OSTEOLOGICAL EVALUATION

Prepared by
Karen Ramey Burns, Ph.D.
Forensic Anthropologist

Product No. BC-302

Human Male Polynesian Skull

Bone Clones, Inc.
OSTEOLOGICAL REPRODUCTIONS
9200 Eton Ave. Chatsworth, CA 91311
Phone: **(818) 709-7991** *or* **(800) 914-0091** *(USA only)*
Email: info@boneclones.com Web: www.boneclones.com

Human Male Polynesian Skull

Product Number: BC-302

The staff of the Laboratory of Human Osteology observes that, in addition to its noticeable robustness, this skull possesses a sagittal keel, parietal bossing, and a rocker jaw. Also, the staff ran FORDISC on its measurements and the result was that it is likely Polynesian.

Maxwell Museum of Anthropology:

The Maxwell Museum of Anthropology's Laboratory of Human Osteology, at the University of New Mexico, specializes in numerous facets of physical anthropology. The laboratory serves as a repository of human remains and includes prehistoric, historic, documented, and forensic remains.

Established in 1984 by Dr. J. Stanley Rhine, the Maxwell Museum's Documented Skeletal Collection has grown to include 237 individuals (as of July 2005) encompassing both sexes, all ages, and many population groups. The skeletal remains are obtained by donation, either by the individual before death, or by the family of a deceased loved one. Information on the sex, age, population affinity, and cause of death is available for the majority of these individuals, allowing students and visiting researchers to develop and test new techniques and theories.

Since 1995, prospective donors or their families have been asked to provide health and occupational data as well. With this information, researchers are able to examine the skeletal manifestations of particular diseases including degenerative joint and disc diseases, lymphoma, and osteoporosis, as well as the reaction of bone to repetitive motions and trauma. Recent research has included efforts towards the identification of handedness in individuals, determination of body mass from the skeleton, and variation in cranial damage from various projectiles. The importance of the Documented Collection cannot be overstated. No other institution in the American West has as large a collection of human skeletal remains with such extensive demographic data.

Bone Clones is grateful to the Maxwell Museum for allowing us to select specimens for reproduction from their valuable collection and granting us exclusive casting rights to these pieces.

Human Male Polynesian Skull

Product Number: BC-302

Specimen Evaluated: Original Specimen and Bone Clones® cast

Skeletal Inventory: 1 Cranium
1 Mandible

Osteological Observations:

The original skull in good condition. Postmortem damage was sustained in the areas of the zygomatic processes, the interorbital walls, the right mandibular condyle, and coronoid process of the mandible. The styloid processes are gone.

The Bone Clones® cast of the skull has been repaired in the areas of the zygomatic arches, the orbital walls, and the right condyle and coronoid process of the mandible. The interorbital area containing the nasal conchae and the perpendicular plate of the vomer was not repaired, and the styloid processes were not replaced.

The skull exhibits a mild sagittal keel and parietal bossing. The foramen magnum is unusually large and the occipital condyles are very large and somewhat elevated. The mandible is a classic “rocker jaw.”

Figure 1: Frontal View of Polynesian Skull The mild sagittal keel and parietal bossing can be seen from this view.

Dentition:

The dental condition is poor. There is evidence of severe periodontal disease, and only 12 of 32 teeth remain. Of the missing 20 teeth, 8 were lost before death, and the others were lost postmortem. Caries, severe abrasion, and fractures are present. The temporomandibular joint is enlarged and modified, most probably the as a result of mastication with missing teeth and unorthodox occlusion.

Features of Race:

The mandible is a typical "rocker jaw" as described by Philip Houghton (1977, 1978). A rocker jaw has no antegonial notch and the jaw "rocks" on a table surface rather than sitting flat on the lower edge. This type of jaw is characteristic of Polynesians.

Figure 2: Comparison of Polynesian Rocker Jaw with Standard Jaw Form The jaw on the left is a "rocker jaw." The one on the right is a more standard form. Compare the curvatures of the inferior edges. (Both are male.)

The nasal bones are narrow and appear "pinched" together. This form was described by Murrill (1968) as "narrow-rooted" nasal bones, typical of Polynesians.

Figure 3: Closeup of "Pinched" Nasal Bones The nasal bones are narrow and meet at a sharp angle.

Discriminate function analysis by FORDISC 3.0 software places this skull as most similar to Chinese males. This is probably a reflection of the Asian origin of the Polynesian population and the lack of a significantly large Polynesian sample size within the forensic database.

Features of Sex:

The skull is robust and masculine in appearance. The supraorbital ridges are bulging, and the supraorbital margins are well-rounded. The mastoid processes are large, and suprameatal crests (zygomatic arch extensions) are present. The nuchal area is large but not significantly ridged. Discriminate function analysis by FORDISC 3.0 classifies the skull as male.

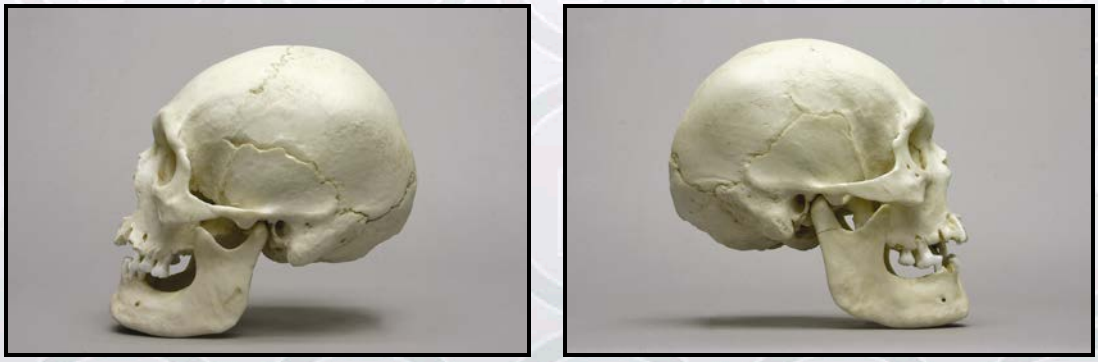

Figure 4: Lateral Views of Male Polynesian Skull Note the large masculine supraorbital ridge, the large mastoid processes, and the prominent suprameatal crest.

Features of Age:

The basicranial synchondrosis is fused, but none of the cranial vault sutures are fused, including the posterior portion of the sagittal suture. The basicranial synchondrosis usually fuses in the late teens, and the posterior portion of the sagittal suture often begins to fuse in the late 20's.

Adult dentition was complete at the time of death, several teeth were absent before death, and the cusps of the remaining teeth were well-worn. This individual was definitely an adult, but none of the available cranial characteristics are sufficient to determine age. Experience suggests that this is young adult with extremely poor dental health.

Trauma:

All trauma appears to have been postmortem, with the exception of the dental pathology.

SUMMARY:

1. Race: Asian/ Polynesian.
2. Sex: Male.
3. Age: Adult.
4. Trauma: Dental pathology. Other trauma appears to have been postmortem.

Educational Resources:

1. This skull can be used effectively in combination with skulls of other ancestry to introduce discussion of geographic variation in the human skull. It is an example of the rocker jaw described by Houghton (1977, 1978). It is also an example of "narrow-rooted" nasal bones reported by Murrill (1968). The mild sagittal keel is also interesting. It can be used in comparison with the true sagittal keel of *Homo erectus.*

2. The skull can also be used to show variation in the male skull form. The supraorbital ridges are large, and the supraorbital margins are well-rounded. The mastoid processes are large, and suprameatal crests (zygomatic arch extensions) are present. The nuchal area is large but not ridged as would be expected in a robust male.

3. The skull can be used to address the subject of dental health. Antemortem and postmortem tooth loss can both be demonstrated in the alveolar ridges of the maxilla and mandible. The effect of tooth loss on the temporomandibular joint can also be seen.

References:

Houghton, P. (1978). Polynesian mandibles. *J Anat, 127, 2*, 251-260.

Houghton, P. (1977). Rocker jaws. *Am J Phys Anthropol, 47*, 365-369.

Murrill, R. I. (1968). *Cranial and Postcranial Skeletal Remains from Easter Island.* University of Minnesota.

Ousley, S.D., and R.L. Jantz (2005) FORDISC 3.0: Personal Computer Forensic Discriminant Functions. University of Tennessee.

Disclaimers:

This report is meant only as a teaching tool for introductory level students of the anatomical, anthropology or forensic sciences who might be using this specimen to learn human and forensic osteology. My opinions are based solely upon the material presented to me. This is somewhat different from a real forensic investigation in which additional studies would be required prior to the formulation of diagnoses and the production of a report. These studies might include plain film radiography, computed tomography (CT) studies, histology, etc. My opinion regarding age is based only upon non-metric assessment and without access to the postcranial skeleton.

Karen Ramey Burns, Ph.D.
Human Osteologist, Forensic Anthropologist