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NARA (HEIJŌ) IMPERIAL PALACE
SITE EXCAVATION REPORT X

SURVEYS IN THE "KOFUN ERA"-I

ENGLISH SUMMARY

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NARA (HEIJŌ) IMPERIAL PALACE SITE EXCAVATION
REPORT X
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HEIJŌ IMPERIAL PALACE SITE EXCAVATION REPORT X

The Nara Cultural Properties Research Institute has carried out a continuing series of excavation studies since 1959 at the special site of the HEIJŌ (NARA) Imperial Palace in Saki-cho, Nara city. Results of these studies have been published in the *Heijōkyū Hakkutsu Chōsa Hōkoku* (Heijō Imperial Palace Site Excavation Report) nos. I — IX. This present report is a coalition of the results of surveys on the remaining sites and artifacts from the Kofun Era (AD. 4th–7th centuries), which were unearthed in excavations carried out during the 48th survey (1968) and the 101st survey (1977).

The 48th survey site was located in the area of the *Higashi Chōshūden* (East Assembly Hall) south of the *Dainiji Chōdōin* (Second Hall of State) (Fig.1). The area is at the foot of a hill that gently descends towards the south. The 101st survey site was located in the dried up bed of the Saki-ike pond to the east of the *Daiichiji Dai-gokuden* (First Palace Council Hall). The 101st excavation was carried out as a study preliminary to a change in the status of the site (i.e., it was to become a construction site for private use.) The Kofun Era sites excavated within the area of the 48th survey were ditches SD 6030 and SD 6038, tomb SX 6035 and pits SK 6034 and SK6033. From the 101st survey area (6ACA) ditches SD 8520 and SD 8521 were excavated.

Ditch SD 6030 runs from the northwest of the survey area toward the southeast beneath the foundations of the East Assembly Hall (SB 6000). It is a natural riverbed, “S”-curved, 4–5 meters (1 meter=1.094 yard) in width and 1.2 meters in depth (Plans 2–4, Pl. 3–8). Excavations were carried out to the west side (“north area”) and to the south side (“south area”) of the building’s foundation. In the ditch basin of the north area there is an arrangement (SX 6032) where several wooden stakes were driven in a line across the ditch. There is a similar arrangement in the south area (SX 6031).

Though there is a slight difference in the ditch’s strata accumulation between the north and south areas, in both areas from seven to nine strata are recognized. These strata can be roughly divided in to two major levels: sandy lower stratum and clay based upper stratum (Pl. 8, Figs. 6–7). From each stratum various artifacts, such as pottery, *haniwa* (clay figurines), and wooden implements were found. Notably, a large number of wooden implements were unearthed from the upper stratum of the south area, along with natural wood (Plan 4, Pl. 3–4). Within the rectangular tomb SX 6035, located to the east of SD 6030, were three rows of vertically halved cylindrical *haniwas* utilized for coffins. In each coffin a corpse seems to have been buried with its head towards the north, though a very few pieces of human bone were found and no funerary articles were discovered (Plan 5, Pl. 9–10).

Ditch SD 8520 divides as it runs an irregular north-south course. The north terminous of the ditch is 5 meters wide and 1 meter deep; the dimensions of the other sections of the ditch, however, vary. The ditch strata can be divided into upper and lower sections. When the upper stratum was formed the dividing point of the ditch was covered; moreover, this point appears to have been a stagnant area. From these strata, pottery, wooden implements, a small bronze mirror, plant seeds, gourds, and insect remains were unearthed (Plans 6–7, Pl. 12–13).

At the dividing point of ditch SD 8520, as well as at the point where ditch SD 8521 enters SD 8520, there are located dams SX 8524 and SX 8523. Both of these dams were formed by a row of imbedded stakes, with a break in the center of their

line (Pl. 14, Figs.10–11). Artifacts unearthed from these areas were divided into the categories of pottery, *haniwa*, wooden implements, and a metal implement and which will be described for each site.

Nine hundred and twenty-eight pieces of red pottery (*Haji* ware) and two pieces of unglazed grey pottery (*Sue* ware) were unearthed from SD 6030. Four hundred and seventy-two of these pieces were from the lower stratum, 458 were from the upper. Among the pieces of *Haji* ware were small round bottomed jars (*tsubo*), vessel stands (*kidai*), small bowls (*wan*), pedestalled dishes (*takatsuki*, dish with a foot), jars, earthen pots (*kame*), bowls (*hachi*), and steamers for rice (*koshiki*). *Sue* ware from SD 6030 were liquid containers of a particular type (*hasô*). The vessel stands were found only in the lower stratum; and the bowls, rice steamers, small vessel stands and *Sue* ware were found only in the upper stratum. Conventional divisions based upon the shape of pottery and its presumed use shows that in the lower stratum 40% of the artifacts (earthen pots) were made up of “cooking sets”, 39.8% (small round bottomed jars, vessel stands, small bowls, and pedestalled dishes) were made up of “food serving sets”, and 12.9% (jars) were made up of “storage sets”. In the upper stratum 68.4% were “food serving sets”, 21.3% were “cooking sets”, and 5.9% were “storage sets”.

From SD 8520, 92 pieces of *Haji* ware were unearthed; the artifacts included some small round bottomed jars, bowls, pedestalled dishes, and earthen pots. Among these the majority (80.4%) were earthen pots for “cooking”, 12% were “storage” jars, and 10% were small round bottomed jars and pedestalled dishes for “food serving” (Pl. 25–26, Tab. 4, Figs.28–29).

In addition to the above, twelve fragments of the Jōmon Era pottery were also unearthed in the 6ACA area. Each of them were either from the body or the mouth of deep bowls, and dated from the latter half of the Middle Jōmon Era (B.C.2500) (Fig.30).

Unearthed *haniwa* included both the cylindrical type and the figurative styles of shields (*tate*), houses, humans, and animals. From ditch SD 6030 shield-shaped (Pl.28, 501), sun-shade-shaped (Pl.28, 511), human-shaped (Pl.29, 605), huose-shaped (Pl.29, 509, 515), animal-shaped (Pl.29, 510), and cylindrical (Pl.29, 502) *haniwa* were unearthed. Unearthed from pit SK 6037 were shield-shaped (Fig.30), house-shaped (Pl.29, 507–508) *haniwa*, from tomb SX 6035 were cylindrical *haniwa* utilized for coffins, and from 6ACA area house-shaped *haniwa* was found in Nara Era Palace garden SG 8500.

There were 179 wooden implements unearthed from SD 6030 and SD 8520, (excluding natural wood and shavings, etc.). The implements in SD 6030 were of four types: wooden tools, agricultural implements, artifacts for daily use, and architectural materials. The wooden tools consisted of ax handles (Pl.32, 1–3), and adze handles (Pl.32, 4–5). Agricultural implements consisted of spades (*suki* Pl.31, 6–8), long bladed hoes (*kuwa* Pl.31, 9–10 Pl.32, Pl.33, 16–17), forked hoes (Pl.32, 18), field rakes (*eburi* Pl.33, 20), wooden field clogs (*tageta* Pl.34, 24), mallets (*tsuchi* Pl.34, 25–26), mauls (*kakeya* Pl.34, 27), weights (*tsuchinoko* Pl.34, 28), pounding boards (Pl.34, 29–32) and sickle handles (Pl.33, 21–22). The spades were of two types; those fashioned from a single piece of wood (*ichiboku-suki*), and those fashioned with two or more pieces joined together (*kumiawase-suki*). There also were four distinct types of hoes. Field rakes were tools for leveling the land to be cultivated; wooden field clogs were for use in the muddy paddy. Mallets and pounding boards were used for threshing and

for softening the grain stalks for later use. The weights were used as a counterbalance in the construction of straw mats or other woven materials.

Articles for daily use consisted of *chikiri* (a section of a loom: the rod around which the warp threads were wound during weaving: Pl.34, 33), spools for thread (Pl.34, 34), pothooks (Pl.34, 35), small tables (Pl.35, 36), boxes (Pl.35, 37-39), lids (Pl.35, 40), carved-out water tubs (Pl.35, 43), carved-out ladles (Pl.35, 42), boat shaped vessels (Pl.35, 41), etc. Architectural materials consisted of ladders (Pl.36, 44-45), pillar sections (Pl.37, 46-56), board sections (Pl.37, 57 Pl.38, 64 Fig.32), wedges (Pl.38, 84-87), poles (Pl.39, 88-119), stakes (Pl.38, 77-80), wooden weights (Pl.38, 81-83), etc. In addition to these items, rubbing sticks with hollow base for starting fires (Pl. 40, 129), wooden arrows (Pl.40, 130-131), combs (Pl.40, 132), pegs (Pl.40, 133), a wooden frame for a shoulder pack (Pl.41, 134-137), a sword sheath (Fig.33), etc., were also unearthened. Wooden implements unearthened from SD 8520 included spades (Pl.42, 153-157), long bladed hoes (Pl.42, 158), mallets (Pl.43, 159-160) in the category of agricultural implements; pillar sections (Fig.34, 179), board sections (Fig.34, 168-169), and rod pieces (Fig.34, 170-178) in the category of architectural materials; other items unearthened included boxes (Pl.43, 162), cutting boards (Pl.43, 163), and boards wrapped with stalks of grain (Pl.44, 164-167), etc. From SD 8520 there was also excavated a small (dia. 2.75 cm) bronze mirror (Pl.44, 200 Fig.35). There are no markings on the mirror's back.

Chapter 5 of this report focuses on the interpretive analysis of various problems related to the sites and artifacts.

1) Reconstruction of area topography prior to Palace construction.

Based on an analysis of the range of the surface area of leveled, as well as undisturbed earth, it has been determined that the palace area lay at the foot of three gently sloping knolls, and in a shallow depression defined by these knolls. When the palace was constructed these slopes were leveled and the earth removed was used to fill in the valley to create a continuous flat area (Fig. 38). This interpretation was confirmed by analysis of the geological structure as revealed in drilling samples from the palace area (Figs. 40-41).

2) Outline of the Heijō Site prior to Palace construction.

Based on excavations carried out so far, the earliest vestiges of human life in the area are suggested by the Jōmon pottery mentioned earlier in this report. But the artifacts and sites become more plentiful and remarkable in the succeeding Yayoi Era. For example, on the south-western side of the palace compound, the remains of several dwellings with a dugout floor and pole frame construction (*tateana-shiki jūkyō*) and tombs, indicating a part of a village community, have been discovered (Figs. 42-43). This village is from the latter half of the Yayoi Era, but pottery and stone-implements from the early Yayoi Era have been unearthened in many locations, and the existence of villages in earlier periods can be surmised positively in this area. The situation shows that there were villages on the hillsides, and the population had worked the paddy fields in the lower area throughout the Yayoi period.

From the Kofun Era a large number of burial mounds appeared in the hills to the north of the palace area. This tumulus group is called a *Saki-tatenami* Cluster, and it gives one of the densest concentration of tumuli in the Nara basin. Thus from this higher area, on and near the summit of the older hills, a great number of related sites have been found (Figs. 42-44, Suppl. tab. 2). Within the *Saki-tatenami* Cluster

are the *Ichiniwa* (SX 500) and the *Shimeno* (SX 249) tumuli; both are of the so-called "keyhole" shape (*zenpô kôen fun*). At the time of the construction of the Heijô Palace the anterior portion of the *Ichiniwa* tumulus was removed, but after several excavations the plan of its rectangular front portion and the surrounding moat were uncovered, and its length was determined to be approximately 250 meters. Similarly, the mound of the *Shimeno* tumulus had totally disappeared. It was determined, however, that it too was surrounded by a moat and had a total length of approximately 105 meters. In addition to these two major tumuli, smaller rectangular tumuli (SX 5700 and SX 7800), imbedded pole frame buildings (*hottatebashira* building) (SB 5755, SB 3773, SB 3774) were found.

These sites date from the 4th–5th centuries. Meanwhile much of the Kofun Era site from the 6th–7th centuries were found to the south of the Heijô palace area in the alluvial plain. One conclusion that may be drawn from the situation is that during the Kofun Era culture gradually moved from the hills towards the plain.

3) Density of pottery findings.

In the lower stratum of ditch SD 6030 there were 230 pieces of pottery unearthed in the north area, and 242 pieces removed from the south area; the heaviest concentration at the curve of the ditch in the north area. In the upper stratum the heaviest concentration was in the south area: 54 pieces were unearthed in the north area, and 402 in the south. Moreover, the characteristic pedestalled dishes (B, C) of the upper stratum were mainly unearthed in the southern side of the south area (Figs. 45–47).

Earlier the relative percentage of each type of earthen ware (divided according to presumed use — "food serving", "storage", "cooking") were noted. However, many of these artifacts classified as jars (*tsubo*) because of their shape (and thus assumed to have been used in storage), on closer examination exhibit excessive accumulation of soot that indicates they were used for cooking. Based on the height and the diameter of the mouth a distinction between jars and earthen pots (*kame*) could be made (Figs. 48–49); namely, those with the diameter to height ratio from 1:3 to 1:4 could be classified as jars, and those with the ratio from 1:1 to 1:2 could be classified as pots. But the number of exceptions to this classification were great. And to determine the actual use of each piece, an individual examination was necessary. By this examination the above noted figures for lower stratum pottery were adjusted to 40% for use in food serving, 10% for storage, 50% for cooking.

We next compared the earthen ware from the upper and lower strata. In the lower stratum, we noted that among the pottery used for food serving, there were a large number of the highly finished pieces of small round bottomed jars (A), bowls (A), vessel stands (A, B), pedestalled dishes (A), etc. There were also a large number of archaic style pots (E, F) and earthen jars (D, E), as well as a number of pieces produced in other provinces. 8.3% of the pieces unearthed from the lower stratum were from other provinces. Among these pieces there were jars (E) (Pl.16, 55) from the eastern coastal area of the Inland Sea; pots (G) (Pl.16, 56–59) from the Sanin area; pots (H) (Pl.18, 85) from the Okayama, *Kibi* area; and pots (I) (Pl.18, 86–92) from the Ise coast and the Kantô area.

In the collection of pottery from the upper stratum, the highly finished pieces used for food serving are lacking, and the pots (A, C) prevalent in the lower stratum become rare, while pots B and D increase considerably in number. Rice steamers and *Sue* ware mark new traits of the phase. The pieces produced in other provinces

decrease and they are limited to pots (H) (Pl.22, 169) from the Okayama, *Kibi* area.

As apparent from the brief description above, the difference between the pottery group of the upper and lower strata are clear. Based on comparisons with other sites in Nara, *Yamato* of the same period, we note that the two strata represent two discontinuous phases within the large era of *Furu* style pottery in *Yamato*.

4) Wooden implements.

Blades for ax handles unearthed were fashioned parallel to the handle itself, while the blades used with the adze handles were attached perpendicularly. The axes were used for felling and splitting trees, while the adzes were employed in the making of planks and the stripping of felled trees. Based on a comparison made with metal axes of the Kofun period, three types of axes (Fig.54) and four types of adzes (Fig.55) were reconstructed. And the "shouldered" metal blades of these tools were determined to be of two types: single and double edged (Fig.56). The double edged blade was most likely used with the ax, and the single edged blade with the adze.

Agricultural tools made up the largest portion of the unearthed wooden implements, and among these the majority were for use in paddy cultivation. On examining the wooden cultivation tools unearthed from SD 6030 and SD 8520, we noted that they were almost all included within known types of tools, already unearthed in the *Kinai* (Kinki) provinces and dating from the Middle and Early Kofun Eras. Items that can be added to these already known types, are harrows (*maguwa*) and mattocks (*chônaguwa*) and certain tools that can be reconstructed from the "U"-shaped spade blades and fitted metal blades. (These latter blades were thin pieces of metal bent to fit over wood carved in the shape of a blade.) All these types collectively represent the characteristic composition of agricultural tools of the period.

Among all the different types of agricultural tools, the hoe (*kuwa*) is the most varied. The "V"-handled hoe with an "eggplant shaped" wooden blade (Pl.32, 11-13 Fig.57, 1-9) can be found as early as the Yayoi Era, and continually developed to become the primary tool of the Kofun Era. The bell shaped wooden blade was an advanced design, the use of which extended from Kyûshû in the south and to as far north as Tôhoku provinces. However in the Later Kofun period this particular style of hoe was replaced by the "V"-handled hoe with a metal blade (Fig.57, 10). Including the "V"-handled hoe with an "eggplant shaped" wooden blade, almost all the agricultural tools in the Early and Middle Kofun Eras, had already appeared in the Later Yayoi Era. In other words, the use of tools established in the Later Yayoi Era continued on into the Early and Middle Kofun Eras without any major alterations. The main development of agricultural tools is recognized to have taken place in the Middle and Later Yayoi Eras when we can witness the shift from the technically refined tools used down to the Middle Yayoi to the more simple and practically fashioned tools of the Later Yayoi. The cause of the change is commonly considered to be a change in the agricultural method itself: the adoption of the technique of trans-planting. This technique, originated in China during the Han Era, was introduced into northern Kyûshû via the Korean peninsula in the Middle Yayoi Era. As this new agricultural technique spread into the *Kinai* provinces, the tools from northern Kyûshû moved with it. As the Kûyshû tools were gradually improved upon we can recognize the change to the so-called "Kofun Era tools". Among these tools were those used for the construction and management of irrigation waterways indispensable to the rice paddies, and of all others they contributed to the increase of the size

and production levels of the fields.

Many hoes and spades, dealt in this report, were of equivalent size and shape, and bore the indication of heavy use as they wore down easily because of their wooden blade, and make it possible for us to assume that there were particular workshops for the mass-production of these tools which in turn serve to indicate the presence of group labor in the development of farm lands.

The last chapter of the report is a brief discussion of the application of Polyethylene glycol (PEG) as a preservative for excavated wooden artifacts. In PEG treatment, unstable water molecules contained in the unearthened wood are replaced with more stable high polymer chemical compounds: PEG. Depending on the molecular weight, PEG can range from a liquid to wax-like solid at room temperature. The wooden artifacts unearthened from the lower stratum of the *Chôshûden* area were treated with the low weight PEG 1500. After the treatment, a portion of PEG permeated the wood was subsequently discharged, and with this discharge the wooden artifact changed its shape, if it was left in unfavourable condition. Thereafter we used the heavier weight PEG 4000. The artifacts were submerged in PEG diluted with water by 20% concentration, and left there for one to two years gradually increasing the PEG concentration to 95–100%. The heavier weight PEG must be heated to liquid state in order to be absorbed by the artifact, and when it returns to room temperature it solidifies within the wood, and thus stabilizes it. This method proved to be very effective in strengthening the poorly maintained artifacts. But it is not without its own problems. As PEG hardens it also sinks to the bottom of the artifact; thus in the process of hardening, the density of the wood is altered and pockets of air are formed within the wood. Therefore it will be necessary to improve upon this submerging technique complying with physical characteristics of PEG. And the application of other methods along with the PEG treatment, freeze drying of the artifacts in a vacuum for example, must be considered to check more effectively the decay of the unearthened woods, in near future.