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DEPARTMENT OF LITERATURE, VOLUME IV.

SECOND EXCAVATION AT KO,
A NEOLITHIC SITE IN THE PROVINCE OF KAWACHI

BY

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AND

STUDY UPON THE HUMAN BONES FOUND AT KO
IN THE SECOND EXCAVATION

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PREFACE

Since we first made an excavation at Kô in June of 1917, and discovered three human skeletons of the neolithic period, as stated in the second volume of this Report, Mr. H. Motoyama secured a lease of the superficies of the site and acting on his suggestion Mr. R. Torii, Professors K. Ogushi, R. Koganei successively carried out their excavations. The number of the human skeletons there found has reached over eighty, together with other invaluable remains, though unfortunately any report on the complete scientific results not yet been published. Besides, it has stimulated research in this field of archæology or anthropology, and, brought other great discoveries of neolithic cimiteries at various places in this country, for example, at Tsukumo, at Todoroki &c., the importance of which can not be overestimated, even in comparison with those of Kô.

Last year, Mr. Motoyama kindly offered us the remainder of the area at Kô, for our second excavation. Accepting his offer, we made up our minds to carry out our plan in co-operation with Dr. Kotondo Hasebé, Professor of anatomy in the Tôhoku Imperial University, in August 1919. Though the excavated area was not large and the discovery not rich, it is our pleasure to publish here the complete results of our labour in this Report. Our sincere thanks are due to Professor Hasebé, who shared the field work under the hot summer sun, and contributed a most valuable study on the human bones then excavated printed in this volume. To Mr. Kingo Tazawa, also who assisted in our first excavation, and to Messrs. Sadahiko Shimada and Masamoto Sakakibara, my two assistants, are due my particular acknowledgements for their help in the field work and adjustment of the materials, to Mr. Etsuzô Tatsuma, a student of our University Hall, for his contribution of a chapter on the ornamental objects.

KOSAKU HAMADA,

Kyoto Imperial University,
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Second Excavation at Kô,
A Neolithic Site in the Province of Kawachi.

(Résumé of the Japanese Text)

CHAPTER I. THE EXCAVATION.

1. Area of the Excavation.

(Plates I—III)

Our second excavation at Kô, a classical site of the neolithic age in Kawachi province, commenced on the 20th of August in 1919, and continued some ten days. The area offered us by Mr. Motoyama was the north-western part of the site, touching on the east the area of our first excavation, extending further on the west to the road, and in a line on the south with the northern limit of Dr. Ôgushi's excavation.

The nature of the soil does not differ from that of our former excavation¹—black soil with human débris about a foot below the surface, then gradually begins a yellowish sand in which no trace of human habitation occurs. We dug layer by layer, each a half foot thick, examining the nature of the pottery, &c. we came upon. First, near the surface, every kind of pottery as well as stone implements were found, then tiles and grey-coloured Iwaibe ware diminished, Yayoishiki pottery with a small quantity of cord-ornamented ware predominating. But at spots F₃ and F₅ occurs a stratum of sand mixed with pebbles, from a depth of about one foot, which tells of a flooding of neighbouring river Yamato washed there sometime after the neolithic period. We found no relics in this sand stratum. Human bones of seven individuals were discovered at spots F₂, F₃ and F₄, all in the eastern part of our area.

1. See this Report, Vol. II.

2. Condition of the Human Bones found.

(Plates IV—VI)

The human skeletons found in our excavation were all in the contracted burial, as in our first excavation and in other ones. It is a wellknown fact that this kind of burial existed in Europe from the paleolithic down to the neolithic ages, in Egypt in the Pre-dynastic period and it still prevails among some tribes in Asia and in Africa as well. The condition of the human bones discovered is as follows:

- No. 1. Female of adult age.—Head N. N. E., body upward, contracted legs on right side. Skull almost complete, as well as all limb bones. About 2 feet deep, in spot F₃. No. associated objects found.
- No. 2. Female of advanced age.—Head E. S. E., body upward, contracted knees on left side. Skull is incomplete, though limb bones, &c., are tolerably well preserved. Most remarkable is that a flat piece of andesite is laid between ribs and hands, showing the stone was evidently placed here when the body was buried. About 2 feet deep, in spot F₂. No objects found, except many small fragments of cord-patterned pottery.
- No. 3. Male of adult age.—Head S. E., body upward, both hands under jaw, knees flexed on body. Skull, trunk and limb bones almost complete and very strong. A ring-shaped ornament made from a deer's antler, painted red, was found on the pelvis and an ear ornament in clay, red painted too, discovered at the right temple, no trace on the left, though carefully examined. About 2 feet deep, in spot F₄.
- No. 4. Female of adult age.—Head probably E., body upward, but impossible to discover its contracted direction, &c. Very incomplete, found in spot F₄, about 1½ foot deep.
- No. 5 to 7. All found at spot F₄. Very fragmentary, impossible to determine sex and age, &c.

We shall have later occasion to observe the contracted burial at Kô and other sites in Japan.

CHAPTER II. OBJECTS FOUND.

1. Stone Implements.

(Plate VII)

Not many stone implements were found. Among them arrow-heads and spear-heads, about 25 in number, are the chief objects, all chipped out from black

vitreous andesite, evidently taken from Mt. Futago, about 5 miles to the east of the site. Forms of arrow-heads are both, with and without stems. There are also a few specimens of awls in the same material.

The only object to be specially mentioned is a polished pestle in diorite. (Fig. 1) Polished implements are very scarce at this site, though several celts and "woman's knives" have been reported, but never such a pestle has been found before. No pseudo-paleolith were discovered this time.

2. Pottery.

(Plate VII)

Several sorts of pottery were found in the excavation as before. First, fragments of old tiles, mostly red in colour, are of the later historic ages, found in the main near the surface soil. Secondly, the Iwaibe ware or a grey-coloured hard pottery, and the Yayoishiki pottery, or a reddish brown ware, occur in abundance in the layers between one to two feet from the surface, but with a diminishing tendency of the former as the depth increases. Thirdly, dark pottery with cord-ornamented appears chiefly in the layer where human bones are found, all in smallest fragments, and often scattered in the layers nearer the surface. As a whole, however, the Iwaibe occurs in the uppermost level, the Yayoishiki in the middle, and the cord-patterned in the deepest, though there cannot be drawn any distinct lines between these, either in the nature of soil or in their occurrences.

The Iwaibe is in historic ages, originated by the influence of the Korean pottery. The Yayoishiki seems a pottery made since the neolithic down to historic ages, sometime co-existing with the Iwaibe. The cord-ornamented ware is undoubtedly neolithic, with its primitive decorative motives, as seen elsewhere in the world. In our first excavation, big fragments were noticed, intentionally covering the skull of a skeleton, and in Dr. Ôgushi's time some perfect specimens were discovered on the bodies. On this occasion there were collected only very tiny fragments, sometime near a skeleton, or scattered without any rule or order. They are rather delicate fabric, compared with neolithic ware of other localities in Japan, thin and hard with fine ornaments. Most of them are patterned in a

cord or mat-like design, some with nail ornaments, as may be seen in the neolithic pottery in Europe or elsewhere. We found a few new varieties of these kinds of ornaments as shown in the plate. I have called the neolithic pottery discovered in the last excavation as the "Proto-cord-ornamented", because of its primitive nature of decoration and of fabrication, but as we find this time there are rather fine specimens of the kind, it will be better to include the main neolithic pottery here under the name of "Ko type."

Though only a single fragment (Pl. VII, 1), we must not overlook the find of another sort of neolithic pottery discovered during this excavation. It is of a reddish brown colour with a thicker make of a cord ornament and resembles to those found in the shell-mounds in the northern Japan. Mr. Fukuhara possesses in his collection a fragment of pottery in the same nature, found on the surface at this site, but we had doubts of its provenance until our discovery of the said piece. (Fig. 2). How explain the occurrence of this isolated fragment in this site? We are not able, as stratigraphical evidences show, to discriminate the dates of either pottery, or to attribute their differences to racial variance, when we compare those to the series of different varieties of neolithic pottery in other sites of Japan. The only appropriate theory is that this unusual variety was imported here, from some other place where such a different ware was manufactured by perhaps a different tribe or settlement of the neolithic people of the same period.

3. Personal Ornaments, &c.

(Japanese text written by Mr. Etsuzo Tatsuma)

(Froptispiece)

As we have stated two interesting personal ornaments were found associated with human skeleton No. 3. An ear ornament made in clay, shaped like a mortar and painted red, was discovered at the right temple, though one of the pair is missing at the left. A small hole perforated vertically, perhaps was used for the attachment of another ornament. We find such type of ear ornaments, more or less varied in form, in other neolithic sites in Japan,¹ as well as in Korea

1. At Miyatojima, it is reported, Dr. Matsumoto found quite same ear ornament at a temple of a skeleton.

and Manchuria in historic tombs, and also among certain savage tribes in Formosa &c. (Fig. 6 to 8) But we must bear in mind that here at Kô, during Dr. Ôgushi's excavations was found another kind of ear ornament *in situ* by several skeletons, that is to say, stone rings resembling somewhat the Chinese jade *chüeh* (玦)¹. So we have to admit that there existed two sorts of ear ornament used by the same tribe, apparently of the same period.

Another ornament in a ring-shaped object made from a deer's antler with two projections (one is broken) and painted also in red. This was found on the pelvis of No. 3 skeleton. We do not know how it was used nor what it was used for, though it can be conjectured that it was hung as an amulet near the waist. A similar specimen, with four projections, was discovered at Shimo-Numabe in Musashi, not associated with any skeleton.² Recently also several ornamental objects made of the same material, were brought to light at Tsukumo by Drs. Hasebe and Kiyono placed at pelvises of the skeletons.³ They are shaped a little differently, but with perforations whereby may be suspended by a string, and seemingly having the nature of amulets like present specimen.

CHAPTER III. CONCLUDING REMARKS.

1. On the Contracted Burial.

Though not a few neolithic skeletons had hitherto been found in Japan, yet owing to unfavourable condition or to the careless manner of conducting the excavations, no accurate account of the burial customs had been obtained. It was at the Tsukumo shell-mound that a contracted burial was first noticed by Mr. Kwanichi Uchida in 1915, but some scholars distrusted its authenticity, because of the contracted position of burial. When I made my first excavation at Kô, just after coming back from Europe, there were discovered three skeletons in

1. See Laufer; *Jade*. p. 216.

2. Shown in the Frontispiece by the kind permission of Mr. A. Matsumura, Anthropological Institute, Tokyo Imper. University. This was found by the late Prof. S. Tsuboi in 1902.

3. See this Reports, Vol. V.

that attitude and I declared that the burial method itself almost affirms its neolithic character. Since then succeeding excavations at Kô and at Tsukumo, also recently at Miyatojima and at Todoroki, all neolithic cemeteries, supply us ample evidence that this form of contracted burial prevailed during the stone age in Japan, though there are a very few exceptional cases.

At Kô, no extended burial has yet been recorded, at Tsukumo and elsewhere, children are buried in urns, as we see in Egypt. The contracted position at Kô is usually rather tightly bound, and the body faces upward. The knees are placed at either side, right or left at option, but the heads of the skeletons in most cases are directed to the east or north-east-ward. At Tsukumo and at Miyatojima also the heads are directed to the north or to the east-ward, but there is no fixed rule at Todoroki. Perhaps the fixed rule of the head direction shows a later development of the social custom.

At Kô we came across in some cases pottery vases which were placed on the bodies and which undoubtedly contained the offerings for the dead, and in some cases the heads are covered by the fragments of a pottery which seems intended for the protection of the skull. But in some cases, as in *e. g.*, No. 2 of this excavation a stone slab is laid upon the body on purpose. How then are we to interpret this fact?

Various theories have been expressed on the meaning of the contracted position of burial.¹ For instance, it is said to save burial space or to economise in the size of the coffin (1), or to imitate the form of the embryo (2), or to resemble the attitude of repose (3) or to prevent the revival of the dead or evil spirit(4). For my own part, the last theory seems most probable at least in the case at Kô. The placing of a stone slab on the body is to be considered as intended to hold down the dead from rising again into the world with its evil spirit.²

No sign of the existence of any protection for the dead has yet been found, though we can assume that they were originally covered with a mat or like

1. See Dechelette; *Manuel d'archéologie*, Tom. I. I. p. 471-474. Hoernes; *Natur-und Urgeschichte des Menschen*, Bd. II. p. 424 Naville; *The Cemeteries of Abydos*, Part I, p. 6.

2. Amongst many savage tribes in Formosa also prevails this contracted burial. They in some cases bound up the bodies with cord which as seems to be intended to prevent their reappearing.

materials. No evidence of the existence of any conspicuous stele or mound on the surface of earth, though it is very probable that there was a certain kind of mark to indicate the spot. We do not know whether this world-wide custom of burial in the prehistoric ages as well as in these days among savage tribes, is to be explained as originating from one centre or at various places independently, but I myself incline to the latter view, believing at least that the custom in Japan has little geneological connection with that of prehistoric Europe or of Africa.

2. Pottery and Race Problem.

I proposed in the Report of our first excavation at Kô a theory that the maker of the neolithic cord-ornamented ware and of the Yayoishiki pottery was the one and same race, the latter being the descendants of the former, though naturally there took place a further racial admixture since the neolithic time, and the Yayoishiki was the pottery produced by the improvement of the technique or of the kilns, perhaps influenced by the later comers who amalgamated with the former settlers, and that this neolithic people is to be called "Proto-Japanese" as it constitutes the main blood of our Japanese ancestors. I meant then that the Proto-Japanese were a different race from the Ainos, while I admitted a certain mixture of their blood.

I am very glad that my theory about the pottery has been accepted by scholars like Professors Hasebe and Matsumoto in the main, though opposed bitterly by Dr. Kita. However, Drs. Matsumoto and Hasebe differ in their views of the race, believing that the Kô people or the neolithic inhabitants of Japan was a race akin to Ainos which might be called the "Ainoides" or a tribe of the so-called "Pan-Ainos". This very clever and reasonable theory starts from the facts that the human bones show some affinities with the Ainos on the one hand, as Professor Koganei has pointed out, and some dissimilarities to the Ainos on the other hand, as Professor Suzuki has insisted. But they support my theory on the point that this neolithic people constitutes the main blood of our ancestors.

Professor Hasebe, my co-operator at Kô this time, insists again as we see elsewhere in this Report, that the people shows strong affinities with the Ainos

in their physical character, and might be called a race akin to the Ainos, while in certain points they differ from them. I have to endorse his view and willingly correct or improve my former theory on the nature of the "Proto-Japanese" that they were a race akin to the Ainos in the main, though not the direct forefathers of the present Ainos, while they had mixed already with other race or races, as the cephalic forms tell. But it is unnecessary to alter my view that this neolithic people became the main stock of our Japanese ancestors, amalgamating by and by with the later comers, and that they deserve to be called the "Proto-Japanese." I have already insisted that the Japanese were not comparatively late comers to this island, as most scholars have considered, but a people produced of the mixture of different races as early as in the neolithic or the beginning of the historic age. The neolithic people at Kô, I think, represents the Proto-Japanese in this sense, consisting the main part of our ancestors and not a different race from ourselves.

How are we now different in situation from ten years ago, when we had very few or no materials of neolithic skeletons scientifically excavated! We are now able to base the study of the race problem of our prehistoric age upon sound ground since our first excavation at Kô brought light upon this field of investigation. I shall not complain if my theory be corrected in the future by further discoveries or new results, but I hope we shall all dig deeper into Earth's Record of Ancient Matters, and find more and more data to unravel for this most important and interesting problem, and sincerely and manfully co-operating with each other, elucidate at length the race problem or the Prehistoric Japanese which is also that of the Japanese race at present.

DR. KOSAKU HAMADA,

Study upon the Human Bones found at Kô in the Second Excavation.

(Résumé of the Japanese Text)

In August, 1919, I had an opportunity to share in the excavation at Kô with Prof. Hamada and discovered a few human skeletons of the stone age. At Kô hitherto a great number of skeletons has been unearthed by various scholars, and our find was comparatively poor in number as well as in preservation, compared with previous discoveries. However I am glad to publish here the results of my studies upon the skeletons we found, though I reserve for the future more exhaustive studies of the Kô people, together with comparisons with other neolithic skeletons found at various sites in Japan, as well as with the present Japanese and other related races. I must here express my sincere thanks to Dr. Araki, President of the Kyoto Imperial University, and to Professors Suzuki and Hamada, &c., who kindly gave me such a grateful opportunity, and to all who assisted me during the excavation.

CHAPTER I. LIST OF THE HUMAN SKELETONS.

(Plates IV—VI)

Of the total of seven, only three are in comparatively good condition, No. 3 almost complete, and Nos. 1 and 2 tolerably well preserved. All others are in much fragmentary condition.

No. 1. (T.S. 15)¹ Female adult.

Determined from the suturae on the skull which are not yet obliterated by synostosis, and the enamel of the grinding surface of teeth which is much worn out, and the nature of the bones, which are not strong, &c.

Cranium, some parts defective; vertebrae and ribs imperfect. Scapulae, clavicle broken; humeri, radii and ulnae also imperfect. Hand-bones preserved. Pelvis imperfect, femora

1. Number of the specimens in the Tohoku Imperial University.

tolerably complete, patellae preserved, fibulae and tibiae broken. Foot-bones partly left. A block of stone is placed on the ribs.

No. 2. (T.S. 16) Female of advanced age.

Determined from the teeth on the mandible which are much worn out and the sockets of most molars completely closed, and from a slight depression on the sides of the skull, some deformation of the vertebrae, and the feeble nature of the bones &c.

Cranium some parts defective; vertebrae and ribs fragmental. Scapulae, clavicles incomplete; humeri rather well preserved, ulnae and radii tolerably perfect. Hand-bones well preserved. Pelves imperfect, femora well preserved, patellae left, tibiae and fibulae tolerably perfect. Foot-bones well preserved.

No. 3. (T.S. 17) Male in adult.

Determined from the bones which are very strong and thick, the sagittal suture on the skull much obliterated by synostosis, though somewhat too prematured, and worn out teeth &c. Perhaps between adult and advanced age.

Cranium almost perfect; vertebrae and ribs also nearly complete. Scapulae, clavicles almost complete, humeri, radii and ulnae as well as hand-bones well preserved. Pelvis, tibiae and fibulae, &c., all in good condition. Foot bones well preserved.

A clay ornament, coloured red, found at right temple and a curved ornament near the true pelvis.

No. 4. (T.S. 18) Female in her prime.

Determined from the smallness of the cervical vertebrae, &c., and the pre-molars on the mandible which do not show much use, and the bones which are not strong.

Cranium imperfect; vertebrae and ribs fragmental. Upper-limb bones partly preserved. Lower-limb bones mostly lost.

No. 5. (T.S. 19) A. Fragments of a cranium. B. Fragments of the limb-bones, &c.

Both groups seem to belong to one single female.

No. 6. (T.S. 20) Groups of the fragments of bones which seem to belong to at least two different individuals.

- A. Fragments of a cranium. (male adult)
- B. Fragments of a cranium. (Female?)
- C. Fragments of a vertebral column and upper-limb bones.
- D. Fragments of a vertebral column.
- E. Fragments of an upper-limb bone.
- F. Fragments of a lower-limb bones.
- G. Fragments of limb bones.

There are also scattered fragments of various parts of human bones.

CHAPTER II. CRANIUM

(Plates VIII & IX)

The skulls of Nos. 3 and 6A are tolerably big in size, and thick and heavy, while those of Nos. 1 and 2 are smaller in size, moderately thick and less heavy. The weight of skulls with mandibles, in the present imperfect condition, is 733 gr. in No. 3 and 560 gr. in No. 1. The mandibles of these skulls are massive and heavy (109 and 85 gr. respectively), while that of No. 6A is comparatively light and that of No. 2 rather atrophic (57 gr.). Generally speaking the muscular ridges are well marked, especially in Nos. 3 and 6A; and the suturae are simple and short, and the obliteration has proceeded to a high degree in No. 3. Also in No. 3, a large part of the sutura frontalis, which occurs more frequently among Japanese than Ainos, is noticeable, and in No. 6B the sutura transversa squamae occipitalis in its whole line. Asymmetry in slight degree is noticeable in No. 3, and a part of the parietal bone in No. 2 is deformed, perhaps by the pressure of the earth.

1. Measurement of Calvaria.

Here I only remark that Nos. 2, 6A and 1 show somewhat nearer figures to those of Aino, given by Prof. Koganei. (Table I)

2. Measurement of Facial Bones.

In Nos. 3 and 6A facial parts were reconstructed from the fragments, but No. 6A lacks the frontal bone. We should notice that the faces are broad and low, accordingly the orbits are low, the noses broad, palates short and broad. Compared with Ainos the facial and palatal length is shorter and orthognathic. (Table II)

3. Craniological Description and Special Remarks on each Part.

(a) *Norma lateralis*: Skull is long shaped, the sutura nasofrontalis a little depressed, the arcus superciliaris very prominent, the fossae supragrabbellares clearly perceivable. The outline tracing is characterised in such a way that

behind the tubera frontalia it is slightly curved and at the tubera parietalia the line becomes more strongly curved and reaches the lambda point, with a slight curvature again. From the lambda point the line abruptly curves or the vault line becomes much stronger. The squama occipitalis is less arched and much steeper in the male than in the female. (Fig. 9-11)

(b) *Norma occipitalis*: The curve of the crown is rather flat and the side walls of the skull stand almost parallel to each other. The base is slightly swelled out. The occipital part characteristically forms a frustum of a pyramid.

(c) *Norma verticalis*: No. 1 makes a fine rounded oval form, No. 3 somewhat pentagonal oval form. No. 2 and 6B resemble the former and No. 6A the latter. Also in No. 1 and 3 the glabella, arcus superciliares and proc. zygomaticus disturb the frontal line, and in No. 3 the arcus zygomaticus projects beyond the sideline.

(d) *Norma frontalis*: Facial region is large compared with the calvarium. The face is broad and low, cheek-bones prominent. No. 3 is especially robustly built, the forehead being flat and orbital cavity low. It is particularly to be noticed that some of the teeth were extracted the custom obtained amongst our neolithic people as is evidenced here at Kô and elsewhere. In No. 3 upper canine teeth, in No. 4 all lower incisors and first premolars, in No. 6A four canine teeth are extracted.¹

(e) *Norma basilaris*: Slightly vaulted, the lineae nuchae strong and the palate short and broad.

Special Remarks.

(a) Frontal region: In No. 3 exists the sutura frontalis as we have noticed.

(b) Occipital region: In No. 6B is seen the epactale s. incae, separated into two, smaller right and larger left, by the sutura sagittalis lateralis dextra. No. 6A the torus occipitalis is somewhat developed.

(c) Temporal region: The temporal scale is flat, especially in No. 1. There is no stenocrotaphy in Nos. 1, 2 and 3.

1. See my own article in *The Anthropological Journal*, Nos. 11, 12, Vol. XXXIV. (Tokyo, 1920) Prof. Koganei also published his study on the custom of extracting teeth in our neolithic inhabitants in the same Journal.

(d) Basal region: The foremen occipitale magnum is more or less rounded rhomboid.

(e) Facial region: The aditus orbitae is rectangular and the lateral axis a little slanted outward. No cribra orbitalia. The nasal bones are moderately broad, and in its section fairly well arched. The cheek bone is not much high, always with the posterior crack (hintere Ritze). The under margin of the nasal is more or less sharp and there is none with the fossa praenasalis. The fossae caninae is flat, the palate slightly vaulted; the torus palatinus is indicated only in No. 6A.

(f) Jaw bone: The tubercula mentalia is weak in Nos. 1, 4 and 6A, much indicated in Nos. 2 and 3. The torus mandibularis is very remarkable in No. 1, and noticeable in Nos. 6A and 3, but not seen in Nos. 2 and 4. The Proc. coronoideus is short and broad, the incisura mandibulae shallow. [Plate X]

(g) Teeth: In Nos. 1, 3 and 6A are labiodental, in No. 3 slightly progenical. The teeth arch is short and broad; the upper half-elliptical, the lower parabolical. The teeth are middle size and strongly used. In Nos. 1, 2, 3, 4 and 6A there are seen several decayed teeth. We have seen elsewhere teeth were extracted in Nos. 3, 4 and 6A.

CHAPTER III. BONY VERTEBRAL COLUMN AND THORAX.

1. Bony Vertebral Column.

(Plate XI)

In No. 3, the most well preserved skeleton of our find, we can observe 7 cervical, 12 thoracal, 5 lumbar, 4 sacral and an uncertain number of coccygial vertebrae. Of this the inclination of the processus spinosi of the thoracic vertebrae is weak, and the proc. spinosi of the lumbar vertebrae is short and their back ends are extended downward. So the difference of the whole sagittal diameters between the thoracal and lumbar vertebrae is small as in the Japanese. The backward inclination of the proc. transversi is not strong. (Pl. XI. 2) The third, fourth and fifth lumbar vertebrae in this skeleton, are separated into two parts, each a larger front part consists of the corpus, proc. articulares superiores and proc. transversi; and a smaller part consists of the proc. articulares inferiores

and proc. spinasus. Such a variation is sometimes seen on the 5th lumbar vertebra only, but to find it occurring in three of this vertebrae is very rare, as reported by Mr. Barclay Smith on a female of the Egyptians. As to the praesacral vertebrae see Table III.

The long bones of the extremities in No. 3, &c., the length approaches the maximum of the Japanese, the height of the vertebrae of the Kō people coincides with the ordinary height of the latter. Moreover, as to the saggital and transversal diameters, the distance between the outer discharges of the proc. articulares inferiores, that of the proc. transversi infer., the saggital and transversal diameters of for. vertebral, the Kō people and the Japanese have no remarkable differences. Also we must notice that of the praesacral vertebrae the cervical part is comparatively large. The curvature of the vertebral colum is weak in No. 3 and the lumbar index is 102.3.

Sacrum (Table IV). The Sacrum of No. 3 is large and very large compared with the praesacral vertebrae. The vertical and transversal curvature is weak.

2. Bony Thorax.

Ribs (Table V) of No. 3 are 12 in number on each side, long, thick and broad, and the torsion weak with strong curvature.

Sternum (Table VI) of No. 3 is large and its manubrium broad. The proc. xiphoides is united by bone to its body. The notches for the costal cartilages are 7 pairs in all.

CHAPTER IV. BONES OF THE UPPER LIMB.

1. Shoulder-girdle.

(Plate XII)

(a) *Scapula* (Table VII): Having been able to join up the fragments of the scapula of No. 3, I could take measurements in the ordinary way. The characteristic point is that its upper border takes a convex instead of the concave curve. The vertebral border curves flat at the end of the upper spinal lip, while in the Japanese it curves sharply. Also the axillary border is very thick and the muscular impressions are well marked. The great scapular notch ("incisura

acromioglennoidalis" of the author) is very broad, which in the European, Indian is very narrow and in the Japanese, Chinese, Formosan aborigine medium, and in the East-Caroline, Australian, Dayak, Thinkit, and especially in the Aino, very broad.

(b). *Clavicula* (Table VIII): Slender, flat and rather straight. The acromial bending is weak as its characteristic. (Pl. XIII, 3)

2. Bones of the Free Extremity.

(a) *Humerus* (Table IX): The cristae tuberculi majoris et minoris and tuberositas deltoidei are strong, the sulcus n. radialis remarkable. The shafts in Nos. 1 and 3 are rather flat (Fig. 17)

(b) *Radius* (Table X): Long, thick but not very flat. (Fig. 18)

(c) *Ulna* (Table XI): Long, in No. 6C is rather short, but flat, the so-called "platycubitony" of Prof. Koganei.

(d) *Carpus*: The bones of the carpus are moderate in size, but rather small compared to the long humerus.

(e) *Metacarpal bones and digital phalanges* (Table XII & XIII): The metacarpal bones, proximal, and middle row are very long, but the ungual phalanges small.

CHAPTER V. BONES OF THE LOWER LIMB.

1. Pervis

(Plates XIII—XV)

The pelvis of No. 3, reconstructed by ordinary methods, is large, especially high and deep. The distance between the anterior spines is comparatively small, the iliac wings high, but rather narrow and somewhat divergent. The inlet of the true pelvis is large and more rounded, the true pelvis being comparatively short. The interobturator breadth is large and the symphysis high. The outlet of the pelvis is large and the angle of the pubic arch wide. The angle of inclination of pelvis is moderate. So the pelvis of No. 3 is nearer to the Japanese than to the Ainos (Table XIV).

2. Bones of the Free Extremity.

(a) *Femur* (Table XV): Long and the "pilastered" form is very remarkable in No. 1, and to a certain degree in No. 3. (Fig. 20) Bending is weak, except in No. 2. The platymeric character is noticeable also in No. 2, but not in the others. None has the third trochanter.

(b) *Tibia* (Table XVI): Long. The platynemic character is seen in Nos. 1 and 3. (Fig. 21) The anterior border is not sharp in Nos. 1, 2, 3 and 6F, and the facet for astragalus of the lower extremity extends beyond the anterior border.

(c) *Fibula* (Table XVII): The fluted character of the external surface is remarkable, especially in No. 3 (Fig. 22). The sagittal diameter is great and looks flat. Rather thick compared to the tibia.

(d) *Patella* (Table XVIII): The internal border-facet is always obvious.

(e) *Tarsal Bones*: The astragalus (Table XIX) is broad in its breadth. The upper surface slightly convex from front to back, the extension on the neck (collum) of this surface always exists, and its outer border is higher than its inner border, or at least has the same height. The anterior surface is slightly convexed, and its outer border not sharp. In the lateral aspect the caput is situated very low.

Calcaneum (Table XX): Large and the anterior limit of the tuber calcanei obvious. The internal and external planter tubercles are clearly divided. The axis of the astragalus always intersects that of the calcaneum from inner back to exterior front.

Scaphoid (Table XXI): Very thin at the outer end.

Cuboid (Table XXII): The bending at the vertical direction of the anterior surface is strong. Three cuneiform bones (Table XXIII): the middle one's inferior ridge is not sharp. Metatarsal bones (Table XXIV): very long, and the shafts of the metatarsal bones are three-sided and flattened laterally. The tuberosity of the fifth is often very long. Phalanges (Table XXV): very long.

CHAPTER VI.

PROPORTIONS AND HEIGHT OF THE BODY.

Of the Kô skeletons, the vertebral columns are short in height as compared to the limb. Thus they have shorter extremities, compared to the trunk than the Japanese. In the spinal column the cervical part is comparatively strong and large. In No. 3 the sacrum is large compared to the praesacral column.

The sternum, of No. 3, is large, but not so much as in the limb-bones. The long and straight clavícula indicates the broadness of the shoulders. Its proportional length to the physiological length of the humerus is thus: No. 2 r. 48.8, No. 3 r. 48.4 l. 50.2

The proportion of the physiol. length of humerus to the physiol. length of the radius is thus: No. 2 r. 76.2, No. 3 r. 73.6 l. 73.3, No. 6C r. 74.5 so it is longer than in the Japanese.

The carpal bones are moderate in size and the carpus seems short and broad compared to the humerus. The metacarpal bones, on the contrary, are very long. The following are the proportional lengths of the 3rd to the physiol. length of the radius: No. 3 r. 28.3 l. 28.2, No. 2 l. 28.4, No. 6C l. 31.7 (r. used for radius) so except for the last one, all are sizes common among the Japanese. The order of the bones are II, III, IV, V, and I and except No. 2, the first and second are comparatively long, and the fifth is comparatively long in Nos. 1 and 2. The proportional length of the phalanges to the metacarpal is not much different from that of the Japanese. The terminal phalanges are especially small.

The pennis of No. 3 is high and deep, the sacrum being large compared to the praesacral column.

The femora and tibiae are very long and large, compared to the height of the vertebral column. The proportional length of tibiae to the femora was not possible to make out, but the proportion of the middle circumference of the fibula to that of the femur is thus: No. 1 r. 57.1, No. 2 r. 57.1 l. 57.3, No. 3 r. 66.7 l. 67.0.

The tarsal bones are very large, especially the astragalus, while the calcaneus

is rather short and narrow. The metatarsal bones are very long, being in the ordinary order, as II, III, IV, V and I. The proportional length of the first metatarsal bone to the second in Nos. 1 and 3 is longer than that of the Japanese, and the proportional length of the fifth is shorter. The proximal phalanx is long, compared to the first metatarsal, but the other phalanges are not much different from those of the Japanese.

The proportion between the upper and lower limbs was not possible to make out, but in No. 3 the proportion of the maximum length of the left radius to the physiological length of the tibia is 66.2 and it is to be said that the lower limb is longer than that of the Japanese.

If the bodily height of the Kô skeletons is calculated after Prof. Pearsons methods,

No. 1 ♀ 152.78 cm No. 3 ♂ 166.85 cm (Koganei No. 2b ♀ 149.77)¹

No. 2 ♀ 150.51 cm No. 6C ♀? 149.86 cm (Suzuki No. 2 II₃ ♀ 149.75)²

Though I am cautioned that this method is not quite adequate in the present case, because of different proportions of limb-bones in Europeans and this people, we may still conclude that the Kô people belongs to a race under the medium height.

Conclusion.

In the foregoing chapters I have described the characteristics of the Kô skeletons and it is clear that they are different in many points from the present Japanese, and it is difficult to think they were directly the ancestors of the latter. According to Prof. Koganei the Kô people has rather similar or the same characteristics to the skeletons found in the shell-mounds ascribed to the Ainos, such as the plakubitonic character of the ulnae, pilastered femora, platycnemia of the tibiae, its raised ridge along the posterior surface and extraordinary strong fibulae, &c. When I compared the Kô skeletons to those found at Hosoura and at Oshiro in Rikuzen, both belong to the same kind of site above mentioned, all the osteological characters are quite the same and justify Prof. Koganei's theory.

1. *The Journal of Anthropology*, No. 12, Vol. XXXII. (Tokyo, 1918)

2. This Report, Vol. II.

Some of the craniological characteristics of the Kô skeletons also approach those of the Aino skulls measured by Dr. Koganei, but not similar at the various points, such as the lesser facial length and smallness of the maxillar index, &c. Therefore, all I can say at present is that the neolithic people at Kô was a race which has characters nearer to the Aino and reserve for the future detailed discussions upon their genealogical nature, &c.

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[THE END]