AN UPPER PALAEOZOIC FAUNA FROM MIHARA-NORO,* HIROSHIMA PREFECTURE, JAPAN

by

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Introductory

About 80 km to the NE of Hiroshima city, in the Chugoku Plateau, surrounded as it were by the Cretaceous formation chiefly consisting of granitic rocks, is a Palaeozoic terrain, relatively of limited extension. According to the geological map of Hiroshima Prefecture, 1:200,000 (1963), this area belongs to the northern zone of the Palaeozoic formation of this region, and it is at about the eastern end of this region that the limestone platform of Miharanoro is situated: it is a part of the limestone zone exposed near the town of Tojo toward south-west. The limestone bed here is considered to occupy the upper part of the limestone formation of the Taishaku-Dai (tableland), well known for its natural beauty exhibited along the gorge of the Taishaku river traversing there.

Concerning the geology of the region around Taishaku-Dai several reports have appeared up to present. The Palaeozoic formation is regarded on the basis of fossil evidences to range from the upper Carboniferous up to the Permian. The Fusulina limestone plays an importent role as the stratigraphical key. Besides, among corals some are forms pointing to the Carboniferous, and several brachiopods are of the Permian types. Within the small area of Miharanoro, where abundant fossils have been collected by ISAO NISHIKAWA, Carboniferous forms do not seem to have been recognized, among them. On the other hand, Permian forms have not been reported to occur abundantly. It may likely be that research for fossils in both areas have not been carried out with enough care. If the abundant fossils from Miharanoro would be of Permian age, as has been suggested to be, many of them are expected to be discovered also in the Taishaku-Dai faunas.

* The piece of land here under consideration consists of Miharanoro-East (三原野呂東) and Miharanoro-West (三原野呂西), both belonging to the Township of Tojo: "noro" signifies, in the local usage, a valley or a deep-seated flat landscape: however, Miharanoro is practically in use among the people in the region, Miharano being misuse appeared in the topographical map published years ago by topographical survey board.

Now, a few lines will be inserted here on Miharanoro and the fossiliferous limestone there. Miharanoro limestone, so it may be called, is a milky white, massive rock, forming the surface of the area, about 2.5 km and 1.5 km, N-S and W-E, respectively, with a rather little relief, and mild type of karst topography, with small scale dolines here and there, especially in the southern part. On the surface of the platform there are many spots where fossils are found, often in abundance. From these exposures of the fossiliferous rocks different kinds of fossils have been collected by NISHIKAWA, during a long period of more than ten years, spending his leisure hours in the busy daily life of a grocer at a nearby town of Yuki. In the very rich material entrusted to us for study, we have been able to find forms of foraminifera (chiefly Fusulinidae), sponges, corals, bryozoans, brachiopods, molluscs (cephalopods, gastropods and a few pelecypods), arthropods (a few trilobites), and some calcareous algae. NISHIKAWA has stopped at each spot where fossils are found, and has endeavored to pick up as many specimens as possible, each spot and the lot of specimens obtained was numbered throughout. These locality numbers are added at the end of the descriptions of fossils. As the structure and the trend of the limestone are not easily to be cleared, this way of numbering is very appropriate: it is possible that the lists of species from each of these spots or " localities " may throw light upon recognition of the order of palaeontological succession; the fusulinids may be of use, first of all.

The Miharanoro fauna attracted the writer's notice because it contains rather rich molluscan fossils, besides brachiopods and foraminifers. Among others cephalopods and gastropods are represented by rather well preserved specimens. The Upper Palaeozoic stratigraphy of our country has been very well established by the intense studies on the fusulinids, the Fusulina limestone being very widely developed. It is quite contrasting that the " macro- " fossils of the upper Palaeozoic have only rarely been referred to, if not entirely neglected; it does not seem to be that such fossils do not occur in the " Fusulina limestone " so extensively developed, and so popular among the students of fossils. Time and again names of different fossils, say, brachiopods, molluscs, corals, etc. are found accompanying the lists of fusulinid species from different localities. For the palaeontological stratigraphy, of the Younger Palaeozoic, no doubt, fossils other than fusulinids may not be of significance. But, as far as the palaeobiological consideration is regarded important for the better understanding of fossils and faunas, palaeoecology should not be neglected from the stratigraphical palaeontology. Of the foraminifers, especially fusulinids, by means of which the Younger Palaeozoic stratigraphy has been given standard, majority may be regarded planktonic in life; the knowledge on the kinds of fossils of sedentary animals and plants occurring together with them may be of help for judging the ecological conditions of the foraminiferous rocks under consideration. For this purpose, gastropods may likely be one of the useful materials.

Besides, in order that a fauna or a flora representing a stratum, i.e., a certain period, be ecological pertinent, in other words, that palaeontology would be more highly valued as the natural record of the history of life, a wholesale recording of fossils of all kinds in faunas may ,without doubt, be desired no less than a graceful research to exhaustively record certain group or groups of fossil animals and plants.

The purpose to study the fossils of Miharanoro is to try to examine whether such an idea can be realized, or not. The material may not be insufficient if its contents can be thoroughly studied. NISHIKAWA's collection contains varieties of species, some of them even quite abundantly. For the work, which is desired to be carried out in a certain period of time, hands are necessary. Fortunately they are found among the colleagues in Hokkaido University. Prof. MINATO, presiding the Institute of Palaeontology and Historical Geology of the University, together with the members of the staff of the Institute, has taken up the scheme. Beside Prof. M. MINATO, Drs. S. HONJO, M. KATO, S. NAKAMURA and others are ready to take part in the research: Mr. S. KUMANO's subtle photographic art is encouraging. Virtually, the research work is now being started in collaboration. Three articles are going to be published in this issue. Further studies will appear succesively in this Journal from time to time. The Institue being quite well equipped, and the technique excellent, I hope and expect that there would be some further contributions toward the science of fossils in the years to come. These studies will some time provide us with the knowledge important for clarifying the stratigraphical distribution and the ecological relations of these fossils and the fossiliferous limestone of Miharanoro.

Finally, Mr. I. NISHIKAWA has to be cordially thanked by palaeontologists of our country for his incomparable hospitality to have us study his precious collections for which he has devoted himself single-handed for years. His interest toward the earth science is so strong that he intends to continue his research and collection not only in Miharanoro, but further in certain other places around his home town: more will be contributed to earth science, I sincerely hope.