156,6–157,0 m — coral limestone dominated by Rugosa (*Disphyllum*) and Tabulata (*Alveolitidae*, *Thamnopora*, *Scoliopora*).

157,0–158,1 m — coral limestone dominated by ramose Tabulata (*Thamnopora* and *Scoliopora*).

158,1–158,3 m — stromatoporoid-dominated limestone.

158,3–158,4 m — coral limestone dominated by massive Tabulata (*Alveolitidae*), replaced by ramose Tabulata (*Thamnopora* and *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

158,4–158,7 m — light-colored, cavernous, dolomitized limestone, most likely composed of recrystallized, indeterminate corals and (or) digitate stromatoporoids.

[158,7–164,0 m — core is missing]

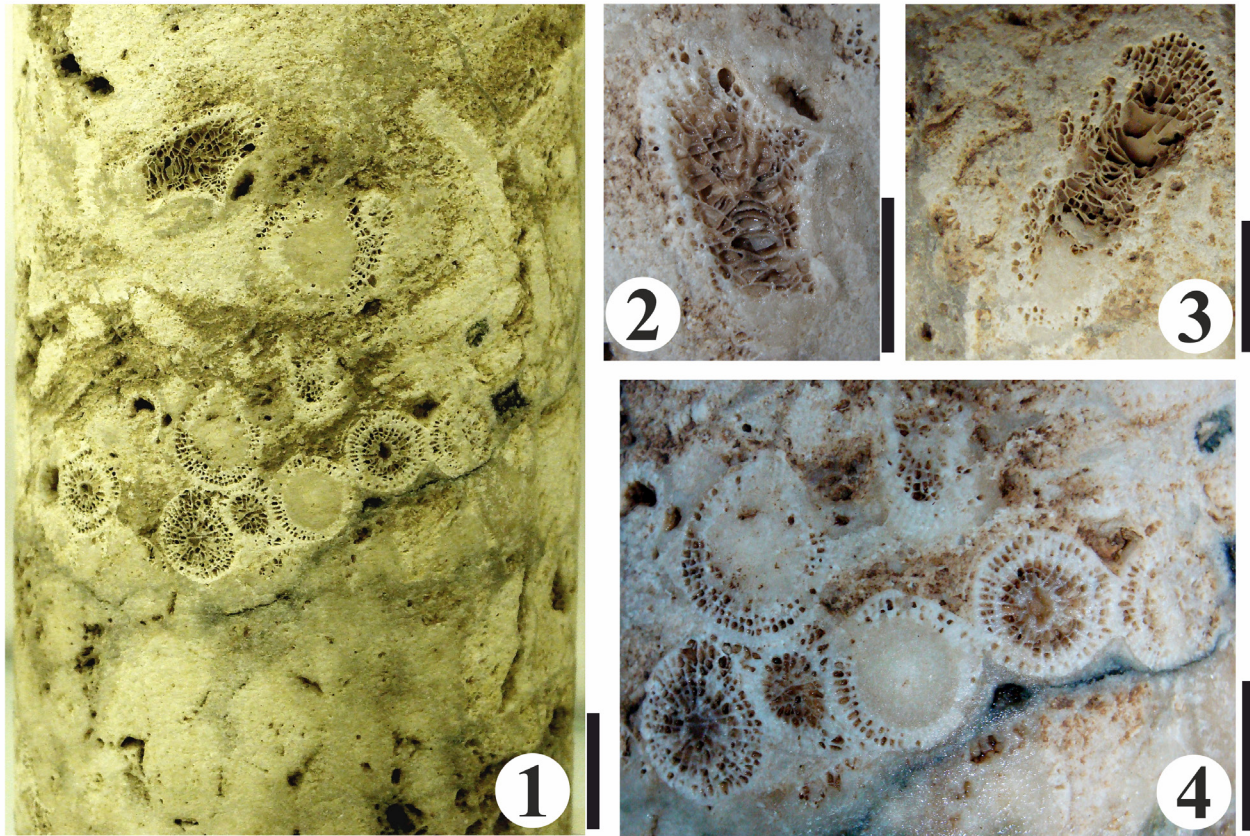


Plate 1 — Rahachouskaya-742 borehole, Rugosa-dominated limestone.

1 — Recrystallized subcerioid Rugosa (lower third of the core sample), fasciculate Rugosa (middle part of the core sample), fasciculate Rugosa, ramose Tabulata, and detrital limestone (upper part of the core sample). 2, 3 — Longitudinal sections of *Disphyllum* corallites (2 — part of image 1, enlarged). 4 — Cluster of fasciculate Rugosa (*Disphyllum*) in porous detrital matrix (part of image 1, enlarged). 1–4: depth 157,0 m. Scale bars: 1 cm (2–3) and 2 cm (1). The depicted material is exhibited in the Zoological Museum of the Biological Faculty of the Belarusian State University (Minsk, Belarus).

164,0–164,7 m — coral limestone dominated by fasciculate Rugosa (*Disphyllum*) and ramose Tabulata (*Thamnopora*, *Scoliopora*), with sporadic stromatoporoids.

164,7–166,5 m — light-colored, cavernous, dolomitized limestone.

166,5–166,8 m — limestone dominated by massive Tabulata (*Alveolitidae*), recrystallized, indeterminate corals and (or) stromatoporoids.

166,8–166,9 m — coral limestone dominated by fasciculate Rugosa (*Disphyllum*) and ramose Tabulata (*Thamnopora*, *Scoliopora*).

166,9–167,0 m — limestone dominated by massive Tabulata (*Alveolitidae*) and stromatoporoids.

167,0–167,1 m — limestone dominated by Rugosa (*Disphyllum*) and stromatoporoids.

167,1–167,2 m — coral limestone dominated by fasciculate Rugosa (*Disphyllum*) and ramose Tabulata (*Thamnopora*, *Scoliopora*).

167,2–167,3 m — limestone dominated by massive Tabulata (*Alveolitidae*) and stromatoporoids.

167,3–167,4 m — coral limestone dominated by Rugosa (*Disphyllum*) and massive Tabulata

(*Alveolitidae*), with crinoid debris.

167,4–167,6 m — limestone dominated by stromatoporoids and ramose Tabulata (*Thamnopora*, *Scoliopora*).

167,6–167,7 m — light-colored cavernous dolomitized limestone without visible organic remains.

167,7–168,0 m — stromatoporoid-dominated limestone.

[168,0–170,6 m — core is missing]

170,6–171,2 m — limestone dominated by massive Tabulata (*Alveolitidae*), Rugosa (*Disphyllum*) and stromatoporoids.

171,2–171,6 m — coral limestone dominated by massive Tabulata (*Alveolitidae*), with brachiopods.

171,6–171,7 m — stromatoporoid-dominated limestone, with pelecypods.

171,7–171,8 m — limestone dominated by massive Tabulata (*Alveolitidae*) and stromatoporoids.

171,8–171,9 m — coral limestone dominated by massive Tabulata (*Alveolitidae*).

171,9–172,0 m — limestone dominated by stromatoporoids and massive Tabulata (*Alveolitidae*).

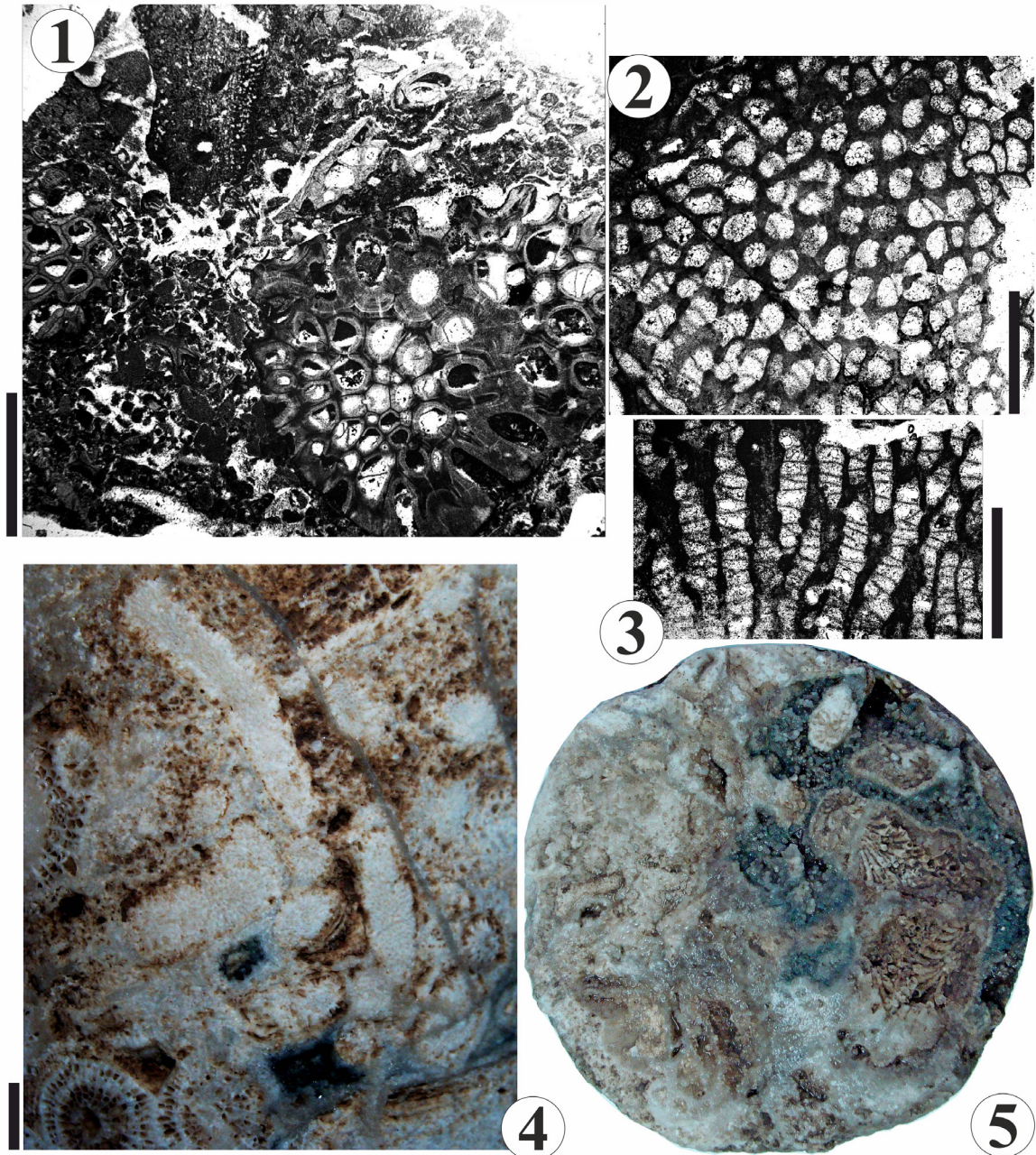


Plate 2 — Rahachouskaya-742 borehole, framework Tabulate corals.

- 1 — *Thamnopora cervicornis* (Blainville), coralla and their fragments in detrital matrix (thin section) [10].
 2, 3 — *Crassialveolites obtortus* (Lecompte), transverse (2) and longitudinal (3) thin sections [11].
 4 — Cluster of *Scoliopora* sp. (core surface). 5 — Core cross-section with leached *Thamnopora* sp. and a cluster of recrystallized and leached *Scoliopora* sp. Depth: 157,0 m (1-3) and 170,7-175,5 m (4, 5). Scale bars: 5 mm (1, 4) and 2 mm (2, 3).
 Core diameter (5) — 7 cm

172,1-172,2 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

172,2-172,3 m — limestone dominated by stromatoporoids and massive Tabulata (*Alveolitidae*).

172,3-172,6 m — limestone presumably composed of recrystallized subcerioid Rugose corals.

172,6-172,8 m — limestone dominated by massive Tabulata (*Alveolitidae*) and stromatoporoids.

172,8-174,6 m — stromatoporoid-dominated limestone, with gastropods (174,2 m), a lens of crinoid debris (174,3 m) and with brachiopods (174,5 m).

174,6-174,7 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

174,7-175,0 m — coral limestone dominated by massive Tabulata (*Alveolitidae*).

175,0-175,1 m — limestone dominated by stromatoporoids and Rugose corals (*Disphyllum*).

175,1–175,2 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*).

175,2–175,3 m — stromatoporoid-dominated limestone, with gastropods and presumably cephalopods.

175,3–175,4 m — coral limestone dominated by massive Tabulata (*Alveolitidae*).

175,4–175,5 m — limestone dominated by massive Tabulata (*Alveolitidae*) and stromatoporoids.

175,5–175,6 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

175,6–175,7 m — stromatoporoid-dominated limestone.

175,7–175,8 m — limestone dominated by stromatoporoids and Rugose corals (*Disphyllum*).

175,8–176,0 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

[176,0–179,0 m — core is missing]

179,0–179,2 m — coral limestone dominated by massive Tabulata (*Alveolitidae*).

[179,2–182,7 m — core is missing]

182,7–182,8 m — coral limestone dominated by massive Tabulata (*Alveolitidae*) and Rugose corals (*Disphyllum*).

[182,8–185,0 m — core is missing]

185,0–186,2 m — light-colored cavernous dolomitized limestone.

186,2–186,3 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

186,3–186,5 m — coral limestone dominated by massive (*Alveolitidae*) and ramose (*Thamnopora*, *Scoliopora*) Tabulata.

186,5–188,0 m — limestone dominated by Rugose corals (*Disphyllum*), stromatoporoids, and Tabulate corals (*Alveolitidae*, *Thamnopora*, *Scoliopora*).

188,0–188,2 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*).

[188,2–192,0 m — core is missing]

192,0–192,1 m — coral limestone dominated by Rugose corals (*Disphyllum*).

192,1–192,4 m — coral limestone dominated by ramose Tabulata (*Thamnopora*, *Scoliopora*) and fasciculate Rugosa (*Disphyllum*).

192,4–192,5 m — coral limestone dominated by massive Tabulata (*Alveolitidae*).

[192,5–196,8 m — core is missing]

196,8–197,0 m — limestone dominated by stromatoporoids and ramose Tabulata (*Thamnopora*, *Scoliopora*).

[197,0–204,0 m — core is missing]

204,0–205,0 m — coral limestone dominated by subcerioid and fasciculate Rugosa (*Disphyllum*).

A schematic representation of the carbonate section is shown in Figure 2.

As can be seen from the Figure 2 and the description above, the section appears to have a certain symmetry. Specifically, three intervals of comparable thickness can be traced. The first (depth 156,0–170,6 m, approximately 14–15 m thick) is characterized by a predominance of ramose and fasciculate Tabulate and Rugose corals, with the presence of massive tabulates, cerioid Rugosa and stromatoporoids in varying quantities. The middle part (depth 170,6–185,0 m, approximately 14 m thick) is distinguished by a predominance of massive corals and stromatoporoids, with purely stromatoporoid intervals occurring near the middle of this part. Further on, to a depth of 205,0 m, there is a third interval (approximately 20 m thick), in which ramose and fasciculate corals are again most common.

However, the incompleteness of the core should be considered. More complete data could either confirm or challenge this observation.

DISCUSSION

The reconstruction of the framework structure proposed below (Fig. 3) is based both upon the results of the borehole material study as well as on possible analogues.

Previously, Middle Frasnian (Semiluki) zoogenic buildups in Belarus were shown to have core and slope facies [1]. The material described in this article generally corresponds to this. The core is supposedly characterized by the dominance of massive and cerioid corals and Stromatoporoids, while the peripheral areas are those dominated by branching (ramose and fasciculate) corals.

Also considered as a close analogy are the Middle Frasnian coral and stromatoporoid bioherms in the neighboring Orsha Depression. There fragmentary buildup consisting of a massive core formed by cerioid Rugose corals, alveolite Tabulate corals and Stromatoporoids, and dense accumulations of mostly ramose Tabulate corals (*Thamnopora* and *Scoliopora*) with significant participation of *Alveolites*, was observed by the authors in the Graliova quarry [10].

There are indications of a similar type of buildup structure with a massive core and lateral flanks from other areas as well. In particular, such an architecture is characteristic of the Silurian bioherms of Eastern Iowa (USA) [7]. They exhibit a massive core formed with significant participation of corals and stromatoporoids, as well as stratified flanks.

Presumably, these analogies can be taken into account in order to suggest the structure of the buildup discussed in this publication.

Considering the buildup's location within the volcanic rock mass as a xenolith possibly buried by an explosive event, it seems entirely plausible that the borehole could have penetrated the framework structure not from the roof to the base, but at an angle to the true

vertical axis of the buildup. Thus, the borehole could have penetrated the buildup's core and the lateral flanks surrounding it. This likely explains the aforementioned symmetry. This is also supported to some extent by the predominantly perpendicular orientation of the vertical

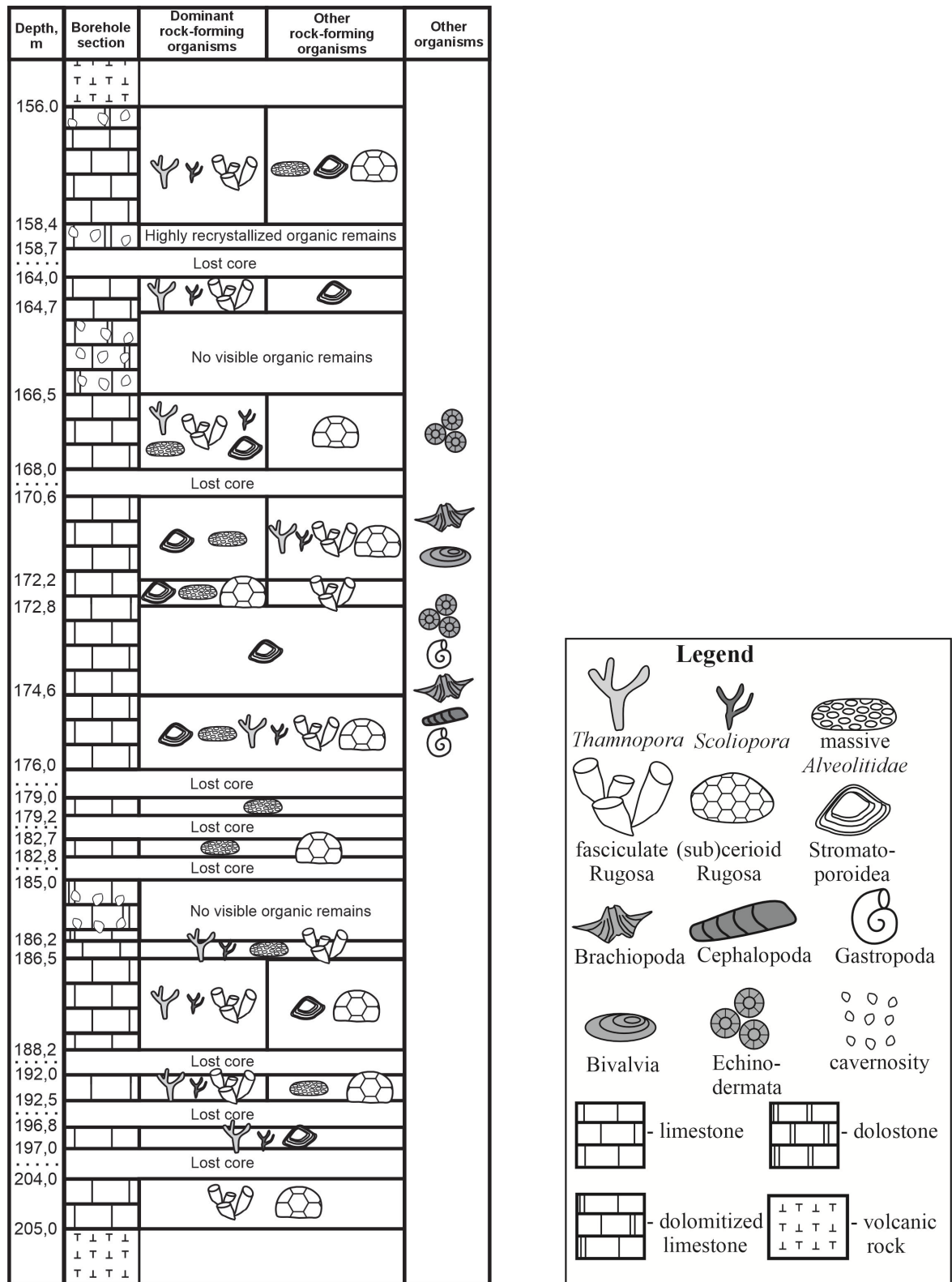


Figure 2 — Schematic section of the carbonate xenolith uncovered by the Rahachouskaya-742 borehole

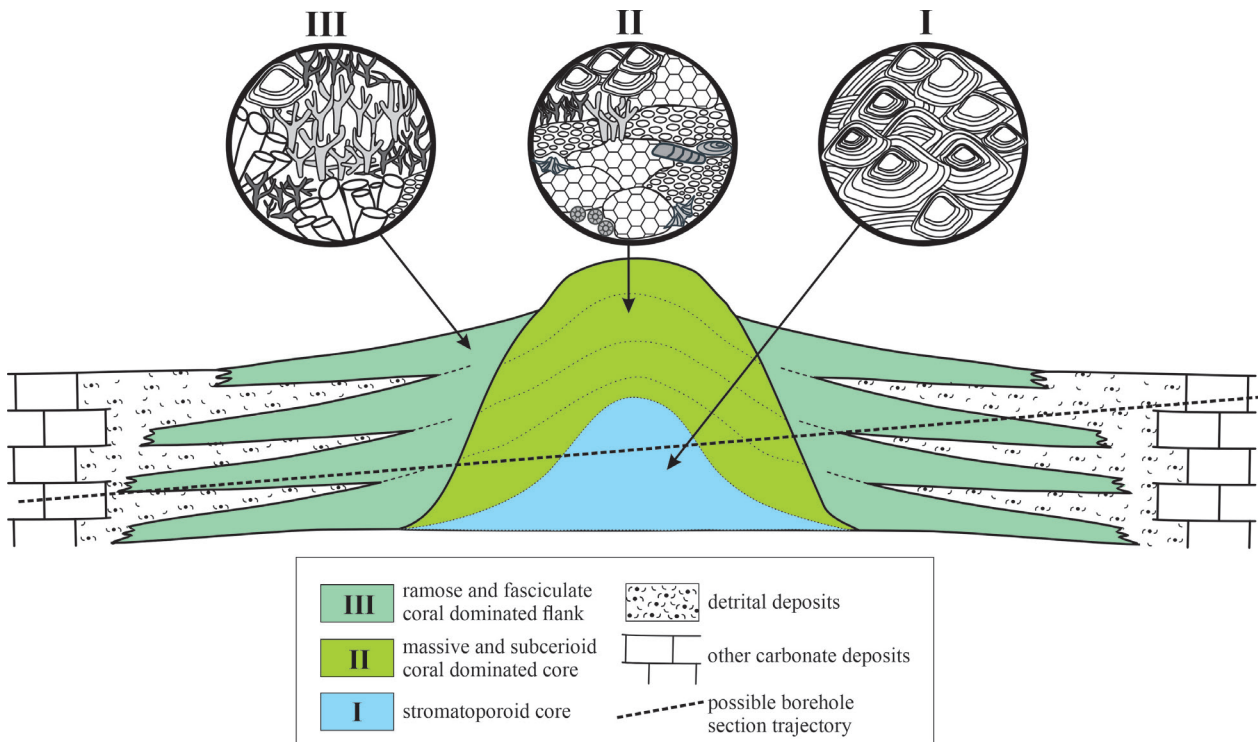


Figure 3 — Reconstruction of the zoogenic buildup (cross-section) uncovered by the Rahachouskaya-742 borehole
Legend for organisms — see legend to Figure 2

axes of the rugose and tabulate corals to the lateral surface of the borehole core (Plate 1, fig. 1).

Thus, an inner part (framework core) of massive stromatoporoids, tabulate, and subcerioid rugose corals can be traced within the buildup, as well as adjacent lateral areas (flanks), largely formed by ramose tabulate and fasciculate rugose corals (Fig. 3). It is noteworthy that crinoids and mollusks (pelecypods, gastropods, cephalopods) are mostly confined to the core of the buildup.

The initial growth phase probably represented a stromatoporoid bioherm. Subsequently, a mixed biocoenosis developed on it, consisting of stromatoporoids, massive Tabulata and subcerioid Rugosa. This formed the massive core of the buildup. At the same time, a biocenosis of ramose and fasciculate corals developed around the core, partly on the debris derived from it.

The proposed reconstruction, based on a single borehole, which, moreover, did not uncover the buildup in its original location, is speculative. Part of the uncertainty is also caused by the incompleteness of the core recovery. Therefore a possibility of revising the given reconstruction cannot be ruled out, especially if drilling data from adjacent boreholes becomes available. In particular, the described framework could have been not a separate unit, but part of a more complex framework structure. In addition, the thickness of the buildup and its true transverse dimensions can only be guessed at.

Porosity. Preliminary examination of the borehole core revealed well-defined porosity of the exposed carbonate rock. Porosity was estimated approximately based on the number and area of visible pores on several core surface areas and its longitudinal cuts. It varies greatly, reaching nearly 15–20%, and in cavernous intervals it can be significantly higher. In moderately recrystallized coral limestone, porosity is associated with voids in the coral skeletons and the detrital matrix filling the spaces between them. The skeletal cavities of fasciculate rugose corals often retain their “anatomical” voids to varying degrees (Plate 1, fig. 1–4), whereas massive subcerioid Rugosa are predominantly sealed with carbonate material (Plate 1, fig. 1). In the skeletons of *Alveolitidae*, the main porosity is represented by relatively small secondary voids formed during the dissolution of coralla, as well as voids at the surface of contact between the corals and the matrix. In the skeletons of ramose *Thamnopora*, the main porosity is associated with the partially unfilled spaces of the corallites. In *Scoliopora* clusters, the observed porosity is confined primarily to contacts between the coralla and the matrix (Plate 2, fig. 4).

In highly recrystallized and dolomitized limestone, the porosity described above is inverted. Specifically, the walls of the tabulate corallites dissolve, leaving behind empty spaces, while internal casts form in place of the corallite cavities and pores (Plate 2, fig. 5).

In dolomitized intervals, various leaching caverns occur, the sizes of which are mainly up to 1,5 cm, and

less often larger. The shape of some caverns is complex and anisometric. Here the volume of voids in the rock can reach high values. Many of the caverns are filled with dolomite mass and greenish-blue dolomite clay to varying degrees.

The porosity of stromatoporoid skeletons has not been studied. Judging by coeval examples from the Orsha Depression, dolomitized stromatoporoids can significantly increase rock porosity.

Detrital intervals also have high dissolution porosity, which can cause the rock to acquire a spongy structure.

The study of buried buildups and their porosity is important not only for assessing the quality of potential carbonate hydrocarbon deposits, but also for considering similar structures for underground gas and liquid storage [1]. Of particular interest in this regard are framework structures buried as large xenoliths in poorly permeable volcanic rocks — it is precisely such a structure that is reported in this paper.

Paleoecology and taphonomy. Although the material studied provides only a limited insight into the growth conditions of the buildup, some assumptions can be made. No visible evidence of brecciation was found in core examination, which may tentatively indicate that the buildup occurred in a relatively low energy environment or below the wave base. Fractures healed by dolomite are observed (Plate 2, fig. 4); they could have formed when the volume of the rock changed because of dolomitization.

A somewhat more confident conclusion is that the buildup was *postmortem* exposed to subaerial conditions for some period. Subaerial exposure preceded the burial of the buildup in the diatreme. These circumstances likely resulted in the formation of solution pockets filled with greenish-blue dolomite clay (Plate 2, fig. 4, 5). Thus, the indicated features may be traces of paleokarst.

Paleogeographic significance. Previously, the Prypiat Trough was considered the main area of occurrence of zoogenic framework formations in the Semiluki deposits of Belarus [1]. Following the discovery of coeval zoogenic buildups in the Orsha Depression and Zhlobin Saddle and their preliminary paleontological study [10, 12; data from the present publication], it is possible to assume the existence in the Semiluki time of a coral-stromatoporoid “reef belt” extending from the Orsha Depression to the Prypiat Trough. Apparently, the belt was not an area of

continuous growth of framework structures, but rather was a region of their spotty development.

CONCLUSIONS

1. The article describes a zoogenic framework structure from the Middle Frasnian Semiluki Formation of Belarus, buried in younger Upper Devonian volcanic rocks of the volcanic pipe (diatreme) as a unique giant xenolith.

2. If the described structure was an isolated buildup, it could be considered a bioherm with a diameter of at least 50 m. The bioherm has a core formed by stromatoporoids and predominantly massive corals. The core is flanked by coral limestone dominated by ramose and fasciculate corals, as well as detrital carbonates. This reconstruction may be significantly revised if similar structures become available for study.

3. The carbonate rocks of the buildup are characterized by significant porosity, largely due to the coral skeletons, including those dolomitized and leached. The described material confirms previously published indications of the potentially high reservoir properties of zoogenic structures of the Semiluki Formation of Belarus.

4. In paleogeographic terms, the information obtained allows to assume the existence of an “East Belarusian Reef Belt” during the Semiluki time, which includes approximately coeval zoogenic buildups of the Orsha Depression in the north, the Zhlobin Saddle in the central part, and the Prypiat Trough in the south of the eastern region of the country.

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This publication is dedicated to the memory of the Belarusian stratigrapher Dr. Semyon A. Kruchek (1937–2021), with whom the framework structure described here was discovered.

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ЗААГЕННАЯ ПАБУДОВА З СЯРЭДНЯГА ФРАНА (ВЕРХНІ ДЭВОН) ЖЛОБІНСКАЙ СЕДЛАВІНЫ (УСХОДНЯЯ БЕЛАРУСЬ)

Ю. У. Заіка¹, С. А. Кручак

¹Дзяржаўнае прадпрыемства “ГЕАСЕРВІС”
вул. Янкі Маўра, 53, 220015, Мінск, Беларусь
E-mail: cyrtophyllum@gmail.com

Па керне свідравіны Рагачоўская-742 апісана каралава-страматапарайдная пабудова сярэднефранскага ўзросту, якая захавалася ў выглядзе ксеналіту ў верхнефранскіх вулканагенных утварэннях адной з трубак выбуху ў Жлобінскай седлавіне. Пабудова ўтворана галінчастымі і масіўнымі табулятамі, кусцістымі і субцэрыюіднымі ругозамі, страматапарайдэямі і арганагенным дэтрытам. Акрамя каркасных бесхрыбетных, знойдзены рэшткі пелецыпод, гастропод, брахіапод, гастропод, крынаідэй і цэфалопод. У карбанатным разрэзе, у парадку залягання знізу ўверх, прасочваюцца тры інтэрвалы, якія адрозніваюцца па складзе і асаблівасцях каркасных арганізмаў. У першым (магутнасцю 14–15 м), і трэцім (магутнасцю 18–19 м), пераважаюць галінчастыя і кусцістыя каралы. Сярэдні, магутнасцю 12–13 м, адрозніваецца дамінаваннем масіўных і субцэрыюідных каралаў і страматапарайдэй. Улічваючы заляганне пабудовы як ксеналіту, пахаванага ў выніку эксплазійнай падзеі, разрез свідравіны можа быць арыентаваны нахільна або перпендыкулярна да сапраўднай вертыкальнай восі пабудовы, у залежнасці ад вугла яе алахтоннага залягання. Такім чынам, свідравінай маглі быць пройдзены і латэральныя часткі (першы і трэці інтэрвалы) і ядро пабудовы (сярэдні інтэрвал разрэзу), якое яны абрамляюць. Гэтым можна растлумачыць вышэйзгаданую сіметрыю. Ядро сфарміравана з масіўных страматапарайдэй, табулят і субцэрыюідных ругоз, а прылеглыя да ядра латэральныя ўчасткі ўтвораны галоўным чынам галінчастымі табулятамі і кусцістымі ругозамі. Гэтая рэканструкцыя грунтуецца на дадзеных толькі адной свідравіны і таму з’яўленне новых аналагічных знаходак можа прывесці да яе перагляду. Пароды, якія складаюць пабудову, характарызуюцца добра заўважнай сітаватасцю. У менш перакрышталізаваных вапняках сітаватасць звязана з пуста-

сцямі ў шкілетах каралаў і ў дэтрытавым матрыксе. Шкілеты куцістых ругоз нярэдка захоўваюць «анатамічную» пустотнасьць, у той час як субцэрыюідныя ругозы пераважна закальматаваныя карбанатным рэчывам. У шкілетах масіўных і пласціністых табулятаў *Alveolitidae* пераважае другасная сітаватасць растварэння, а таксама сітаватасць на кантакце паліпнякоў з матрыксам. У шкілетах галінчатых табулятаў *Thalporoga* асноўная сітаватасць звязана з часткова незакальматаванай унутранай прасторай каралітаў. У класцях табулятаў *Scolioroga* сітаватасць прымеркавана, у асноўным, да кантакту паміж галінкамі паліпнякоў і матрыксам. У больш перакрышталізаваных даламітызаваных вапняках назіраецца інверсія сітаватасці: адбываецца растварэнне сценак каралітаў табулятаў з утварэннем на іх месцы пустой прасторы, у той час як на месцы першапачатковых «анатамічных» пустасцяў каралітаў утвараюцца ўнутраныя злёпкі. Найбольш даламітызаваныя інтэрвалы характарызуюцца кавернознасцю. У палеагеаграфічных адносінах знаходка мае асаблівае значэнне, бо дазваляе звязаць аднаўроставаыя заагенныя пабудовы Аршанскай упадзіны на поўначы, Жлобінскай седлавіны ў цэнтральнай частцы і Прыпяцкага прагіну на поўдні краіны ў тэарэтычны каралава-страматапароідны рыфюідны пояс, які, верагодна, існаваў ва ўсходняй Беларусі. Даследаванне дэвонскіх арганагенных пабудов уяўляецца важным не толькі для іх ацэнкі ў якасці пастак вуглевадародаў, але і як магчымай асновы для падземных сховішчаў газу, а таксама вадкіх рэчываў. Буйныя арганагенныя ксеналіты ў малапранікальных вулканагенных адкладах, падобныя апісанаму ў гэтай працы — новы від аб'ектаў, перспектыўны для дадзенай мэты.

Ключавыя словы: каркасная пабудова, страматапараідэі, табуляты, ругозы, сярэднефранскі пад'ярус, дэвон, Жлобінская седлавіна, Беларусь.

ЗООГЕННАЯ ПОСТРОЙКА ИЗ СРЕДНЕГО ФРАНА (ВЕРХНИЙ ДЕВОН) ЖЛОБИНСКОЙ СЕДЛОВИНЫ (ВОСТОЧНАЯ БЕЛАРУСЬ)

Ю. В. Зайка¹, С. А. Кручек

¹Государственное предприятие «ГЕОСЕРВИС»
ул. Янки Мавра, 53, 220015, Минск, Беларусь
E-mail: cyrtophyllum@gmail.com

По керну скважины Рогачевская-742 описана кораллово-строматопороидная постройка среднефранского возраста, сохранившаяся в виде ксенолита в верхнефранских вулканогенных образованиях одной из трубок взрыва в Жлобинской седловине. Постройка образована ветвистыми и массивными табулятами, кутистыми и субцериоидными ругозами, строматопороидеями и органогенным детритом. Кроме каркасных беспозвоночных, встречены остатки пелеципод, брахиопод, гастропод, криноидей и цефалопод. В карбонатном разрезе, в порядке залегания снизу вверх, прослеживается три интервала, различающихся по составу и особенностям каркасных организмов. В первом (мощностью 14–15 м) и третьем (мощностью 18–19 м), преобладают ветвистые и кутистые кораллы. Средний интервал, мощностью 12–13 м, отличается доминированием массивных и субцериоидных кораллов и строматопороидей. Учитывая залегание постройки как ксенолита, захороненного в результате взрывного события, разрез скважины может быть ориентирован наклонно или перпендикулярно к истинной вертикальной оси постройки, в зависимости от угла её аллохтонного залегания. Таким образом, скважиной могли быть вскрыты и латеральные части (первый и третий интервалы) и ядро постройки (средний интервал разреза), которое они окаймляют, чем можно объяснить вышеуказанную симметрию. Ядро сформировано из массивных строматопороидей, табулята и субцериоидных ругоз, а примыкающие к ядру латеральные участки образованы главным образом ветвистыми табулятами и кутистыми ругозами. Эта реконструкция основана на данных бурения лишь одной скважины и поэтому появление новых аналогичных находок может привести к ее пересмотру. Породы слагающие постройку обладают хорошо выраженной пористостью. В менее перекристаллизованных известняках пористость связана с пустотами в скелетах кораллов и в детритовом матриксе. Скелеты кутистых ругоз нередко сохраняют «анатомическую» пустотность, тогда как субцериоидные ругозы преимущественно закольматированы карбонатным веществом. В скелетах массивных и пластинчатых табулята *Alveolitidae* преобладает вторичная пористость растворения, а также пористость на контакте полипняков с матриксом. В скелетах ветвистых табулята *Thalporoga* основная пористость связана с частично закольматированным внутренним пространством коралли-

тов. В кластерах табулят *Scoliopora* пористость приурочена, в основном, к контакту между ветвями полипняков и матриксом. В более перекристаллизованных доломитизированных известняках наблюдается инверсия пористости: происходит растворение стенок кораллитов табулят с образованием на их месте пустого пространства, тогда как на месте первоначальных полостей кораллитов образуются внутренние слепки. В наиболее доломитизированных интервалах развита кавернозность. В палеогеографическом отношении находка имеет особое значение, так как позволяет связать одновозрастные зоогенные постройки Оршанской впадины на севере, Жлобинской седловины в центральной части и Припятского прогиба на юге страны в теоретический кораллово-строматопороидный рифоидный пояс, вероятно, существовавший в восточной Беларуси в семилукское время. Исследование захороненных органогенных построек представляется важным не только для их оценки в качестве ловушек углеводородов, но и как возможной основы для подземных хранилищ газа, а также жидких веществ. Крупные органогенные ксенолиты в малопроницаемых вулканогенных отложениях, подобные описанному в этой работе — новый вид объектов, перспективный для данной цели.

Ключевые слова: каркасная постройка, строматопороидеи, табуляты, ругозы, среднефранский подъярус, девон, Жлобинская седловина, Беларусь.