16. *The Recent Brachiopod Fauna of Japan.*

(3) *Notes on the Subfamily Laqueinae.*

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The third report deals with the species believed to be new and belonging to the subfamily Laqueinae, all except *Pictothyris elegans* are from the Japan Sea. *P. elegans* is from southern Kyûsyû.

Pictothyris elegans sp. nov. Figs. 1-4.

Type loc.: Sôyô-maru station 520, 35°43' N., 133°07'30'' E., 75 m., sand, bottom temperature 23.3° C., Aug. 23, 1929. Reg. No. 56776.

Distinguishable from *Pictothyris picta* (Dillwyn),¹⁾ a recent as well as fossil species in Japan by possessing a larger size, more circular shell outline, total absence of divaricating coloration, finer concentric growth lines and a longer front margin; otherwise quite identical. Length 37.0, width 32.4, and depth 18.5 mm.

Pictothyris laqueaeformis sp. nov. Figs. 5-6.

Type loc.: Sôyô-maru station 428, 32°17'30'' N., 129°44'15'' E., 119 m., pumice, bottom temperature 17.0° C., July 16, 1929. Reg. No. 58874.

Distinguishable from both *P. picta* and *P. elegans* by possessing a shell outline quite indistinguishable from the species of the genus *Laqueus*. Characteristic of *Pictothyris* in possessing a divergent cardinalia, prominent cardinal process and the descending branches in not being united to the median septum by a connecting band. Close to *Laqueus orbicularis* Yabe and Hatai,²⁾ a recent species from Japan in shell outline. Length 13.8, width 13.2, and depth 7.0 mm.

Laqueus concentricus sp. nov. Figs. 11-14.

Type loc.: Sôyô-maru station 619, 39°16'27'' N., 139°29'15'' E., 338 m., rock and gravel, bottom temperature 4.4° C., Aug. 14, 1930. Reg. No. 58891.

Characterized and distinguishable from the other species of *Laqueus* in possessing strong concentric growth lines which are overlapping in aspect, quite regularly spaced in region anterior to middle of shell length, thin test, slight splashes of light red coloration periodically at margins only, equal convexity of valves, and orbicular shell outline. Length 17.5, width 15.5, and depth 9.0 mm.

1) Yabe, H.: Sci. Rep. Tôhoku Imp. Univ., Sendai, Ser. 2, Geol., Vol. 15, No. 3, p. 194, pl. 13, figs. 1 a-c, 3, 4, 9, 1932.

2) Yabe, H. and K. Hatai: Proc. 10 (1934), 663, figs. 41-44.

Laqueus rubellus (Sowerby) subsp., *obessus* subsp. nov.

Figs. 7-10.

Type loc.: Sôyô-maru station 652, 41°27'08'' N., 140°23' E., 110 m., gravel, bottom temperature 14.0° C., Aug. 24, 1930. Reg. No. 58651.

Distinguishable from *Laqueus rubellus* (Sowerby),¹⁾ a recent as well as fossil species in Japan by the more globular shell outline, rather small size, incipient truncation of the valves accompanied by an indentation which makes both valves appear somewhat pinched anteriorly. Length 19.5, width 16.5, and depth 13.0 mm.

Distribution: Sôyô-maru stations 525, 35°41'30'' N., 134°18'30'' E., 137 m., sand, bottom temperature 14.0° C., Aug. 23, 1929; station 641, 40°42'23'' N., 139°51' E., 227 m., gravel and sand, bottom temperature 9.7° C., Aug. 22, 1930. Reg. No. 58652; and station 652, 41°27'08'' N., 140°23' E., 110 m., gravel, bottom temperature 14.0° C., Aug. 24, 1930. Reg. No. 58651 (type).

This subspecies is distinguishable in a large number of specimens but in a small number, distinction is less noticeable.

The subfamily now contains two genera, namely, *Laqueus* and *Pictothyris*. The former has the descending branches united to the median septum by connecting bands while the latter is free from the median septum. *Laqueus* has a cardinalia consisting of inner and outer hinge-plates divided by the crural bases while in *Pictothyris* there are two divergent buttresses open clear to the apex and headed by a prominent cardinal process, this last mentioned process is absent in *Laqueus*.

The genus *Laqueus* includes the following species, namely, *rubellus* (Sowerby) *blanfordi* Dunker, *morsei* Dall, *japonicus* Yabe and Hatai, *proprius* Yabe and Hatai, *quadratus* Yabe and Hatai, *orbicularis* Yabe and Hatai, *pacificus* Hatai, *suffusus* Dall, *rubellus obessus* sp. nov., *concentricus* sp. nov., and *hanawaensis* Hayasaka; all in Japanese regions. In the northwestern American region are, *californicus* (Koch) *californicus vancouverensis* Davidson. There are also several undescribed species of *Laqueus* in the Neogene of Japan. The genus *Pictothyris* contains, *picta* (Dillwyn), *hanzawai* Yabe, *elegans* sp. nov., and *laqueaeformis* sp. nov. No species of this genus are known from the Tertiary deposits or seas outside of Japan.

The genus *Laqueus* is distributed in the north Pacific region only, in both living and fossil state. The record of a species of *Laqueus* in Hawaiian waters seems to be an error; if so, then the genus is confined to the zoological provinces of Californian, Aleutian, Japonic and northern part of the Indo-Pacific provinces. The genus *Pictothyris* is confined in its fossil and living distribution to the northern portion of the Indo-Pacific zoological province.

The genera *Laqueus* and *Pictothyris* do not only differ from each other in fossil and living distribution but also in the cardinalia, loop and foramen. Although the two genera are distinguishable from one another, they are related to each other in the coloration, shell outline,

3) Sowerby, G.: Thes. Conch., Vol. 1, p. 350, pl. 69, figs. 40-42, 1847; Yabe, H.: loc. cit., p. 194, pl. 13, figs. 2 a-c, 5 a-c, 6-8, 1932; Nomura, S. and K. Hatai: Saitô Hô-on Kai Mus., Res. Bull. No. 2, p. 12, pl. 2, figs. 7-18, 1934.

size attained in the adult stage, by *Pictothyris* being in a stage of loop development superior to that of *Laqueus*, and by the external characteristics of the shell (compare *L. rubellus* with *P. picta*) being hardly distinguishable from one another.