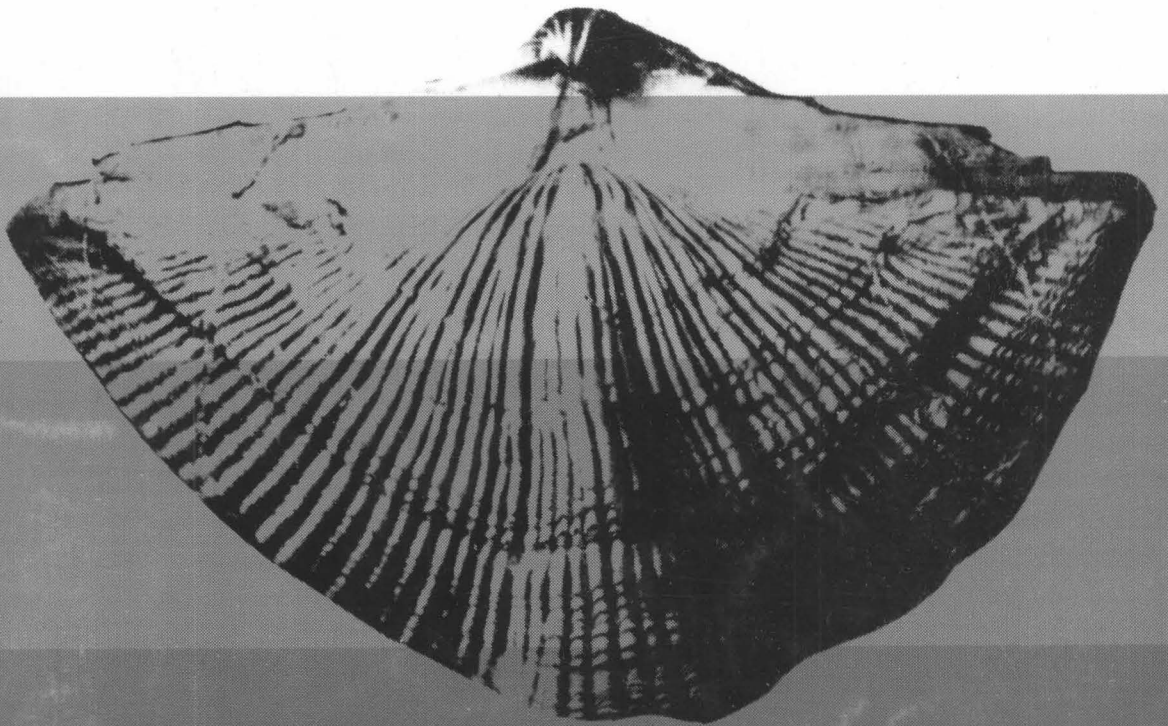


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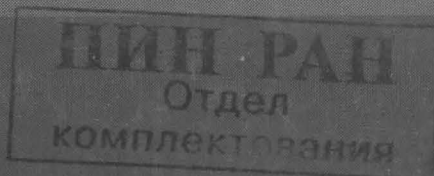
A TRANSLATION OF

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FIRST FIND OF THE ICHTHYOSAUR *Ophthalmosaurus* IN THE KIMMERIDGIAN OF THE USSR

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The ichthyosaur genus *Ophthalmosaurus* was erected in 1874 from the Oxfordian of England. English material of this genus, previously known from strata ranging from the Callovian to the Portlandian stages, was revised in 1955 by Appleby [5]. Two species are assigned to this genus — *O. icenicus* Seeley and *O. monocharactus* Appleby. Synonymy with the North American ophthalmosaur *Baptanodon* Marsh [7] is still under discussion.

This genus is also known from the Volgian stage of Moscow and Povolzh'ye, where it was first described by Bogolyubov [1]. Several of the specimens mentioned (but not described) by this author were assigned provisionally to the English species. Earlier ophthalmosaurs of uncertain specific identity were noted by Zhuravlev [2, 3] from Volgian strata on the left bank of the Volga in Saratov.

In 1982, near the village of Malye Undory in the Ul'yanovsk region of the Ul'yanovsk Oblast, I found the first ophthalmosaur in Kimmeridgian strata in our country. An association of 25 bones, evidently belonging

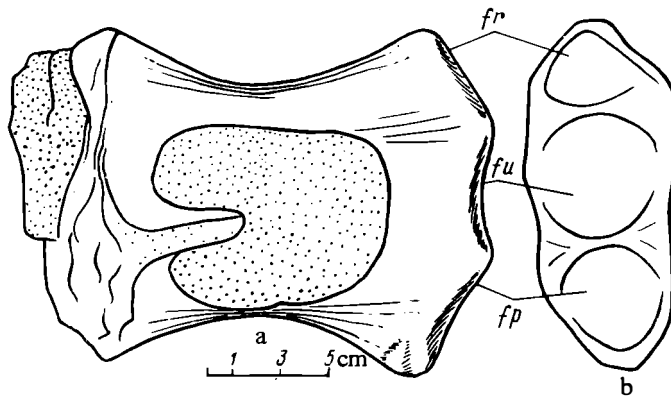


Fig. 1. *Ophthalmosaurus undorensis* sp. nov.; holotype No. 140; left scapula: *a* - ventral surface, *b* - distal end of scapula from below. Explanation: *fr* - facet radius, *fu* - facet ulna, *fp* - facet pisiformes.

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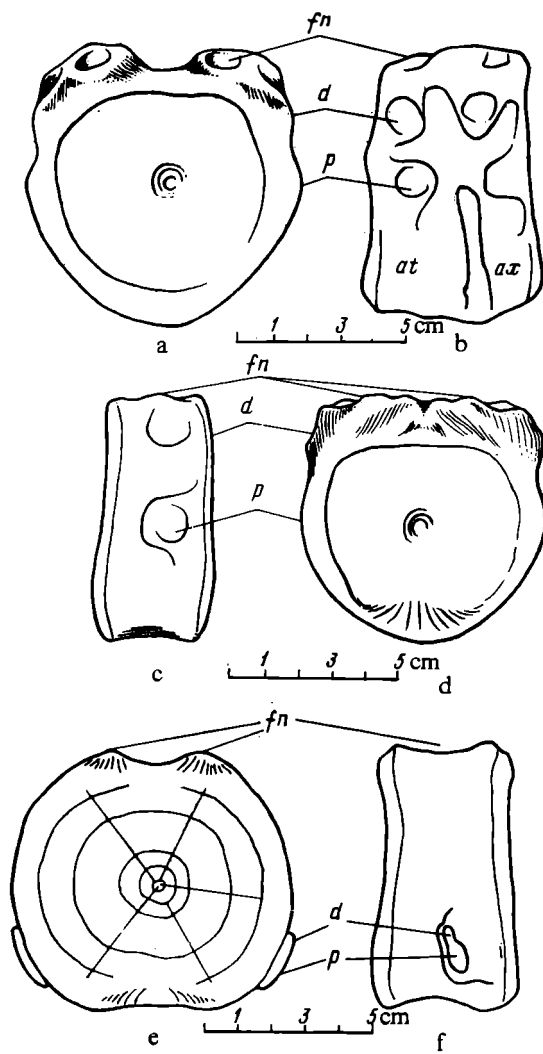


Fig. 2. *Ophthalmosaurus undorensis* sp. nov.; holotype No. 140; vertebrae from various parts of the vertebral axis: *a, b* - atlas-epistrophius, *a* - frontal view, *b* - lateral view; *c, d* - anterior thoracic vertebra, *c* - lateral view, *d* - anterior view; *e, f* - anterior tail vertebra, *e* - anterior view, *f* - lateral view. Explanation: *fn* - facet neuralis, *d* - diapophysis, *p* - parapophysis, *at* - atlas, *ax* - axis.

to one individual, occurred in dense calcareous marls of the upper Kimmeridgian (*Aulacostephanus mutabilis* foraminifer zone, according to V. I. Baryshnikov of Saratov University). The material consists of a tooth, 18 thoracic vertebrae, fused atlas and epistrophius, and a shoulder blade and humerus with three articulation facets (for the radius, ulna and pisiformes) on the distal end, which is a characteristic of the studied genus. Many vertebrae were damaged by scavengers prior to burial.

Genus *Ophthalmosaurus* Seeley, 1874

Ophthalmosaurus undorensis V. Yefimov, sp. nov.

Generic name. Named after the village of Undory in the Ul'yanovsk region of the Ul'yanovsk Oblast.

Holotype. Tooth, fragments of postcranial skeleton; collections of the "Simbirsk" Industrial Works of the Ul'yanovsk section of the All-Russian Cultural Fund, spec. No. 140; right bank of Volga River near village of Undory; Upper Jurassic, upper substage of Kimmeridgian stage, *Aulacostephanus mutabilis* zone.

Description (figs. 1, 2). Only preserved tooth conical, sharp, with saber-like curvature, covered with 26 two-sided longitudinal folds that extend from base to summit. Length of preserved portion of tooth 20 mm, diameter in middle 4 mm. Root not preserved.

Of preserved vertebrae (fig. 2), three (Nos. 1-3) are characterized by fusion of diapophyses in region of articulation of neural arches, and thus belong to neck region. Their form exhibits a characteristic hexagonal form. Thoracic vertebrae Nods. 4-10 with two differentiated rib facets belong to dorsal region. They are nearly round in form, slightly constricted dorsoventrally. Several of these vertebrae have scratch marks that evidently were caused by scavenging prior to burial. Thoracic vertebrae Nos. 13, 15 and 16 are similar to preceding vertebrae, but are characterized by fusion of diapophyses with parapophyses. According to Andrews [6], in ophthalmosaurs such fusion occurs on vertebra 41, but according to Appleby [5] it occurs between 27 to 37. Based on dimensions of described specimens, I think that thoracic vertebrae Nos. 13, 15 and 16 were located between vertebrae 37 and 45.

Width of ventral part of available left shoulder blade 140 mm, length of narrow dorsal part, of which approximately half is complete — 64 mm. Length of articular surface for humerus 95, width 45 mm.

Preserved left shoulder blade is short and massive (fig. 1). Its length is 155 mm, width of proximal end 119, and distal end 139 mm. Proximal end in transverse section like an asymmetrical trapezoid with rounded corners. On upper side there is a trochanter that extends from proximal end almost to middle of bone. Its height is 32 mm. On lower surface along central part there is a deltopectoral ridge. Distal end carries three glenoid surfaces separated by sharp spines. Facets for coracoid and ulnar bones identical in size, 57 mm (fig. 1 b); but third (for radius) almost two times smaller, 36 mm.

Dimensions in mm of vertebrae:

Spec. No.	Height	Width	Length
1	67	67	31
2	72	71	32
3	76	72	40
4	85	100	45
5	92	100	45
6	92	100	46
7	86	100	46
8	94	96	42
9	86	94	46
10	84	94	44
11	86	97	38
12	97	100	38
13	91	96	41
14	91	96	38
15	95	100	39
16	98	97	42
17	94	103	39
18	94	100	44

Comparison. The only species from the USSR for comparison is *Ichthyosaurus volgensis* Kazan. [4], which Bogolyubov [1] assigned to the ophthalmosaurs. In the species here erected the vertebrae are noticeably shorter (see above), indicating that the spine was very rigid. Strong fusion of the vertebrae decreased or eliminated lateral motion of the body during swimming, giving the tail and anterior joints a greater role in swimming. Comparison of the structure of the glenoid facet of the shoulder blades of *O. undorensis* and *O. icenicus* suggests that the carpal region of the swimming paddle of the new species was significantly thicker than in the Western European species. A more thorough comparison with crania of *O. icenicus* Seeley and *O. monocharactus* Appleby, both from the Jurassic of England, is hindered by the incompleteness of our material. One can only note that the structure of the teeth of *O. undorensis* is very similar to that of the English species. Differences in the structure of the scapula and vertebrae permit assignment of the Ul'yanovsk specimen to a new species. It is possible that the discovery of more complete ichthyosaur remains of this age will necessitate revisions.

Material. The holotype.

References

1. Bogolyubov, N. N. O., 1910, On Portlandian ichthyosaurs. *Izv. Imper. Akad. nauk*, Vol. 4, No. 6, pp. 469-476.
2. Zhuravlev, K. I., 1941, Ichthyosaurs and plesiosaurs from oil shales of the Savel'yev shale pit. *Priroda*, No. 5, pp. 84-86.

3. Zhuravlev, K. I., 1943, Finds of Upper Jurassic reptiles in the Savel'yev shale pit. *Izv. Akad. Nauk SSSR. Ser. biol.*, No. 5, pp. 293-306.
4. Kazanskiy, P., 1903, On the ichthyosaur bones found in the Syzran' district of the Simbirsk province. *Tr. o-va yestestvoispyt. pri Imper. Kazansk. un-te*, Vol. 37, No. 3, pp. 1-33.
5. Appleby, R. M., 1955, The osteology and taxonomy of the fossil reptile *Ophthalmosaurus*. *Proc. Zool. Soc. London*, Vol. 126, pp. 403-447.
6. Andrews, C. W., 1907, Notes on the osteology of *Ophthalmosaurus icenicus* Seeley. *Geol. Mag.*, Vol. 4, pp. 202-208.
7. Gilmore, C. W., 1905, Osteology of *Baptanodon* (Marsh). *Mem. Carnegie Museum*, Vol. 2, pp. 77-129.