56. Discovery of Early Paleolithic Artifacts from Nakamine and Aobayama Sites, Northeast Honshu, Japan

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The Early Paleolithic artifacts were found from the Middle Pleistocene deposits by excavations precedent to constructions of a water purifying station at Nakamine, Taiwa-cho, about 20 km north of Sendai, in 1983 and of a library of Tohoku University at Aobayama, Sendai City, in 1984. The Nakamine and Aobayama sites are on the higher terrace 90 m and 150 m above sea level, respectively, at the eastern end of the spur of dissected hills, of which summit level is subhorizontal and lowers gently eastwards. Fluvial terraces are distributed in three groups in the hills largely consisting of the Pliocene sedimentary rocks. The higher terrace occupies top of the hills, but diverges from the summit area to the flanks of the hills. The deposits are fanglomerate, which grades upwards into clay and volcanic ash at Nakamine and Aobayama. In the Sendai area, the fanglomerate and overlying volcanic ash are named the Futatsuzawa Gravel and Koeji Volcanic Ash Members of the Middle Pleistocene Aobayama Formation.1,2) The lowest horizons of the Paleolithic artifacts at Nakamine and Aobayama are in clay to the lower part of volcanic ash. Red soil occurs in the Aobayama Formation and its equivalent at Nakamine as a paleosol buried by the subsequent volcanic ash layers. Clayey volcanic ash in the upper part of the higher terrace formation at Nakamine was dated by thermoluminescent method to 368,300±24,700 years before present.

The middle terrace, which is named the Dainohara Terrace in Sendai, has a gentle gradient and continues to the coastal terrace widely distributed in the coastal areas of Japan, to which the name of Shimoseyoshi Terrace has been applied frequently. The Shimoseyoshi Terrace represents major high stand of sea level in the transition from Middle to Late Pleistocene or in the early Late Pleistocene. At Tsukabara about 80 km south of Sendai, deposits of the Shimoseyoshi Terrace record the Blake Geomagnetic Polarity Subchron about 110,000 years before present.3,4) The Dainohara Terrace is covered by the Medeshima Volcanic Ash,2) which covers the Aobayama Formation with unconformity. A pumice bed unconformably overlying the higher terrace formation at Nakamine was dated to 140,100±6,200 years before present by thermoluminescent method.

The lower terraces are compound alluvial fans filling the valleys cut into the older terraces together with the hills. The extensions of the lower terraces are buried beneath fluvial and coastal plains. The Nagano Volcanic Ash2) covers the older part of the lower terraces in the southwestern part of the Sendai area. Deposits of almost all terraces yielded plant remains and pollen, and of the middle terrace along the Pacific coast include marine fauna. The climate indicated by the floras is generally cool in the ages of the higher and lower

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terraces and moderate in the age of the middle terrace, as compared with the present climate in the same area. Water temperature indicated by the marine fauna from the middle terrace deposits is moderate. Red paleosol of the higher terrace deposits is considered to have developed in the age of the middle terrace.

Stratigraphic units of the higher terrace formations and overlying layers were further subdivided in the sections excavated at Nakamine and Aobayama. The subdivision is based on the zonal patterns superposed upon the original layered structure by postdepositional alteration and human activities (Figs. 1, 2).

The excavation at Nakamine, where some artifacts of the Heian Period of about 1,000 A.D. have been collected, was conducted by the Board of Education of Miyagi Prefecture. Three sites, named Nakamine A, B and C, were excavated. Among them the excavation of the Nakamine C site yielded the Paleolithic tools. Five cultural horizons were recognized in clay and volcanic ash of about 5.5 m in total thickness of the higher terrace formation and overlying layers (Fig. 1).

The first cultural horizon on the layer IIb yielded 66 artifacts in two separated clusters. One of them includes small points, an axe and bifacial tools in a concentration, and the other large blades, scrapers and chips. Both clusters belong to the Mesolithic Period about 10,000 years before present.

In the second cultural horizon on the layer IIc, 107 artifacts were concentrated in an elliptical area 3 m in longer diameter. They were a point, a drill, an end-scaper, scrapers, tools retouched by bipolar technique (Pièes esquillée), blades, cores, flakes and chips made of siliceous shale, siliceous tuff, obsidian and opal. This assemblage belongs to the Upper Paleolithic.

From the third cultural horizon on the layer III, 19 artifacts were found. They were bifacial tools, scrapers, a drill, tools retouched by bipolar technique.
This assemblage is similar to that from the Zazaragi site about 22 km north of Nakamine belonging to the Middle Paleolithic Period about 40,000 years before present.

In the fourth cultural horizon on the layer IV, 11 artifacts were concentrated. They were cores, flakes and a tool made of rhyolite, dacite, andesite, tuff and siliceous shale by bipolar technique.

From the fifth cultural horizon in the layer VII, 106 artifacts were excavated in two groups on both sides of a gentle hollow. Each group includes several concentrations of 3 to 33 artifacts. Lithic materials are various: chal-
cedony, jasper, siliceous tuff, dacite, vein quartz, andesite, rhyolite and others. The artifacts are classified into heavy tools of coarse materials and light flake tools of siliceous materials. The heavy tools made from tabular pebbles include chopping tools, picks and crude scrapers. Bipolar technique was frequently applied to their fabrication. The light tools include bifacial tools, drills, tools retouched by bipolar technique, gravers(?) , notches, denticulates, scrapers, cores and flakes. They were flaked from polyhedral or discoidal cores or both, but not by the Levalloisian technique.

The excavation of the Aobayama B site was conducted by the Commission on the Buried Cultural Properties in the Campus of Tohoku University. The site has been reserved by the Laboratory of Archaeology of the University as an artifact yielding area since 1982. Four cultural horizons were recognized in the Middle Pleistocene Aobayama Formation, Late Pleistocene Medeshima Volcanic Ash and Nagano Volcanic Ash, in ascending order (Fig. 2).

The first cultural horizon on the layer 2 yielded fragments of potteries, stone arrowheads and flakes belonging to the Neolithic Jomon and Yayoi Periods.

The second cultural horizon on the layer 3 yielded scrapers and flakes of probable final Paleolithic Period.

The third cultural horizon on the layer 5 yielded 22 lithic artifacts including scrapers, blades and flakes of the Late Paleolithic Period. They were discovered in a concentration within an area of 2×3 m. This concentration is assumed to be a remain from human activity, which will be determined by the microwear analysis of the artifacts.

The fourth cultural horizon on the layer 11d yielded two small lithic artifacts: scraper and flake. These small tools are comparable with those in the oldest assemblage from the Nakamine site.

The assemblage of artifacts from the layer VII of the Nakamine site, as well as from the layer 11d of the Aobayama site, has an affinity with some of the Middle Paleolithic ones discovered so far in Japan, but differs from them in existence of component small tools and variety of their materials. In China, the upper layers of Zhokoudian Loc. 1 and Xujiaoyao site have yielded many small tools. Morphotechnical similarities are recognized between the small tools from the Zhokoudian Loc. 1 and Nakamine site, both of which include various scrapers, points, drills, gravers, core tools, and are characterized by bipolar technique applied to their fabrication. The similarity indicates probable correlation between these assemblages of the Early Paleolithic Period.

References