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NEW DATA ON THE STRATIGRAPHY OF THE LOWER JURASSIC MARINE DEPOSITS ALONG THE VILYUY RIVER[1]

by

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Much attention has been devoted to the detailed study of the stratigraphy of the deposits of combustible gas and of oil shows in certain districts of Yakutia. These deposits, which fill the enormous areas of the Vilyuy syneclise and the Verkhoyansk marginal basin, include extensive Jurassic sediments. The areas in which these deposits occur, especially in the vicinity of the Paleozoic, are also of interest from the practical standpoint of prospecting for possible placer and bedrock deposits of diamonds. Stratigraphic studies also play a large role in geologic mapping and in the preparation of the State Geologic Maps.

A BRIEF HISTORY OF THE STUDY

Along the Vilyuy River the Jurassic marine deposits have been studied for a long time. In 1853 - 1854 R. K. Maak [11] first mentioned the presence of Jurassic marine deposits along the Vilyuy River. In 1861 a member of his expedition, Pavlovskiy, continued the investigations along the banks of the Vilyuy River and determined that the Jurassic deposits extend from the Vilyuy River eastward in the direction of the Kempendyaya River.

In 1917 the Vilyuy was visited by the famous geologist A. G. Rzhonsnitskiy [12], who worked out the first stratigraphic scheme for the Jurassic deposits, within which he distinguished the following: Liassic fresh-water deposits, marine deposits of the Lower Dogger an, and Upper Jurassic fresh-water deposits. In the Jurassic deposits this investigator discovered an ammonite, which was subsequently identified by A. P. Pavlov as the Upper Aalenian Harpoceras murchisonae Sov. A. G. Rzhonsnitskiy's stratigraphic scheme was widely used in its time.

A more precise account of the stratigraphic subdivision of the Jurassic deposits occurs in the joint work by G. A. Krymgol'ts, G. T. Petrova and V. F. Pshelintsev [10], who, on the basis of samples collected from Yakutia, noted the following subdivision for the basin of the Vilyuy River: Liddle Liassic, Upper Liassic and Upper Aalenian with Ludwigia murchisonae Sow. The chief defect of this scheme is that these subdivisions included strata of different stratigraphic importance.

In the past 10 or 15 years, as a result of prospecting for oil and diamonds in Yakutia, this region has seen a broad development of geologic survey and scientific research operations, whose scope has included the Vilyuy basin. Among these later works, the most important have been the investigations of A. A. Arsen'yev and V. A. Ivanova [1], which have provided a more detailed picture of A. G. Rzhonsnitskiy's scheme; on this basis (according to G. Ya. Krymgol'ts's identifications) the section has been divided into two layers with sand and conglomerate sediments (the Yemyaksinskian and the Ukugutskian), as well as strata containing Harpax (Middle Liassic), those containing Leda (Upper Liassic), a marine Aalenian layer with Ludwigia murchisonae Sow., and continental deposits of the undivided Middle and Upper Jurassic.

Of great value for the stratigraphy of the Jurassic deposits is also the paper by V. A. Vakhrameyev and Yu. M. Pushcharovskiy [3] on the adjacent areas, in which they have distinguished almost the same strata as along the Vilyuy River (containing Harpax in the Middle Liassic and Leda in the Upper Liassic).

Mention should also be made of a number of investigations by A. G. Kossovskaya [5], who was the first to note the typical mineral associations for the Middle and Upper Liassic deposits of the northwestern flank of the Vilyuy syneclise.

Beginning in 1950, regular geologic surveys on the scales of 1:1,000,000 and 1:200,000 have been made in the Vilyuy River basin by the All-Union Aerogeological Trust (with the participation of the Saratov V. N. I. I.). These organizations have done much important work in

[1]Novyye dannyye po stratigrafii Nizhneyurskikh morskikh otlozheniy r. Vilyuya, (pp. 88-98).

mapping the Jurassic deposits. Directly along the Vilyuy River, investigations were made by V. I. Kurlayev, B. K. Gortsuyev, and V. N. Bgatov, following either G. Ya. Krymgolts' or A. A. Arsen'yev's scheme for the subdivision of the Jurassic deposits. But the definite description of the Jurassic deposits of this area was made somewhat later, in the Explanatory Notes accompanying the Map Sheet R-50, prepared by R. E. Treylob, B. N. Leonov, and G. F. Lungersgauzen with the participation of B. P. Vysotskiy [13].

An important practical contribution to the working out of the unified stratigraphic schemes was made by the Conference on the Stratigraphy of Siberia, which was organized in 1956 in Leningrad. This conference took up the problem of the stratigraphic subdivision into stages of the Jurassic marine deposits of the Vilyuy syneclise and the Verkhoyansk basin, proposed by Z. V. Koshelkina [6, 7]. Along the Vilyuy River, this scheme recognized the Domerian, Toarskian and Aalenian stages among the marine deposits. The Aalenian stage is characterized by single specimens of the ammonite Ludwigia murchisonae Sow., from the collections made by A. G. Rzhonsnitskiy.

In 1958 was published the valuable synthesizing paper by V. A. Vakhrameyev [4], which, on the basis of the author's personal observations and the literature sources, brought together all the known information on the Jurassic stratigraphy of the Vilyuy River.

After the stratigraphic conference G. Ya. Krymgol'ts, in looking over A. G. Rzhonsnitskiy's collection, noted some inaccuracies in the identifications of the ammonites Ludwizia murchisonae Sow, and undertook a review of the paleontological remains.

At the same time, for the purpose of making additional collections of ammonites and finding outcrops of the strata from which A. G. Rzhonsnitskiy had collected the above-mentioned ammonites, the geologist N. N. Tazikhin visited the Vilyuy River in 1957. He did not, however, find any bedrock exposures of the strata containing Ludwigia murchisonae Sow. and collected only a few samples of ammonites from the talus of an outcrop that had already been described earlier by A. G. Rzhonsnitskiy.

In his monographic treatment of the ammonites collected by A. G. Rzhonsnitskiy and N. N. Tazikhin, G. Ya. Krymgol'ts reidentified the ammonites called Ludwigis murchisonae and placed them in a new genus Osperleioceras (O. viluiense). On the basis of the similarity of certain morphological criteria between these forms and the Western European species, he also made some important suggestions in regard to the Middle Toarskian age of the Vilyuy remains. His proposal radically changed the conception of the Viluyu section and cast doubt on the presence of Aalenian deposits in it, though they had been firmly established in the literature.

Nevertheless because A. G. Rzhonsnitskiy's discoveries of bedrock occurrences were never repeated, and because numerous remains of the same forms had been collected by N. N. Tazikhin from talus, it appeared that the essential problem of the age of the upper half of the marine deposits containing Leda was still far from settled. This supposition still required confirmation, and it remained necessary to find a satisfactory answer to the question of the age of the upper half of the Lower Jurassic marine deposits in the section.

The solution of this important problem is connected with the preparation and publication of the series of sheets of the State Geologic Map on the scale of 1:200,000, and with the correct interpretation of the geologic history of the Vilyuy syneclise. With this goal in mind, the present writer undertook her trip to the Vilyuy River in the spring of 1958.

The materials derived by this writer from the outcrops along the Vilyuy River now make it possible to present the stratigraphy of the section through the Jurassic marine deposits in considerable detail.

STRATIGRAPHIC OUTLINE

Lower Jurassic

The Domerskian stage (J_1d). The deposits of the Domerskian stage occur along the Vilyuy River in the area from the mouth of the Ulakhan-Dzhiyelligir River to Belesyusek-Aryytta Island and conformably overlie the sandstones and conglomerates of the Ukugutskaya formation.[2] They also merge gradually into the overlying deposits of the Toarskian stage.

The deposits of the Domerskian stage are represented by sands, sandstones, sandy shales and calcareous sandstones, which are frequently rich in plant material and in places even contain thin lenses of brown coal. Total thickness no more than 36 m.

On the basis of the paleontological features of the deposits, the Vilyuy section may be taken as the typical section through the Domerskian stage of the Vilyuy syneclise.

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[2]According to this writer's information, the geologic age of the Ukugutskian formation is Lower and partly Middle Liassic.

Below follows a bed-by-bed description of the deposits of the Domerskian stage, according to the individual outcrops which contain paleontological remains.[3]

In the section near the mouth of the Ulakhan-Dzhiyelligir River, on the right bank of the Vilyuy River, the exposures from bottom to top are:

J_1uk 1-7. Massive coarse-grained gray and yellowish-gray sandstone, highly micaceous. 25 m.

J_1d 8. Ochre-yellow sand with interbeds of dark gray clay and small lenses of coal. 0.1 m.

9. Dark-gray clay, very sandy, with layering a millimeter thick, noticeably rich in plant detritus and with small lenses of coal. In the lower half of this clay stratum the present writer has identified Pseudomonotis tiungensis Petr., Panope sp., and Nannobelus ex gr. janus Dum. 17 m.

10. Highly ferruginous, coarse-grained sand, with scattered pebbles of quartz and metamorphic and sedimentary rocks, and nodules of sideritized sand concretions and shell fragments of the genus Harpax. 0.15 - 0.2 m.

11. Gray, coarse-grained sand with small lenses of brown coal. 1 m.

12. Dark gray sand full of plant detritus. 0.08 m.

13. Gray coarse-grained sand. 1.6 m.

14. Massive gray sand, with three interlayers of loaf-shaped concretions of calcareous sandstone. The bottoms of the lenses of calcareous sandstones contain Amaltheus margaritatus Montf. The calcareous sandstones themselves contain Harpax terquemi Desl., H. aff. originalis Kosch., H. viluicus Kosch., Panope elongata Kosch., Pleuromya liasica Kosch. and Myophoria cf. batuobica Kosch. 3.79 m.

15. Fine-grained gray sandstone with interlayers of cross-bedded ferruginous sandstone. 1.9 m.

16. Dark gray shales, highly sandy, with occasional nodules of dark gray (bluish-gray on weathered surfaces) limestone, containing rare Pseudomonotis aff. tiungensis Petr. and Paltarpites argutus Buckm. 8.9 m.

17. Ochre-yellow gypsiferous sandstone. 1 m.

Jt 18. Dark gray shales with layers of sand and concretions of calcareous sandstone containing Leda acuminata (Golff.). 1.6 m.

In generalizing the material on these outcrops, it is important to note that the Domerskian stage is lithologically heterogeneous and is subdivided into three packets: a lower packet represented by sandy shales, a middle one composed of sandstones, and an upper packet of sandy shales.

Eastward, upstream along the Vilyuy River, some 2.5 km from Belesyusek-Aryytta Island (on the right bank), the upper half of the Domerskian section is exposed. This, from bottom to top, contains:

J_1d 1. Dark gray calcareous sandstone grading into coarse-grained sandstone with Harpax terquemi Desl., H. ex gr. laevigatus Orb., H. Viluicus Kosch., Pleuromya striatula Ag., Lenella tiungensis Kosch. In the uppermost part of the sandstones have been identified Pseudomonotis tiungensis Petr. and Tancredia kuznetsovi Petr. 3 m.

2. Fine-grained, dark gray sandstone, ferruginous in places. 2 m.

3. Yellowish-brown clayey sandstone. 1 m.

4. Gray fine-grained sandstone, with interlayers of sideritized sandstone concretions and nodules of calcareous sandstone. 0.7 m.

J_1t 5. Sandy light-yellow clay, with lenses of sandstone. 1 m.

The conclusion regarding the geologic age is based on the assemblage of fossils: the ammonites Amaltheus margaritatus Montf. and Paltarpites argutus Buckm. occurring above it, and also on the characteristic belemnites and bivalve molluscs. Among these, the ammonite Amaltheus margaritatus Montf. is extremely widespread and is known in almost all the main sections in Central and Northern Yakutia. The numerous and frequent occurrences of Amaltheus margaritatus in the Domerskian deposits of Yakutia make it possible to use this form for zonal stratigraphy. This is also the place to note that the presence of deposits below the Amaltheus margaritatus zone has thus far not been established in the territory of the Vilyuy syneclise. It is not impossible that these are continental facies of the Ukugutskian formation. Nor is there any paleontological basis for the presence of these deposits in Northern Siberia.

A comparison of the sections through the Domerskian stage on the Vilyuy River with those in the adjacent areas of the Markha and Tyung

[3]The cephalopods from the Vilyuy section were identified by the present author in consultation with G.Ya. Krymgol'ts and G.F. Lungersgauzen.

Rivers (Figure 1) reveals the fact that the latter are distinguished from the main section by their lithologic composition, by their somewhat different fossil contents and by their inconstant thicknesses. For example, along the Markha River the deposits of the Domerskian stage lie sometimes upon the sandstones of the Ukugutskian formation with pebbles at the base of the formation, and sometimes on the Paleozoic rocks and are represented entirely by gray fine-grained sands and sandstones. The thickness of the deposits along the Markha River is small (according to G. I. Bushinskiy) – from 0.5 to 6 m. Completely different relationships obtain in the Tyung River section, where similar deposits in places also transgressively overlie the Paleozoic limestones. The latter section contains two packets in all: the lower represented by an alternation of polymictic sandstones and limestones, and the upper of sandy foliated shales. The thickness of the Domerskian stage along the Tyung River is evidently somewhat greater than along the Vilyuy River. Domerskian deposits have also been mentioned along the Batuobiya River by A. A. Arsen'yev [2].

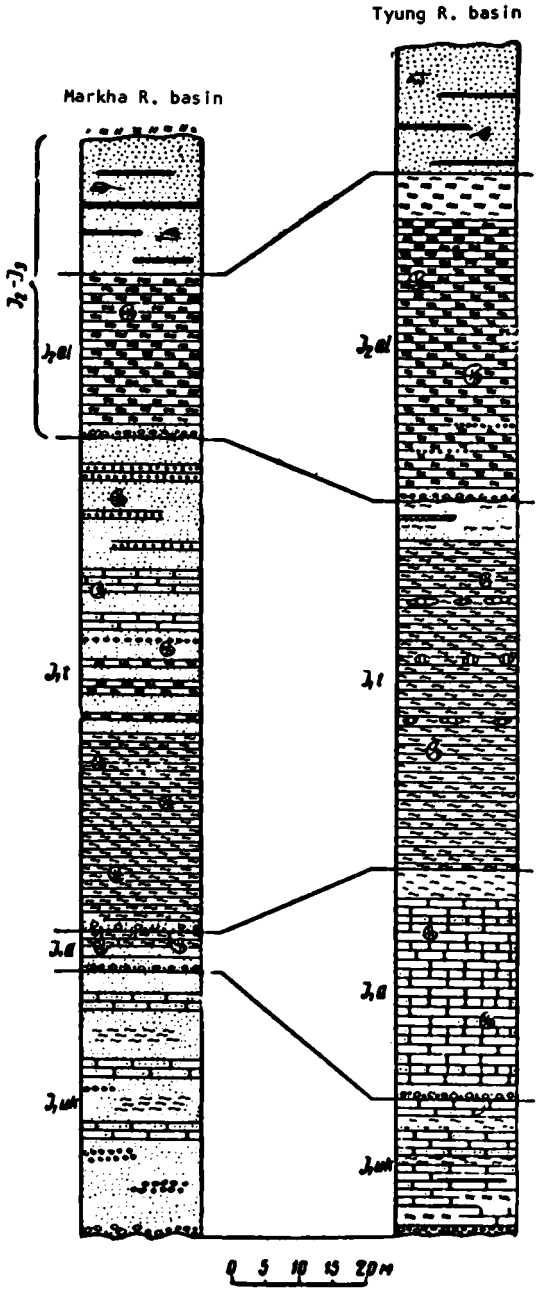

FIGURE 1. Correlation of the sections through the Jurassic marine deposits along the Markha and Tyung Rivers (drawing upon data from V.A. Vakhrameyev and Yu.M. Pushcharovskiy).

The Toarskian stage (J_1t). Deposits of the Toarskian stage are widely known along the Vilyuy River. They are exposed in the area between the mouths of the Ulakhan-Dzhiyelligir and the Yulyuger Rivers. In all three outcrops these deposits are conformably underlain by the sandstones and shales of the Domerskian stage and are overlain (with conglomerates at the base) by coal-bearing deposits of Middle Jurassic age. The section through the Toarskian stage consists of a very homogeneous series of sandy, bluish-gray shales with frequent peculiarly shaped lenticles or nodular elongated concretions of sandstones and pelitomorphic and sandy limestones, which as a rule are full of faunal remains. The visible thickness of the Toarskian deposits along the Vilyuy River is probably no more than 47 m. The present writer has studied the deposits of the Toarskian stage in three outcrops.

In the first outcrop, located near the mouth of the Ulakhan-Dzhiyelligir River, the lower half of the section is exposed. Here the following beds have been described, from bottom to top:

J_1d 17. Ochre-yellow gypsiferous sandstone. 1 m.

J_1t 18. Dark gray shales, with layers of ferruginous sand and concretions of calcareous sandstone containing Arctotis sp. and Leda acuminata (Goldf.). 1.6 m.

19. Dark gray shale with concretions of pelitomorphic limestone. 9 m.

20. Dark gray sandy shale with interlayers of concretions that are disposed at the following intervals from the bottom of the stratum: a) 4.38 m, dark gray argillaceous sandstone; b) 0.78 m, dark gray sandy limestone with Phacoides sp.; c) 1.14 m, dark gray calcareous sandstone with many Leda jacutica Petr.; d)

3. 92 m, dark gray pelitomorphic limestone with Leda acuminata (Goldf.), L. jacutica Petr., Tancredia sp., Modiolus nitidula tiungensis Petr., Mesoteuthis gracilis Hehl., M. ex gr. stimula Dum., and Septaliphoria sp.; e) 1. 8 m, dark gray calcareous sandstone with rare Leda; f) 3. 9 m, greenish-gray sandstone.

21. Greenish-gray sandy shale. 4 m.

22. Dark gray sandy shale with layers of sideritic concretions. 4 m.

Downstream along the Vilyuy River, about 2. 5 km from Belesyusek-Aryytta Island, is the second outcrop of the deposits with which we are concerned here; this contains a fuller section of the beds with Leda.

This outcrop (first described in 1917 by A. G. Rzhonsnitskiy) extends for some distance but is less well exposed than the first. Upon the deposits of the Domerskian stage, from bottom to top, lie:

J1t 5. Light-yellow sandy clay with small lenses of sandstone. 1 m.

6. Rusty brown sideritized sandstone. 0. 1 to 0. 15 m.

7. Dark-gray sandy shale with lenses of light-gray clay and siderite nodules, and also fragments of Arctotis sp. 4. 3 m.

8. A pocket of lenticular concretions of dark gray argillaceous limestone with Dactylioceras gracile Simps. 0. 2 to 0. 3 m.

9. Dark gray sandy shale. 1. 2 m.

10. Yellowish-gray sandy shale with lenses of clayey sandstone. 5. 8 m.

11. Dark yellow clay with large spherical concretions of sandy limestone. 2 m.

12. Rusty brown to reddish-cinnamon sandstone, coarse-grained, with small layers of gray sandstone and sandy limestone. 1 m.

13. Light yellow sandy clay. 0. 5 m.

14. Rusty brown, medium-grained sandstone. 0. 2 m.

15. Light yellow clay with pockets of calcareous sandstone concretions. 0. 8 m.

16. Dark gray sandy shale with small lenses of dark cinnamon-colored clay.

17. Dark gray sandy shale with lenses of dark cinnamon-colored argillites. 3 m.

18. Dark gray sandy shale with small lenses of limestones, sandstones, clays and coquina. The order of occurrence of the fossils, with the thicknesses of the layers in which they are found, is the following (from bottom to top): a) 3. 6 m, a layer of pelitomorphic limestone concretions with Leda jacutica Petr., L. acuminata (Goldf.), (Mytiloides) oviformis Khud., Mesoteuthis ex. gr. oxycona Hehl.; b) 1. 8 m, a layer of shell limestone with Leda jacutica Petr., L. ex gr. acuminata (Goldf.), Tancredia sp., Mesoteuthis ex gr. stimula Dum., M. gracilis Hehl.; c) 1. 1 m, a layer of shell limestone with Leda jacutica Petr., L. ex gr. acuminata (Goldf.), Tancredia sp., Osperleioceras viluiense Krim.; d) 1. 6 m, a non-fossiliferous sandy limestone concretions; e) 1. 8 m, concretions of sandy limestone and small banks with Leda acuminata (Goldf.), L. jacutica Petr., Mesoteuthis ex gr. stimula Dum.

19. Dark gray sandy shale with interlayers of clayey sandstone and small banks with Leda ex gr. acuminata (Golf.), Tancredia ex gr. stubendorffii Schm. 2. 8 m.

20. A pocket of calcareous sandstone concretions with Leda viluiensis Kosch., Modiolus viluiensis Khud., Liostrea aff. acuminata Sow., Tancredia aff. stubendorffi Schm. 0. 2 m.

21. Dark gray shale with a predominance of interlayers of dark cinnamon colored argillites and concretions of sandy limestones with Leda liluiensis Kosch., Tancredia aff. stubendorffi Schm., Lima sp. and plant traces not well enough preserved for identification. 8. 8 m.

22. Sandy clay, highly ferruginous, with lenses of coal and concretions of sideritized sandstone with Arctotis ex gr. marchaensis Petr. and (Mytiloides) marchaensis Petr. 0. 5 m.

J2jk 23. Gravelite with large scattered pebbles. This layer has a lenticular structure and does not extend far laterally. 0. 2 to 0. 65 m.

24. Light gray and yellowish-gray sands with small lenses of gravelite and coal (Yakutshaya formation). 15 m.

The total thickness of the deposits in the Toarskian stage in this outcrop is no more than 46 to 47 m.

Downstream on the Vilyuy River, about 2 km below the mouth of the Yulyuger River, is the third and last comparatively large outcrop of deposits of the Toarskian stage (Figure 2). The rocks of this outcrop correspond stratigraphically to the upper half of the section of the preceding outcrop. Here, from bottom to top, are:

J1t 1. Light yellow clays. 0. 7 m.

2. Greenish-gray siltstone with Tancredia

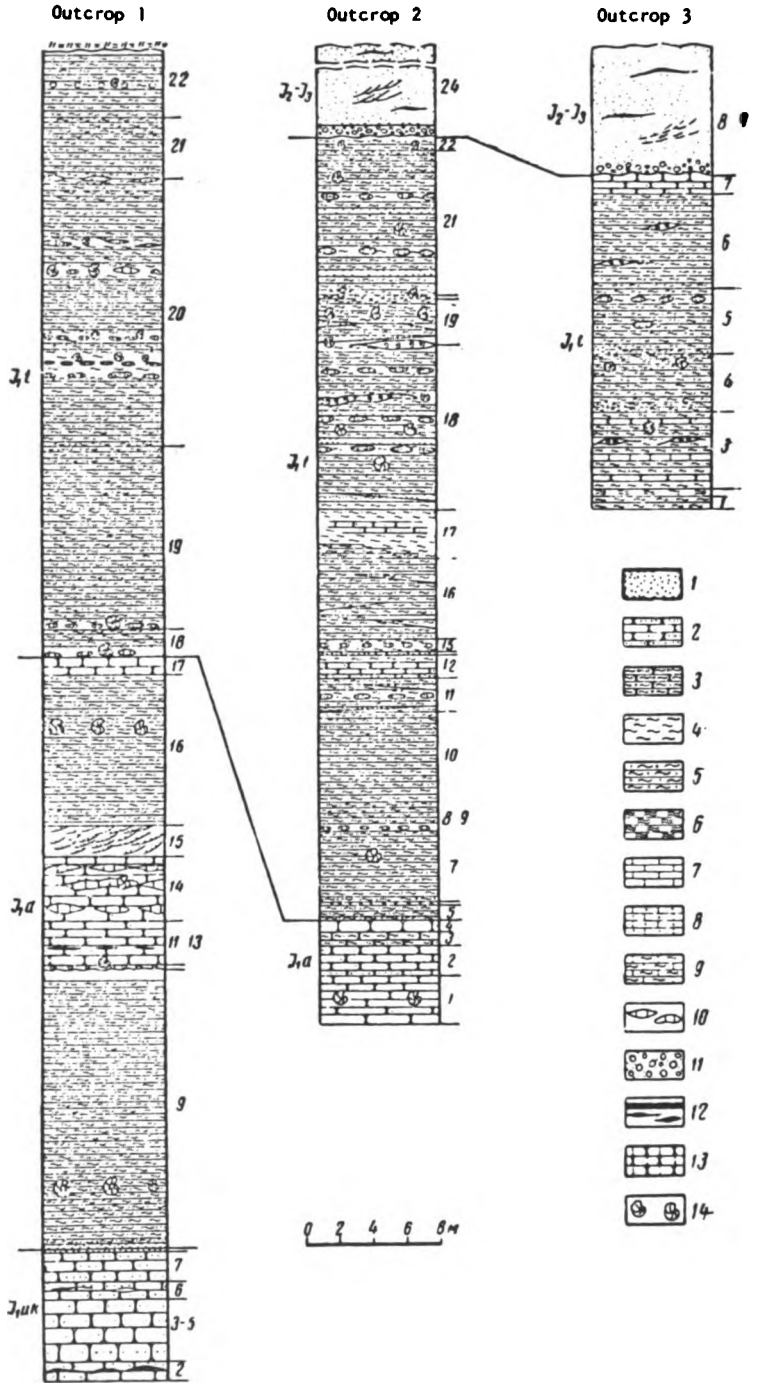

FIGURE 2. Correlation of the sections through the Lower Jurassic deposits along the Vilyuy River (Outcrops 1, 2 and 3 - after data of the present writer):

1 - sand; 2 - sandstone; 3 - clayey sandstone; 4 - clay; 5 - sandy clay; 6 - siltstone; 7 - limestone; 8 - sandy limestone, 9 - clayey limestone; 10 - limestone lenses and concretions; 11 - gravel; 12 - coal lenses; 13 - calcareous sandstone; 14 - paleontological remains.

sp., Leda jacutica Petr., L. acuminate (Goldf.). 0.5 m.

3. Greenish-gray sandy shale with layers of yellowish-gray siltstones and sandstones containing Leda sp. and Tancredia sp. 4.7 m.

4. Greenish-gray clay, sandy, with small lenses of cinnamon-colored clay and Leda jacutica Petr., Mesoteuthis ex gr. oxycona Hehl. 3.5 m.

5. Ochre-yellow clay with concretions of sandy limestone. 3.9 m.

6. Dark gray, sandy shale with interbeds of brown shale and banks containing Tancredia aff. stubendorffi Schm., Tancredia sp., Natica sp., Mesoteuthis aff. stimula Dum. and vertebrae of Eretmosaurus ex gr. rzonsnickii Menner.[4] 5.7 m.

7. Rusty brown, fine-grained sandstone with concretions of siderite. 0.5 to 1 m.

J_2jk 8. Gravelite, strongly cemented, with occasional large pebbles. 0.2 to 0.65 m.

9. Coarse-grained gray sand, in places ferruginous, with small lenses of coal. 5 to 7 m.

The geologic age of the deposits with widespread and abundant Leda fossils is also determined by a complex of forms: the ammonites Dactylioceras gracile Simps. and Osperleioceras viluiense Krimh. and the belemnites Mesoteuthis gracilis Hehl., M. stimula Dum. and M. oxycona Hehl., which are typical of the Toarskian stage both in Western Europe and in the U.S.S.R. In addition to these, the typically Toarskian bivalve molluscs Leda jacutica Petr. and L. acuminata (Goldf.) are also found. In view of the occurrence of Osperleioceras almost at the very top of the exposure of the marine section (in the bedrock outcrop) and of the similarity in morphology between this ammonite and the Western European species, it can be said that along the Vilyuy River the section described here does not go beyond the limits of the Middle Toarskian. Aalenian deposits are absent. The ammonite remains suggest a subdivision of the Vilyuy River section into two parts: the lower with Dactylioceras[5] and the upper with Osperleioceras. In this regard it may be noted that the Dactylioceras beds are quite widespread. They occur, besides the Vilyuy River, along the Markha and Tyung Rivers and even north of this territory; they apparently have some zonal significance.

Lithologically the Vilyuy River section differs somewhat from the very same sections along the Markha and Tyung Rivers. In the latter the deposits of the Toarskian stage are divided into two packets, the lower one argillaceous and the upper sandy. Along the Tyung River the top of the upper, sandy packet also contains foliaceous clay. In addition, along the Markha and Tyung Rivers one observes a regular increase in the thickness of the Toarskian deposits from 56 to 65 m. Below are the main assemblages of guide fossils for the Lower Jurassic marine deposits on the northwestern margin of the Vilyuy syneclise (the Vilyuy, Markha, Tyung and Batuobiya Rivers).

I. Domerskian stage (J_1d). Ammonites: 1) Amaltheus margaritatus Montf., 2) Paltarpites argutus Buckm. Belemnites: 3) Nannobelus janus Dum. Bivalves: 4) Harpax terquemi Desl. 5) Harpax viluicus Hosch., 6) Harpax spinosus Sow., 7) Myophoria batuobica Kosch., 8) Pseudomonotia tiugensis Petr., 9) Tancredia kuznetsovi Petr., 10) Pleuromya liasica Kosch., 11) Lenella tiugensis Kosch.

II. Toarskian stage (J_1t). Ammonites: 1) Dactylioceras gracile Simps., 2) Dactylioceras athleticum Simps.,[6] 3) Dactylioceras suntarenae Krimh., 4) Osperleioceras viluienae Krimh., Belemnites: 5) Mesoteuthis oxycona Hehl., 6) Mesoteuthis stimula Dum. Bivalves: 7) Arctotis marchaensis Petr., 8) Leda acuminata (Goldf.), 9) Leda jacutica Petr.

Among the forms shown in the table, along with the typical fossil complexes, this writer has identified a rare ammonite. Since this ammonite was first found in the Jurassic deposits of the U.S.S.R., it seems suitable to present a description of it at this point.

DESCRIPTION OF AMMONITE REMAINS

Paltarpites Argutus Buckman, 1923, Figure 3 [1, 2]

1927. Paltarpites argutus. Buckmann. – Type ammonites, t. 393. Figure 1, 2; Ser. 37.

Description. The shell is of medium size, disc-shaped, highly compressed laterally, and evolute. It has a broad umbilicus and faint chamber walls. The siphonal side is sharply carinate, and the keel is not clearly

[4] Vertebrae of Eretmosaurus were identified and described from A.G. Rzhonsnitskiy's collection by V.V. Menner (Outcrop 2). The Eretmosaurus specimens from Outcrop 3 were collected by the present writer.

[5] From the talus of Outcrop 2 N.N. Tazikhin has collected Dactylioceras gracile Simps., D. suntarense Krimh, and Osperleioceras viluiense Krimh.

[6] The guide fossil assemblages were distinguished both from personal observations and from the data of V.A. Vakhrameyev, G.I. Bushinskiy, Yu.M. Pushcharovskiy and G.F. Lungersgauzen.

Distribution of the Paleontological Remains in the Sections along the Vilyuy, Markha, Tyung and Bol'shoy Batuobiya Rivers. Domerskian Stage (J_1d)

No.	Name of organism	Vilyuy R.	Markha R.	Tyung R.	Batuobiya R.	No.	Name of organism	Vilyuy R.	Markha R.	Tyung R.	Batuobiya R.
1	Amaltheus margaritatus Montf.	+	+?	+	—	12	Tancredia kuznetsovi Petr.	+	—	—	—
2	Paltarpites argutus Buckm.	+	—	—	—	13	Pleuromya liasica Kosch.	+	+	+	+
3	Nannobelus janus Dum.	+	+	—	—	14	Pl. striatula Ag.	+	—	—	—
4	Harpax terquemi Desl.	+	+	—	—	15	Pl. galathea Ag.	—	+	—	—
5	H. laevigatus Orb.	+	—	+	—	16	Panope lahuseni Kasch.	—	—	+	—
6	H. viluicus Kosch.	+	—	—	—	17	P. elongata Kosch.	—	—	+	—
7	H. spinosus Sow	—	+	+	—	18	Solen liasicus Opp.	+	—	—	—
8	Myophoria batuobica Kosch.	+	+	+	+	19	Modiolus nitidula tiungensis Petr.	+	—	—	+
9	Pseudomonotis tiungensis Petr.	+	+	+	+	20	Turbo khudjaevi Petr.	—	+	—	—
10	Ps. sparsicosta Petr.	—	—	+	—	21	Pleurotomaria aff. singularis Sieb.	—	+	—	—
11	Lenella tiungensis Kosch.	+	+	+	—						

Toarskian Stage (J_1t)

No.	Name of organism	Vilyuy R.	Markha R.	Tyung R.	No.	Name of organism	Vilyuy R.	Markha R.	Tyung R.
1	Dactylioceras gracile Simps.	+	+	+	9	Nannobelus pavlovi Krimh.	—	—	+
2	D. athleticum Simps.	—	—	+	10	Orthoceras sp.	—	—	+
3	D. suntarense Krimh.	+	—	—	11	Leda jacutica Petr.	+	+	+
4	Osperleioceras viluiense Krimh.	+	—	—	12	L. acuminata (Goldf.)	+	+	+
5	Mesoteuthis oxycona Hehl.	+	—	+	13	Arctotis marchaensis Petr.	—	+	+
6	M. gracilis Hehl.	+	—	—	14	(Mytiloides) marchaensis Petr.	+	+	—
7	M. stimula Dum.	+	—	+	15	(M.) oviformis Khud.	+	+	—
8	Passaloteuthis sp.	+	—	—	16	Modiolus numismalis Opp.	—	+	—

distinguished from the lateral surfaces of the shell. In the fossil impression one may trace wavy, curving thin ribs. The amount of these ribs in the adult whorl (per 1/4 d) is about 30. The ribs merge without a break into the keel, giving the latter a beaded appearance. The young whorls as a rule have bundles with different successions of ribs (Figure 2).

Dimensions. The greatest diameter is 89 mm; the height of the whorl is 34 mm; the diameter of the umbilicus is 33 mm?; the ratio of the whorl height to the shell diameter is 0. 38.

Remarks. The present species may be identified with the form first described by S. Buckman from the top of the Domerskian stage [14] in England (Vol. 363; Figures 1, 2; Series 37; 1923). It differs from Paltarpites paltus Buckm. (Vol. 362; Figures 1, 2; 1922) in having thinner and more numerous ribs on the earlier whorls and in its smaller shell diameter.

Distribution. The upper part of the section through the Domerskian stage of England (above the Amaltheus margaritatus zone).

Location. Central Yakutia, Vilyuy River, in the vicinity of the mouth of the Ulakhan-Dzhiyelligir River (above the beds containing Amaltheur margaritatus Montf.)

Collected by the present author (Museum of the All-Union Aerogeological Trust).

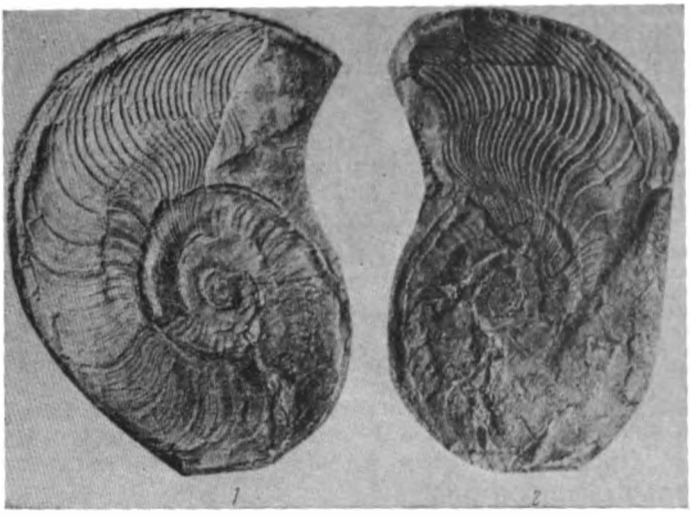

FIGURE 3. Imprint of the ammonite Paltarpites argutus Burkm. from the Vilyuy River (the area near the mouth of the Ulakhan-Dzhiyelligir River). Domerskian stage (top). Collected by Z.V. Koshelkina. Two-thirds natural size.

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