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12. *A Note of the Fossil Marine Fauna from Okinawa-Zima, Ryûkyû Group*

By

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Sometimes ago one of the authors (NOMURA) received from Mr. K. TSUJITA, a teacher of the Okinawa Girls Normal School, a small lot of marine fossils, collected by him from a limestone complex developed in the vicinity of the city of Naha, in Okinawa-zima.

The fossils are the following, namely; Pelecypoda: *Anodontia bialata* (PILSBRY), *Cardium* (*Nemocardium*) *beckei* REEVE, *Codakia divergens* (PHILIPPI), *Codakia* sp., *Corbis sowerbyi* REEVE, *Dosinia grunerii* PHILIPPI, *Macrocallista pacifica* (DILLWYN), *Ostrea ariakensis* FUJITA, *Paphia* (*Paphia*) cf. *amabilis* (PHILIPPI), *Pecten* (*Amussiopecten*) *praesignis* YOKOYAMA, *Thyasira nipponica* YABE and NOMURA. Gastropoda: *Conus capitaneus* LINNAEUS, *C. ebrneus* HWASS, *C. fulmen* LINNAEUS, *C. gastacapi* PILSBRY, *C. kikaiensis* PILSBRY, *Fusinus perplexus* (A. ADAMS), *Xenophora exusta* (REEVE). Cirripedia: *Coronula diadema* (LINNAEUS). Brachiopoda: *Pictothyris hanzawai* YABE, *P. picta* (DILLWYN). Echinodermata: *Clypeaster japonicus* L. DÖDERLEIN. Anthozoa: *Flabellum* sp.

Unfortunately since the stratigraphic position of the beds that yielded the fossils is unknown to us at the present time, it cannot be definitely stated to what geological formation they really belong. There are two possibilities of equal weight, one is, that the fossils from the limestone complex belong to the Ryûkyû limestone

formation,⁽¹⁾ and the other is, that they are from a different facies of the Simaziri Beds, a clastic formation unconformably underlying the Ryûkyû limestone complex just mentioned. If the latter, then the fauna represents a lateral change in facies of that group and may be safely referred to the Pliocene in age⁽²⁾

Among the fossils in the collection, particularly interesting are, *Pecten* (*Amussiopecten*) *praesignis* YOKOYAMA, *Thyasira nipponica* YABE and NOMURA, and *Coronula diadema* (LINNAEUS).

Pecten praesignis is very common in the Lower Pliocene deposits of the provinces of Tôtômi and Tosa, and is well represented in the Simaziri Beds of Okinawa-zima. It is interesting in the fact that, (1) it is much similar to *Thyasira nipponica* which will be stated in the next in its geological range in time, ranging from Miocene to Lower Pliocene in general (2) its distribution in fossil state is much different from that of the species, being known only from deposits lying either south or west of central Japan, (3) the short geological range and extensive distribution in southern and western Japan is a fact in need of consideration in dealing with the age of a geological formation yielding it.

Thyasira nipponica is distributed widely in the Neogene deposits from northern to southern Japan (Byôritu Beds of Taiwan), but is particularly abundant north of central Honsyû. It is interesting in the fact that, (1) it is a derivative of the species *T. bisecta*, (2) its geological range is mainly from Miocene to Lower Pliocene, (3) its geographical distribution in fossil state is much more extensive than that of *T. bisecta*, i. e., in Japan, (4) its associated fauna in the western or southern parts of Japan is quite unrelated to that of its northern association, and, (5) the reference of this species to an age younger than the Pliocene seems unlikely.

Coronula diadema is very common in the Lower Pliocene deposits of the Kwantô region, central Japan and has been reported from certain geological formations (Byôritu Beds?) of the Island of Taiwan.

The occurrence of *Coronula diadema* in fossil state is inte-

(1) S. HANZAWA: Geology and Topography of the Riukiu Islands. Sci. Rep. Tôhoku Imp. Univ. Sendai, Ser. 2. Geol., Vol. 17, 1935.

(2) H. YABE: The Middle and Upper Mizuho Period (Japanese Neogene). Contr. Inst. Geol. a. Palaeont. Tôhoku Imp. Univ. Sendai, Vol. 16, 1935 (in Japanese).

resting in several respects, such as, (1) its presence indicates the former existence of the humpback whale *Megaptera* or its ancestor in the absence of fossil whale bones, (2) its presence in geological formations may aid in throwing some light on the depth of the seas in which sedimentation took place, and another interesting feature is (3) that this species is best represented in the deposits referable to the Lower Pliocene in age, although it is also known to occur in deposits belonging to the Upper Miocene in a two-fold division.

Providing the fossil barnacle now being considered was not pushed up to near the strand line by under-tow currents and that the former whales which act as a host to the barnacle was not able to invade waters as shallow as the strand-line, the following may be reasonable. Of course the question arises as to whether the barnacle was buried at the place of death or in a place remote from the actual place of death. In the fact that the specimen is not water-worn or abraded and well preserved, it seems quite possible if not altogether natural to believe in the category. This data leads in the assumption but not conclusion that the deposits yielding this species in good preservation were laid down in somewhat deep water of the littoral zone and not in the strand line.

From the above, we find that the three species mentioned together with those not remarked upon are important in dealing with the age of a geological complex yielding them. Upon the data now at hand, it seems more reasonable to consider the beds yielding these fossils to be a different facies of the Simaziri Beds and not a part of the Ryûkyû limestone complex. It is only natural to consider the fossil fauna as belonging to the Simaziri Beds upon the absence of knowledge of the stratigraphical relationship existing between the Ryûkyû limestone formation and the beds yielding these fossils.

Furthermore, it seems only natural that the Simaziri Beds should have a limestone facies, and a limestone facies should not always indicate the Ryûkyû limestone formation. Lithic nature alone is often misleading. To be born in mind is the fact that reef-building corals must have existed prior to the building of the Ryûkyû limestone, according to the latitude of the said island.

琉球群島沖繩島の化石海棲フオーナに就いて (摘記)

野村七平 畑井小虎

辻田幹一氏送附の琉球那覇市附近産化石を検するに、石灰岩を母岩として *Thyasira nipponica*, *Pecten praesignis*, *Coronula diadema* 其の他數種貝類, ウ = 等が混在するを知つた。産地の層位關係が不明ではつきりしたことは言ひ兼ねるが上記三種の從來の産出記録に重點を置くなれば石灰岩層ではあるが之を所謂琉球石灰岩とするよりむしろ島尻層群(鮮新世)として考へたい。