

HITTITE BRONZES AND OTHER NEAR EASTERN FIGURINES IN
THE FOGG ART MUSEUM OF HARVARD UNIVERSITY

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We are grateful to the former Director General of Antiquities and Museums, Dr. Cahit Kınay, for his kind invitation to contribute to the series *Türk Arkeoloji Dergisi* and to the present Director General, Dr. Kâmil Su for his courteous assistance. We take this occasion to express our best wishes upon the revival of this notable periodical as an organ of Turkish and international scholarship.

It seemed suitable to present in the following article three Hittite bronzes which have to the Fogg Museum. We have added four other pieces, a Phoenician terracotta head, a goat, which may have come from a border region of Anatolia, a bull, which for a while was considered Urartean, and finally a Babylonian terracotta figurine (1).

The bronze figurines made in the second and first millenium in Anatolia, Syria, Phoenicia, and Palestine are as yet imperfectly classified and dated. A valiant attempt to bring some order

(1) We are indebted to R. J. Gettens, formerly Chief of Technical Research of the Fogg Art Museum and now Fellow for Technical Research at the Freer Art Gallery, Washington, D.C., for the analysis of the bull head, no. 5, which we include as an Appendix. Additional information on on technical aspects was given by Bruno Bearzi, of the Uffizi Gallery, Florence. Mr. Perlie Dyar Chase generously gave permission to include in this article a terracotta head in his possession. To R. J. Barnett we owe a debt of gratitude for information on pieces in the British Museum. into this material had been made by

Valentin Müller (2). A substantial number of pieces has been brought together by H. Th. Bossert, and the material bearing on Phoenicia has been surveyed by R. Dussaud (3). Some additional pieces and groups have been treated since, and a brilliant discussion of the "Lebanese Mountain" group has just been published by H. Seyrig (4). Unfortunately, the majority of the bronze figurines known have come from scientifically supervised excavations; and the pieces that have been excavated

(2) *Frühe Plastik in Griechenland und Vorderasien* (1929), chapters VI and VII, pls. 36-45; also *AJA* 36 (1932) 14.

(3) *Altanatolien* (1942) figs. 348-368, 581-596, 606-616, 1165-1174, 1183. *Altsyrien* (1951) figs. 158, 159-161, 570, 573-618, 1181. R. Dussaud, *L'art phénicien du IIe millenaire* (1949), 52, ff., figs. 18-21, 25-34, 27, 43-45.

(4) Ugarit: C.F.A. Schaeffer, *Ugaritica* 1 (1938) 126 ff. *Ugaritica* 2 (1949) 79 ff., figs. 31, 34, pls. 17-21.

Byblos: P. Montet, *Byblos et l'Egypte*, Haut Commiss. Syrie, Service des Art. *Bibl. archeol. hist.* 11 (1929) pls. 50 f., 61.

A. Parrot, *Syria* 29 (1952) 44 ff., pls. 1-2

E. Porada, *Berytus* 8 (1942) 57 ff., pl. 8.

G. Loud, *Megiddo* 2 (1948) = OIP 62, pls. 233-239.

W. Deonna, "Statuettes de bronze syriennes". *Musees Suisses* 1 (1948) 4-7, figs. 1-2.

G.M.A. Hanfmann, *Arch Anz* 50 (1953) 50 ff. *Altetruskische Plastik* (1936) 24 ff., 55 ff.; and *Archaeology* 6 (1953) 229.

H. Seyrig, "Statuettes trouvées dans les montagnes du Liban", *Syria* 30 (1953) 24 ff., pls. 9-12, with further bibliography.

F. Poulsen, *Ny Carlsberg Glyptotek*, 2. *Tillaeg til Billedtavler* (1941) pl. 17, Br. 2-5.

have tended to emphasize the great diversity of existing local styles and the difficulty of dating types, many of which seem to have persisted over long periods of time. One of the most popular motifs, the lance-swinging warrior, is represented by examples from Byblos, Lebanon, Syria, Antarados, Tortous; Şarkışla (Vilâyet Sivas); in Crete, Mycenae and Tiryns; a hoard on Delos; in Thermon; and finally in East Prussia. Yet the time range cannot be narrowed down beyond the statement that such warrior bronzes occurred from the fourteenth to the eighth century B.C. (5) We have as yet much to learn and the suggestion which we make must needs be regarded as tentative.

(1). Figs. 1, 2, 12 a. Marching male figure with conical cap and torque. Museum number 1943.1120. Grenville L. Winthrop Bequest. 13.7 cm., without base 11.4 cm.

The bronze is cast solid, apparently in one piece with the small flat platform and a large looped peg below the base. The right hand is missing; and the front left corner of the platform is slightly bent. The head is also forced out of its original vertical position. Patina runs from blackish brown to dark olive. The metal underneath seems to be a very coppery bronze, reddish gold in color. The lower part of the platform and the looped peg underneath are left rough, but the figurine is tooled to careful smoothness. Traces of abrasive tooling can be discerned under

magnification-parallel thin fine lines, as if from wires. A rather large cutting tool was used for such details as edge of cap, mouth, fingers, toes, and hem of garment. The deep holes for the eyes, which were presumably fitted with inlays, seem to have been gouged with a drill or punch. The man wears a tall, rounded conical cap, which is separated from his forehead, but merges into head and neck in the back. A double torque, cast separately, is clamped around his neck, the ends meeting on the nape. In his left hand he holds a goblet; some light strokes decorate its edge.

In its present state, the upper part of the body of the figurine seems to be nude. He wears a thick kilt reaching to his knees; the decorated hem of an "overfold" is indicated over the upper left leg by rather crude diagonal strokes. He is barefoot. The figurine was originally covered with some other metal, probably with thin gold leaf; long deep grooves designed to fasten such overlay run from top of cap to between the shoulder blades; on both upper arms (cf. Fig. 2); down his right side from armpit to lower edge of kilt; and down the back side of both lower legs. Similar grooves and a somewhat similar base are seen on a figurine from Tartous (6), which also had inlaid eyes. The technique of covering a figurine with gold leaf is represented in Palestine, Phoenicia, Syria, and Anatolia. If we may take a Hittite figurine purchased in İzmir as a guide, the face as well as the body and garments were so covered (7). The sharp cutting of fea-

(5) V. Müller, *op. cit.*, 112 ff., who also lists pieces from Baalbak, Killiz, Kutahia, and Troy. Cf. G. Loud, *Megiddo 2* (1948) pls. 235, 239, from Levels IX and V B.

Şarkışla: N. Özgüç, *Dergi 5* (1949) 36, 52, figs. 13-14, now in Hittite Museum, Ankara. Probably late Hittite Empire.

The hoard under the Artemesium of Delos contained objects from the fourteenth through the eighth century B.C. J. Delorme, *BCH 71-72*, (1947-48) 148-261, pl. 39.

(6) Louvre. Dussaud, *op. cit.*, 54 f., figs. 20-21; Perrot-chipiez, *Hist. de l'art 3* (1885) fig. 277.

(7) Berlin, Vorderasiatische Abteilung. Bossert *Alt A. 60*, figs. 587-588. "Hittite Empire".

G. Loud, *Megiddo 2* (OIP 62, 1948) pl. 273, stratum VI or VII. Hama: Bossert *AS* fig. 606, "wohl Neues Reich" though found

tures, particularly of nose and mouth, is caused in part by the need for clearly defined forms over or into which the gold leaf could be bent.

The piece is clearly designed as a unit with the base, as the pegs continue the line of lower legs. In its basic construction the figurine displays a curious intermingling of flatness and roundness. Although quite thick and well-rounded about the shoulders, the upper part of the body is flat like a slab. The lower part with the kilt is well-rounded and turned diagonally. The head, too, is quite three-dimensional with its rounded cap neck. Nose, chin, arms, and left leg jut energetically forward. The large feet are planted firmly on the ground so that the walking motion is not too emphatic.

It is difficult to envisage the original glowing appearance of this walking man, to which the vitality of inlaid eyes must have contributed greatly. As it stands now, the figure has an air of compact power and a hint of a ferocious grin which seems to animate the angular features of the face.

As so often, it is difficult to decide whether a god or a human is represented. In principle, a walking figure carrying a vase denotes an "offering" therefore a ministrant, a king or a priest. On the other hand, the gilding would seem to speak in favor of a divine personage. The vase is held by gods on seals of Syro-Cappadocian and of the Second Syrian Groups (1600-1350 B.C. (8). A conical vase is carried by

in level E, 1000-700 B.C. Dussaud, *op. cit.*, 54 ff., (Tortous and Byblos) 62 ff., Ugarit, also figs. 31, 34.

(8) E. Porada, *Corpus of Ancient Near Eastern Seals*, 1, P. Morgan Library (Bollingen Series 14, 1948) 114, 126, nos. 900, 947, 949. For use of vases in temples of Ugarit, cf. C.F.A. Schaeffer, *Ugaritica* 2 (1949) 45 f.; and fig. 13 for another seal showing a walking figure with jug and cup.

a nude male bronze figure and by a draped female figure with polos (crown) from Syria (9). Finally, a goblet is carried as an offering by a queen on a newly discovered ivory relief from Ugarit (10). The cap, in this simple form, without horns, is not infrequent but also not conclusive, as its wearers are themselves not closely unidentified (11). On the seals of the Second Syrian group male figures with rather similar "rounded" or "oval" cap but different garments are described as gods or kings. In one instance, a walking figure with this headgear carries a spouted vase and is identified as a god; in another, he seems to have a double torque around his neck (12). Only so

(9) A shall walking Hittite Bronze figure with cap holding a similar cup is in the collection of Mr. Albert Gallatin; but the style is quite different. Bronze with conical vase held by standing man: V. Müller, *op. cit.* 127, 132, pl. 39, fig. 388; Gottheil, *Studies in Hist. of Religion presented to C. H. Toy* (N.Y. 1912) 361 ff., pl. Müller quotes for vases, *Jdr* 42 (1927) 7. Standing woman: Bossert AS fig. 584, no description.

(10) Ivory: C.F.A. Schaeffer, *Illustrated London News* (March 27, 1954) 489, fig. 7.

(11) Bossert: *Alt. A.* fig. 587, Izmir; 591, Tarsus; 609, Arapkir; 618, Alishar; 716, Cilician seal; Müller, *op. cit.*, 115 ff., assigns the first to Syria, the other two to Asia Minor and quotes for the "flattened cone cap" a bronze from Baalbek, Lortet, *La Syrie* (1884) p. 611, reproduced; and figs. 401, Hamburg; 403, from Thermon; 411, Berlin.

"Syrian Idols", Ny Carlsberg, 2. *Tillaeg*, pl. 17, Br. 4-6. The majority of figurines then, seem to belong to Asia Minor. The bronzes, Müller, 112, fig. 399, from Lebanon and the bronzes from Tartous, Bossert AS fig. 580, are warriors and their thinner head gear intended for helmet.

Seated gods from Megiddo: Dussaud, fig. 44. G. Loud, *Megiddo* 2 (1948) pl. 235. Level IX, 237 f., Level IV or VII (1400-1100 B.C.).

(12) Porada, *Corpus*, 125 f., 131, 134, discusses these figures with "oval headgear", nos.: 944, 949 (vase), 950 E (torque?), 952, 973 E (king), 989, 1025 E. Schaeffer *Ugaritica*

much is clear - that the cap is worn in scenes of peaceful offering or bounay and is not intended as a helmet. The kilt and the torque do not seem to provide decisive evidence, since they are worn by gods well as by humans.

There is one difference between the figures on the Syrian seals and the Fogg figurine; none of the walking "oval cap" figures of the seals wears the kilt with overfold on left thigh, though other figures of the seals do. The kilt occurs in the time of the Hittite Empire and in "Late Hittite" art, but there seems to be no exact way of determining its earliest occurrence (13).

If the cap and the kilt would seem to permit any date from 1600 to 1200 B.C. or even later, the torque points to the upper limit of this range. C.F.A. Schaeffer has argued that the torque-bearers and the remarkable figurines wearing torques belong in the Middle Bronze phase (ca 2100-1800) of Syria and Phoenicia, and while this may be putting matters too precisely, it seems on the whole probable that the Fogg figurine cannot be separated by too long an interval from other figurines which wear torques (14).

2 (1949) 42, fig. 16, god accompanied by lion (1600-1365 B.C.). However, Bossert, *AS* fig. 825, calls figures of this kind "worshippers". Cf. *Alt.A.* fig. 716, from Cilicia = Hogarth *AS* 6:181, seal of Indilimma, servant of Iš-chara.

(13) C.F.A. Schaeffer, *Ugaritica* 2 (1949) 78, remarks that the kilt is worn under the cloak and taken off in strenuous action. He considers that it may have come from Egypt. For later usage cf. E. Akurgal, *Spaethetische Buldunst* (1949) 30 f., who observes that with Late Hittites the "kilt" is actually part of a short "Leibroek" covering the upper part of the body.

(14) C.F.A. Schaeffer, *op. cit.*, 71 ff., fig. 31, pls. 17 ff., dates the Ugarit silver figures with gold torques ca 2000-1800 B.C. He identifies the torque bearers as gods. Cf. Bossert,

To proceed to physical details of the figurines, the large head with emphatic, angular features seems nearest to some Syrian warriors placed by E. Porada about 1700 (15), to the figurines from Firnis and İzmir (*Alt. An.* 584-587), a head from Jabbul (Gabbul), and a bronze from Mishrife (16).

Looking at the bronze from the viewpoint of style it is easier to say what it is not than what it is. It is not one of the typical "Byblos bronzes" (17). It does not show any pronounced Egyptianizing traits characteristic of Reshef figurines and a certain number of other Syrian bronzes (18). It does not belong to the very striking group of "heavy-weights", large, heavy, men and women with huge heads who were made in the mountains of Lebanon (19). On the other hand, it does not belong with the small group of figurines, mostly in precious materials which are so similar to the large sculptures of Boğazköy and Yazılıkaya as to be virtually certain witnesses of the art of the Hittite court (20).

AS fig. 598, from Homs. Bossert, *AS* fig. 584 (genuine?) seems to have four torques. The Megiddo figurines with neck-rings or torques have a wider time range. G. Loud, *Megiddo* 2, pls. 233: 4-5, 234: 13, 235: 20, 23, from Levels XIII to VII.

(15) E. Porada, *Berytus* (1942), 57 ff.

(16) Bossert, *AS*, figs. 576, 434, 585-587. The Ugaritic figure, 19th-18th century, has a similar nose; the Jabbul head shows a similar "slashed" formation of the mouth and outline of the cap. It is dated by Bossert around the middle of the second millennium.

(17) For example, Dussaud, fig. 18.

(18) Dussaud, figs. 29, 34, 37. V. Müller, figs. 372, 374.

(19) V. Müller, 107 ff., figs. 376-386. Bossert, *AS* figs. 588-591, 607-609. Hanfmann, *Arch. Anz.* 50 (1935) 52, figs. 2, 4. A list of thirty-one pieces is given by Seyrig, *Syria* 30 (1953) 26-30. He dates them 2000-1500 B.C.

(20) V. Müller, 104 ff., figs. 369, 371. Bossert, *Alt. A.*, figs. 589-596. On the bronzes, figs. 581-583, see below.

We must therefore seek among the less well-defined material for parallels for details and see to what degree the results may be confirmed on general grounds of style.

The "oval" cap seems to represent an adaptation of the Hittite-type headgear to the outline of Egyptian crown. This assimilation was most likely to occur along the Syrian and Phoenician coast, where Egyptian and Hittite fashions mingled. Figurines with comparable headgear come from Eastern Anatolia, Syria, and Palestine. As far as they are datable—and only that in Megiddo comes from a stratified excavation—they have been dated in the second millennium and usually in the time of the Hittite Empire. If the parallel with "oval" caps seen on the seals of the Second Syrian group is valid, it would provide an approximate location and a time-range from 1600-1350 B.C. These comparisons then point to the range from 1700-1400 B.C. and to North Syria as a possible place of origin.

If we attempt to draw an outline of stylistic development for some North Syrian bronze figurines, it would seem to run from the Sub-Sumerian figures of Tell Jedeideh (21) to the flat idols of Ugarit (22) where the "bird nose" profile indicates the survival of a tradition related to Tell Jedeideh. Porada's "warriors with the feather helmet" form the next step (23). Then a more

corporeal style appears to set in; its distinctive characteristic lies in the rounding of previously angular forms and in nearly sensuous refinement of metal surfaces. In this development the famous seated goddess in the Louvre (24) may represent an earlier phase, of the same school that later produced the Fogg figurine. In grim expressiveness, the head from Jabbul is probably the nearest kin (25).

Still later the same Syrian school developed toward greater softness and animation. The famous, closely related walking figures from Latakiah and Boğazköy (26) still recall some aspects of the Fogg figurine. By this time, (1350-1250? B.C.) not only figurines but even artisans may have travelled from Syria to the Hittite capital.

(2) Figs. 3-4. Large seated male figure with conical cap. Museum number 1943.1119. Grenville L. Winthrop Bequest. Provenance unknown. H. 31.5 cm. According to Bruno Bearzi, cast solid in a sand mould. Partly pitted; corroded metal on ears and under arms. The latter may be a different metal and come from material used to fasten the figure to the throne.

There is little if any evidence of detail work with chisel. This accounts for the vague cast of features. The

fig. 575. V. Müller, fig. 387. Seyrig, *loc. cit.*, 46, rightly says that the "flat" sequence, which we are discussing, runs parallel with the voluminous bronzes of his "Lebanese Mountain Group".

(24) Bossert, *AS*, 581. *TEL II*, 100 D-E = 9. Contenau, *La civilisation phénicienne* (1926) 210, fig. 69 = Collection Hoffmann, from "Beyrouth". Related: E. Grant, *Ain Shems I* (1931) pl. 11; *Megiddo 2* (1948) pl. 236: 24, Level VIII.

(25) For the stocky proportions cf. the figurines from Ugarit and Tortosa, Bossert, *AS*, figs. 576, 580. Perhaps related in style: *Megiddo 2* (1948) pl. 235:23.

(26) Bossert, *Alt. A.*, figs. 581-583, *AS*, fig. 577 (with wrong caption).

(21) Tell Jedeideh: Bossert, *Alt. A.*, figs. 437-438, ca. 2800-2000 B.C. Seyrig, *loc. cit.*, 45, pl. 12.

(22) Schaeffer, *Ugaritica 2* (1949) 82 f., pls. 17 ff. Bossert, *AS*, figs. 592-595. (Berlin; Reber). D.K. Hill, *The Fertile Crescent* (Baltimore, 1944), 25, fig. 22, seem to belong to this early geometric style rather than to that of Late Bronze and Early Iron Age. A. Parrot, *Syria 29* (1952) 44 ff., adds new pieces and dates the group 1660-1400 B.C. Cf. also Met. Museum New-York no. 32.18.1-5.

(23) *Berytus 9* (1942) 57 ff. Bossert, *AS*,

hands are lost. The neck was broken; it has been soldered and painted over with black paint. Under the seat of the figure there is a stump; it seems possible that this was originally a peg to fasten the figure to a throne and that it has been cut down (27). The metal is soft, copper-like, and markedly reddish in color. The surface patina varies from dark brown to a medium green.

The figure wears a small pointed cap. Eyebrows are indicated by slight projections, eyes by two shallow blobs, and the mouth by a slight depression, all produced by casting. The straight nose sweeps right into the outline of the cap; the ears form continuous arcs with the curves rising from the neck. The chin is heavy and rounded. The figure wears a long garment which ends below the knees; no other details are indicated. The shoulders are rounded. The body is quite flat, thinning toward the abdomen, then thickening again. The feet are short and stubby, without any rendering of details.

The figure is presumably that of a god seated in the "Hittite" attitude with lower arms bent at right angle. We cannot be certain of its attributes. The figurine of a seated god found at Enkomi (28) holds a vase in one hand.

Despite its unfinished state, the "Seated God" is an impressive work; students in art courses, to whom it was repeatedly assigned for analysis, have found that it embodies definite aesthetic values. It is as much more geometric work than the preceding piece; it is also the work of an artist who knows how to obtain an effect of mys-

terious and imposing dignity through the use of very simple forms. Thus the strange elongation of the entire body and the final sweep of the neck serves to raise the head to a symbolic importance. Outlines are strong and continuous. A simple, slightly bent contour describes the back of the figure, first curving in slightly, then rising again to the shoulders, dipping briefly at neck, then rising again in the head, to converge finally upon the apex of the hat. When the light strikes it from above, the head seems well calculated to fill the beholder with the sense of a lofty and inscrutable divine presence.

The Fogg figurine has one close relative, which must have come from the same workshop, in a bronze in Berlin (29). V. Müller has listed other figurines seated in the same attitude (30), but the style of most of these seated gods and goddesses is clearly different.

Only one of Müller's examples seems to have an ancestral relationship again the seated "Ishtar" of the Louvre (31). One may well envisage a prototype of this kind being "translated" into the Anatolian Geometric style at some provincial Hittite center (32). Two bronze figurines found in recent excavations at Enkomi display a general resemblance in their construction and while they belong to a somewhat different school they may well reflect a similar Geometric phase or current.

(29) V. Müller, 118, 130, figs. 409-410, Cf. also S. Przeworski, *Syria* 9 (1928) 273 ff.

(30) *Ibid.* Add Dussaud, figs. 37 (Jerusalem) and 44 (Megiddo). A snake-goddess in the Brooklyn Museum is reproduced in Detroit Institute of Arts, *Bronzes of the Ancient World* (1947) no. 8. I owe the reference to John D. Cooney. On the posture of arms cf. V. Müller, *AJA* 36 (1932) 13 ff.

(31) Müller, 118, no. 2.

(32) Examples in stone sculpture are the seated figures of the reliefs of Firaktin and Sipylos, Bossert, *Alt. A.* figs. 550, 561-2.

(27) Cf. the pegs on the seated figures Louvre, n. 24, above; Enkomi, C.F.A. Schaeffer, *ILN* (May 31, 1952) 938, fig. 17 = *Enkomi-Alasia* 1 (1938) pl. 74; *Megiddo 2* (1948) pl. 235:23, 236:24, restored after *Ain Shems* 1 (1931) pl. 11.

(28) *ILN* (May 31, 1952) 938, figs. 14, 17, 18 = *Enkomi-Alasia*, pls. 74 f.

One of the figures was seated on a little bronze throne, when found; the Fogg figurine was presumably seated on a similar throne. The figurines have been found in levels dated by the excavator 1150-1100 and 1100-1050 B. C. (33) The little rounded head of the later of the two figurines allies itself with the Syro-Phoenician traditions. For the Fogg figure, the few available comparisons of detail point toward a Hittite area and the time of the Late Hittite Empire (1400-1200 B.C. (34). So little is known, however, about the period that followed the downfall of Hattuşaş that we cannot rule out the possibility that the Fogg figurine was made in the twelfth century and thus closer in time to the bronze gods from Enkomi.

(3) Figs. 5, 13 b-c. Bearded Man carrying a ram (?). Museum number 1953.111. Gift of Mrs. Lois Orswell Dailey. Provenance unknown. H. with peg 14 cm. without 11.2 cm.

Like the walking man, no. 1, the "Ram-Bearer" is cast solid and in one piece with its little platform and with an oblong, roughly rectangular peg by means of which it was fitted into a base. Most of the surface is covered by brown to green corrosion, which obscures some details. Only the left lower leg and the hem of garment come close to showing the original surface. To judge from them, the piece was carefully smoothed. Where exposed, the metal appears somewhat darker and harder than in the preceding pieces. The details are tooled rather vigorously

(33) C.F.A. Schaeffer, *ILN* (May 31, 1952) 936, figs. 12-18 = *Enkomi-Alasia I* (1938) pls. 63, 71-75. The figure from Megiddo, dated ca. 1350-1100 B.C., shows a similar geometric trend. Dussaud, fig. 44 = G. Loud, *Megiddo 2* (*OIP* 62, 1948) pls. 237 f. Cf. also *Ain Shems I* (1931) pl. 11.

(34) For head and headgear cf. Bossert, *Alt A.* figs. 606, 618 f., from Arapkir and Alışar.

with fairly large cutting chisels of at least two sizes. There is a long groove on the back running from near top of head to edge of garment. This groove may have served to fasten gold leaf as in no. 1; but it may equally well have served some other purpose - for example, it may have been used to attach a long tress of hair (35).

The man is clad in a long garment with a hem, which is decorated by vertical strokes. A vertical line may indicate the central fold or edge of garment. On his head he wears a peculiar angular head-gear which seems to be tied to a ribbon running across the head from ear to ear (Fig. 13 c). There are some indistinct strokes on the "crown". He is bearded, but has apparently no moustache. Eyebrows are raised, eyes deeply hollowed. The lips are raised; a gash above the right lip is probably accidental. With his left hand - more a paw than a hand - he clasps an animal to his chest; the animal is so crudely fashioned that it is not clear whether it has ears or horns; it has a fat, short tail, hence perhaps intended to show a ram rather than a calf. A hole is pierced through the man's right hand which he extends forward. The object which he carried may have been a staff. The back of the head and "crown" is quite flat, the body nearly so.

The proportions of this figurine differ markedly from the preceding examples. The head is not merely large - it is like a huge mask; the body is outlined in the shape of an attenuated bell; the legs are two stumpy pillars. The four major parts - head; arms, animal, and shoulders; garment body; and feet - seem to be added to each other. A similar "additive" impression is

(35) On the "Syrian tress" worn by men as well as women cf. V. Müller, 108, pl. 37 f. Hanfmann, *Altetruskische Plastik* (1936) 31, n. 99; 109. *Arch. Anz.* 50 (1935) 51.

awakened by the individual features - the large and rude eyes, big nose, lumpy ears, slashed mouth, as well as hands and feet seem to relate themselves much more loosely to the figure than in the preceding examples. Yet this rude and loose geometry, this independent impact of important parts - especially eyes and hands - bestows upon the figure something of the quality of a primitive idol, a somnambulant force, which impels the ram-bearer to move hesitantly, unconsciously, almost against his will.

The most significant detail of the animal-bearer is his rectangular head-gear. It may be taken as analogous to the feather helmet known from Syrian warrior figurines of the second millennium (36) or it may be intended as a feather-crown. A rectangular head-piece is worn by a silver figurine from Emesa, (37), dated by V. Müller around 1000, by Dussaud (38) around 1800 B.C. Similar crowns are worn by goddesses (39). If we assume the head-piece of the animal-bearer to be a crown, its exact shape still remains doubtful. If we interpret its flatness "literally", then this head-gear was a flat piece, presumably made of metal and tied to a ribbon - something like the solar crown on a basalt head from Si (40). But if the artist simplified and flattened it because it is seen only from the front, then a circular crown was intended. In this case, it should be com-

pared with the "feathered" crown by human and lion-bodied demons in the reliefs from Tell Halaf and Malatya (41).

The only peculiarity in the cloak worn by the animal-bearer is the lack of a belt. It is rather short, but otherwise conforms down to details of stylization of the hem to the garments seen on monuments of Late Hittite sculpture (42).

The hair of the ram-bearer is combed forward and is cut short over the forehead. This arrangement as well as the beard worn without a moustache can be readily paralleled in Late Hittite sculpture (43). If the figure had originally a long tress attached to the groove in its back, then its general effect would resemble somewhat the appearance of the bronze figures of the "Lebanese Mountain" group (44).

The motif of the animal-bearer has a long history in the Near East which has been treated by E. D. Van Buren and A. Parrot (45). The animal-bearers closest in both time and space to the Fogg example are the figures depicted on the reliefs from Sencirli (46), but the carrying gesture is significantly different. While our figure grasps the animal to his chest with

(41) Bossert, *AS*, figs. 41, 466. E. Akurgal, *Späthethitische Bildkunst* (1949) 125, ff., pl. 25 a = Bossert *Alt. A.*, fig. 774.

(42) E. Akurgal, *op cit.*, 30 f., pls. 26, 40, 42 b. Bossert, *AS*, figs. 442, 501; *Alt. A.*, figs. 771 f., 812, from Tell Ahmar, Sencirli, Tell Halaf, Kargamış, Maraş, Malatya.

(43) Bossert, *Alt. A.*, fig. 948. Akurgal, *op. cit.*, 25 f.

(44) Bossert, *AS* figs. 588-591, 607-609. V. Müller, 107 f., figs. 376-386, 420-422.

(45) E. D. Van Buren, *Orientalia* 20 (1951), 16-69. A. Parrot, *Mélanges Syriens Offerts à M. René Dussaud I*, Haut comm. de la Rep. Française en Syrie et au Liban, Service des Antiq., *Bibl. Arch. et Hist.*, 30 (Paris, 1939) 171-182.

(46) Bossert, *Alt. A.*, figs. 910, 954.

(36) Bossert, *AS*, figs. 575, 610 f. Porada, *loc. cit.*

(37) L. Speelers, *Syria* 3 (1922) 134, pl. 27 = V. Müller, 110 f., pl. 39, fig. 389.

(38) *Op cit.*, 64, fig. 32. He calls the crown "déformation de la double couronne égyptienne".

(39) Bossert, *AS*, figs. 572, 1086, cf. fig. 660.

(40) Bossert, *AS*, fig. 517. This is much later, but ritual head-ornaments are tenacious in survival.

his left hand, the Sencirli bearers carry the animal on their shoulders. This method and the carrying of animals by their horns, foot, and neck is common in scenes on the seals of the First and Second Syrian and Mitannian style (47). During these periods the animal is also sometimes carried on the extended forearm (48). But closest to the gesture of our figure is that of a second millennium statue from Susa (49) and figures on seals of the Akkadian, Late Old Babylonian, and Mitannian periods (50). Here the figures are worshippers and the animal an offering.

That the type continued to be represented in later periods of Near Eastern art is shown by the genii on Assyrian reliefs from Nimrud (51) from the time of Assurnazirpal (883 - 859 B.C.). These are close in time to the Fogg figurine; and since other resemblances are also found between the Fogg figurine and the various "demons" of the Late Hittite reliefs, it is possible that our bronze with distinctive head-gear is intended as a divine personage of inferior rank.

That the meaning of the type is still that of an offering is indicated by the Assyrian genii as well as by the

imitations of these type in Cypriote sculpture, where the animal-bearers are worshippers (52).

It is an interesting problem where and when the same type may first have acquired the connotation of a "Good Shepherd", of a divine being rescuing and protecting the animals of the flocks. For this appears to be the meaning of the earliest representation resembling our type in Greek art - the colossal kriophoros in Thasos is often thought to be Hermes as protector of the flocks (53).

Stylistically, more or less distant resemblances may be found in a number of Near Eastern bronzes, but about the general affiliation there can be little doubt. The rude, additive Geometric style appears to succeed the more balanced, polished, and unified style of the second millennium in Eastern Anatolia, North Syria and the Khabur region, if we except those schools which were influenced directly by either the Egyptianizing or the Assyrianizing arts. Already some terracotta heads from Ugarit (54) appear to have the same type of face as the Fogg animal-bearer. The style is clearly that of the

(47) E. Porada, *Corpus of Ancient Near Eastern Seals in North American Collections*, (The Bollingen Series 14) (New-York, 1948), pl. 137, fig. 910; pl. 140, fig. 931; pl. 141, fig. 932; pl. 143, fig. 937. Frankfort, *Cylinder Seals* (London, 1939) pl. 43, a.

(48) Frankfort, H., *op. cit.*, pl. 41, fig. o. Page 270, text-fig. 84.

(49) R. de Mecquenem, *Mémoires de la Délégation en Perse*, 7, pl. XXVI, fig. 1 a., b., c. = Parrot, A., *loc. cit.* p. 177, fig. 5. Cf. also D. Mackay, *Guide Archaeol. Coll. Univ. Beirut* (1951) pl. 4:8, a bronze "shepherd".

(50) H. Frankfort, *op. cit.*, pl. 20 b, pl. 26:1. E. Porada, *op. cit.*, pl. 29, fig. 189, pl. 39, 245, pl. 58, fig. 400, 404, pl. 156, fig. 1022.

(51) A. Layard, *Monuments of Nineveh* Vol. 1 (London 1849), pl. 47, fig. 4. (Embroidery design).

(52) For instance, E. Gjerstad, *Swedish Cyprus Expedition* 4:2 (1948) pl. 2, Arsos. P. Dikaios, *Guide Cyprus Museum* (1947) 66, pl. 16:1, 600-560 B.C. This link does not seem to be noted in Gjerstad's discussion, though he notes the type in which the animal is carried on the shoulders (*op. cit.*, 344). Cf. Bossert, AS, figs. 47, 49 f. Cf. Ch. Blinkenberg, *Lindos* 1 (1931), 435, pl. 72, nos. 764-6; pl. 94, no. 2088, Cypriote; pl. 82, no. 1882, Greek.

(53) Ch. Picard, *Manuel de la sculpture grecque* 1 (1935), 560, fig. 193. F. Matz, *Geschichte der griech. Kunst*, 1950, pl. 117. In the type where the animal is carried on the shoulders the meaning is still that of an offering.

Matz, *op. cit.*, 176, pl. 82. (Neugebauer, *Katalog Berlin* 1 (1931) no. 158, pl. 19), 481, pl. 286 a ("Pre-Daedalic").

first phase of Late Hittite art, comparable to sculpture of such centers as Sencirli, Kargamış, Malatya, and Tell Halaf (55). The time range may be guessed at as 1000 - 800 B.C., before the onset of strong Assyrian influence upon this area.

(4). Fig. 6 a. Terracotta Head of a Man with Pointed Cap. H. 3.7 cm. Lent by Perlie Dyar Chase. (TL. 10571). Formerly in the collection of Howard Carter.

Broken off at neck. (Traces of paint?). The head is moulded free-hand; ears are tacked on separately. Features are incised with a stick. Head and cap are not separated; the large incised lines over the eyes are probably intended as eyebrows. This gay and lively head with its aquiline nose, small, smiling mouth, and almond eyes is a masterly sketch of a quality rare among Near Eastern terracottas.

The little rounded oval face, urbane rather than fierce, would suffice to indicate that this is a Phoenician in the strict sense of the word. Similar friendly, smiling faces are encountered among the Phoenician ivories. A head from Megiddo is as early as the thirteenth (?) century (56), but in overall proportions the Chase terracotta is even closer to the fine Phoenician ivory head found in Perachora and dated in the seventh century B.C. (57) Until better parallels are forthcoming we are in-

clined to place the Chase head in the eighth or seventh century B.C. and regard it as a work by the same type of artist as those who produced the later Phoenician ivories (58).

Beyond its interest as one of the rare Phoenician terracottas that are real works of art, the head is also a significant document for the history of facial expression in art. As far as we know, nobody has as yet written a history of the smile; it is often regarded as typical of the optimistic attitude toward man that was first portrayed by the archaic sculptors of Greece. Indeed, Dussaud has used the alleged smile of the ivory goddess from Minet el Beida to argue that this remarkable work must be Mycenaean Greek rather than Phoenician, and presumably the lively goddesses found in Mycenae are to be interpreted as heralds of archaic smiles - though authentic Mycenaean faces are certainly not noted for gayety and lively charm (59). Yet Valentin Müller has pointed out that there are some Mesopotamian and Imperial Hittite examples and he rightly sensed that Phoenician ivories must have presented the first examples of optimistic smiling people to the archaic Greeks (60). The Phoenicians have been robbed of much of their prestige; art historians and archaeologists are annoyed by their unabashed eclecticism. With the wealth of Near Eastern material we have now, it may not be amiss to point out that there is

(54) Bossert, *AS*, fig. 634, cf. also fig. 1093, from Khirbet el Medineh.

(55) Bossert, *AS*, figs. 448-457; *Alt. A.*, figs. 903-904; 955 f. The type and expression seem particularly close to Tell Halaf, e.g., *AS*, figs. 455, 464, 471.

(56) Bossert, *AS*, fig. 1114 = G. Loud.

(57) Bossert, *AS*, fig. 809. R.D. Barnett, *JHS* 68 (1948) 5 f., pl. 3 c, thinks that this head does not belong "to any known school." For the cap of the Chase head, cf. the bronzes from Karpasc, Bossert, *AS*, fig. 158 (Berlin), terracotta from Beyrouth, fig. 658.

(58) Cf. ivory head from Nimrud, F. Basmachi, "Nimrud Excavations" *Sumer*, vol. 8 (1952) 196 ff., fig. 2.

(59) Dussaud, 85, fig. 48 C. F. A. Schaeffer, *Ugaritica* I (1939) frontispiece and pl. II. A.J.B. Wace, *Mycenae* (1949) fig. 101-103. The terracotta head from Byblos, Bossert *AS* fig. 641 = M. Dunand, *Fouilles de Byblos*, Atlas I, (1937) pl. 51, no. 1302 is certainly friendly enough and it is not Greek.

(60) V. Müller, 101, 130, 217 ff.

in much of Late Phoenician art a certain humane liveliness, the liveliness of a sea-faring and enterprising people—not only in their sea-faring and commerce and alphabet, but in some aspects of their attitude toward life, the Phoenicians show themselves as fore-runners of the Greeks.

(5). Fig. 6 a. Terracotta "Papsukal" Museum number 1952.42. Gift of Professor Vladimir G. Simkhovitch. H. 8.3 cm.

Broken off below the waist.

This terracotta relief plaque was cast from a standard mould and is one of many of a similar type. He grasps an alabastron by the neck with his right hand while the left palm supports the lower part of the vase. The dress is a long robe belted at the waist. The mantle appears to be formed by a series of horizontal fringed bands. The upper part of the coiffure, which falls in full curls upon his shoulders, is formed by a series of ridges radiating from the top of the head. A moustache curled at the ends, a smooth beard cut sharply at the bottom, and large eyes with prominent lids are other distinguishing characteristics.

Close parallels to this figure have been found at such sites as Babylon and Uruk (61), in levels and buildings belonging to the period of Assyrian domination of Southern Mesopotamia. Consequently, our vase carrier can be dated about 650 B.C. The significance of these figures has been discussed by E. D. Van Buren, who surmises that they may have been intended as lesser

(61) R. Koldewey, "Die Tempel von Babylon und Borsippa", *WVDOG* 15 (1911) 33, fig. 50. J. Jordan, "Uruk-Warka", *WVDOG* 51 (1928) pl. 78 a-b. E. D. Van Buren, *Clay Figurines* (1930) 196 ff., nos. 959-963.

divinities of the court of Ea, the Lord of the Watery Deep (62).

(6). Figs. 7-9. Bronze Head of a Bull. Museum number 1943.1321. Grenville L. Winthrop Bequest. Provenance unknown. H. 7.6 cm. Greatest width including horn and ear 12.8 cm. Width between bases of horns 7.6 cm. Thickness of bronze 0.6-1 cm. Weight: 1535 grams.

The material of the head and the inserted horns is discussed below in the Appendix by Rutherford J. Gettens. The natural color is very golden; the ancient dark green patina survives only in a few spots, as the head was thoroughly cleaned in modern times before coming to the Museum. Its present black to redbrown color is due to natural tarnishing of metal. The right horn and the tip of the left horn are missing; the left ear is broken and the right ear is battered.

According to B. Bearzi, the piece was cast in lost wax process. It was then thoroughly tooled and chiselled. The hair is left as cast, but eyes and muzzle have been carefully worked.

The piece was cast with a "step-back" around the neck (63) so that there is an inner collar for insertion into a hole. Rivets were driven through this collar from inside, fastening the neck to the object into which the head was set. A number of these ancient rivets are preserved and are visible in Figs. 7-9.

The head is large and heavy, the forms very full. The engraved forms are subordinate to cast, plastic shapes. The most prominent features are; the raised rectangle of hair which begins behind the horns and runs down to half-muzzle. The hair is stylized as waves crossed four times by bands of curls on neck,

(62) *The Flowering Vase and the God with Streams* (1933) 101, fig. 56 (Cassite?).

on top of head, over forehead, and over muzzle.

A system of strap-like details links hair to muzzle. The eyes are nearly circular and rise toward center; the upper corner is drawn back slightly. A marked tear-duct is sharpened by a graven line. The eyebrows, shaped like sausages, are raised and outlined by incisions. The two sides of the neck meet in a sharp ridge. The total impression is one of heavy, massive power.

When the bull was first studied it seemed to compare with similar Urartean bull heads. Subsequent view of pieces in Ankara and the British Museum proved that the Fogg Museum piece is larger, much heavier, of different metal, and in a more voluminous and plastic style of the Fogg piece.

The throne of King Ashurnazirpal as depicted on a relief from Nimrud in the British Museum shows the top horizontal member decorated with two bull's head (64). As far as can be determined from the relief it would appear that the original objects were modeled in full plastic forms with emphasis on the large bulging eyes (Fig. 10) As the stylization of the veins and the folds of flesh on the muzzle are sculptured in relief, it may be assumed that the original heads were treated similarly (65). The parallel to the Fogg head is stri-

(62) It was not carried quite around the left side. Figs. 8-9 show clearly where the set-back stops.

(64) E. Budge, *Assyrian Sculptures in the British Museum, Reign of Ashurnazirpal* (London, 1914), pl. XXXI. An ivory lion head from Nimrud, British Museum 91884 resembles the Fogg head in style. Assyrian influence probably accounts for similar use of bull heads on the throne of King Barrekub of Sencirli. Bossert, *Alt A.*, fig. 952.

(65) If the original heads were treated in terms of incised lines, the relief without a doubt would be executed in a fashion similar to that employed in indicating the embroidery patterns on the robes of the king.

king, even though our bronze lacks the ring of curls about the neck and the banded pattern above the eye prominent on the relief. The "set-back" around the neck of the bronze head suggests that it was intended to be inserted into a straight plane such as a part of a throne rather than into a curving one such as the side of a cauldron.

Two groups of bronze bull heads follow the same compositional scheme as the Fogg piece. One group has been shown by Barnett to be Urartean and dated in the eighth and the seventh centuries B.C. They were set in winged frames and attached to cauldrons. The pieces come from Toprakkale and Erzincan (66). The Fogg bull head is clearly differentiated from these in material (a more golden bronze) and style. Throughout, the "Toprakkale-Urartean" bull heads emphasize details by linear engraving, for example, the collar of curls around the neck, the circular eye, and the rectangle on top of the muzzle.

Very much closer to the Fogg Museum piece are three bull heads in the Louvre, Cleveland, and a Midwestern American collection (formerly D. Kekelian) (67). Two of these (Louvre and

(66) R. D. Barnett, *Iraq* 12 (1950) 1 ff., figs. 1-2, pl. 16. *Id* and Nuri Gökçe, *AnSt* 3 (1953) 129, pls. 13 f., 19:1. D. K. Hill, *The Fertile Crescent* (Walters Art Gallery, Baltimore, 1944) 31, figs. 25, belongs to this group. B. A. Kuftin, *Arartskiy Kolumbariy u podoşvy Ararata* (1943) 41, pl. 11:5, (from Kürdistan) is slightly different.

(67) 1. Louvre. Collections Sultan Mecid, F. Sarre. Kuftin, 40 f., pl. 10:2, 11:4. F. Sarre, *Die Kunst des alten Persien* (1923) pl. 45. *Persian Art, An Illustrated Souvenir* (Burlington House, 1931) pl. 9, no. 10. R. Dussaud, *Bull. Musées de France* (1933) 139. G. Contenau, *Manuel d'archéol. orient.* 4 (1947) 2266, fig. 1289.

2. Cleveland. Collections Mahomed Alla Mirza, Christian R. Holmes. Kuftin, 41. Pope, *A Survey of Persian Art* (1938) pl.

Cleveland) were found by men from the village of Guşci in the Salmas District on Urmia Lake. R. D. Barnett, who has traced their history through a publication by B. A. Kuftin, has very kindly placed his material at our disposal. Kuftin's source reported that the two bull heads were found with the skeleton of a bull that had been filled with wax as well as with a Urartean bronze belt and some unspecified silver vessels. The bull heads allegedly formed part of two complete figures of bulls, which were smashed by the finders. The third (ex - Kelekian) bull head is said to have been found in Persepolis. Sarre had conjectured that his piece (now Louvre) might have decorated a throne. Kuftin argued that they either were part of bull figures or were mounted "on tubular objects". Barnett (by letter) states that they are "obviously from a bronze crater". He surmises that all three pieces were cast in one mould, an opinion also expressed by some dealers, who had an opportunity of inspecting all three pieces.

On the piece which is now in a Midwestern collection, the outer base of the has been filed down in a very slight curve, perhaps too slight to fit a cauldron. Cast in one piece with the head, there is a peg on top of neck; it thickens upward. There are two peculiar projections from sides of neck one tooled, the other jagged. Within the head and recessed by ca. 2 cm. against the level of the outer neck is a rough "inner collar", perhaps of a different metal. It might be the remnant of a "metal tube" which originally held the head in place. There are no traces of

rivets or rivet holes, such as are seen on the neck of the Fogg piece. This evidence for original setting is inconclusive; the existence of the peg may be a point against regarding the piece as a vase attachment.

Characteristic resemblances between these heads and the Fogg bull head may be seen in the plastic treatment of the mane, the "sausage" form of eyebrows, and the plastic folds at the tip of the muzzle. They are slightly larger, the proportions are slightly more elongated and such details as curls of the mane are thinner. The eyes are nearly circular.

The Louvre - Cleveland - Midwestern Collection pieces were claimed as Urartean by Kuftin and his opinion is shared by Barnett. Kuftin also suggested that they were the models for Barnett's "Toprakkale - Urartean" type. The Fogg piece seems to us a step nearer the original inspiration. We are inclined to regard it as the Assyrian model and the Louvre - Cleveland group as very close, probably contemporary Urartean imitations. The Louvre and the Cleveland pieces have been called Achaemenid on the basis of their resemblance to the bull capitals from Persepolis (68), but we have no certain examples of similar bronze bull heads from the Achaemenid era.

This magnificent type of Near Eastern bull head considerable vogue in Cyprus, Etruria, and early Greece (69).

(68) For example, E. Herzfeld, *Iran in the Ancient East* (1941) pl. 60 a, and for similar stylization, H. Otto, *ZfAss.* 14 (1944) 9 f., fig. 1.

(69) E. Kunze, "Verkannter orientalischer Keselschmuck aus dem argivischen Heraion", G. Behrens, ed., *P. Reinecke Festschrift* (1950) 96 ff., pl. 16:2, looks a poor derivative of the Fogg type.

Cyprus: G.M.A. Richter, *Cat. Bronzes Metropolitan Museum, New-York* (1951) 348 f., nos. 1182-1187. E. Buschor *Altsami-*

108. Id., *Masterpieces of Persian Art* (1945) pl. 20. *Archaeology* 6 (1953) 199 (photo).

3. A Midwestern Collection, USA. Formerly D. Kelekian. Kuftin, 41, pl. 10:1. A.U. Pope, *Cahiers d'art* 6 (1931) 84 (photo). T. Borenius, *Pantheon* 7:1 (1931) 91 (photo).

(7) Figs. 11-12, 13 d. Bronze Figurine of a Winged Goat. Museum number 1949.92. H. 10.7 cm. L. 8.3 cm. Published: American Institute for Iranian Art, *Exhibition of Persian Art* (1940) p. 302 G. Parke - Bernet Gallery, *Joseph Brummer Sale 2* (May 11-14, 1949) 24, no. 108.

The piece is cast in one with four short pegs which issue from its hoofs. A bit of right hind leg is missing. Technically, it is somewhat puzzling. By its weight, it feels as if it were cast solid; yet there is a hollow space - at least 3 cm. long - inside the goat's rear in which a metal fragment is heard rattling. A neat hole near tail connects with this hollow.

B. Bezzi has suggested that the goat was cast over a suspended core. Bits extracted from the interior have not been identified. Miss Elizabeth Jones of the Fogg Museum's Conservation Department reports that the material is not lead. Another puzzle is presented by the legs. In the opening on the right hind leg, where the piece of bronze has broken away, there was found under a surface layer of earth a "filling" of bright metal. According to Miss Jones the sample tests for copper, but results for lead and tin were negative. The surface of the figurine has been carefully cleaned. There are, however, in many spots accretions of brown iron rust; otherwise the color of the patina is a beautiful dark green. Presumably it was buried together with an iron object.

All major features are cast, but the strap-like outlines around the shoulders and hind quarters and the peculiar small "back-swept" wings are incised by chisel. The general appearance of the goat is sturdy, alert, appealing; it is a stockier and stubbornner animal than the graceful wild-goats of "Classic" Achaemenid or of Orientalizing Greek art.

The eye is big and baneful, the forelegs dig in, as if he was guarding against an attempt to drag him away.

Among the details, the angular formation of horns is noteworthy; also the beard which falls right onto the chest; and the peculiar little flaps which grow from the foreshoulders just under the wings. The male sexual organ was indicated.

Even though the wings look very much like an afterthought on the part of the artist, they are there - and signify that this flying goat is not an ordinary mountain animal.

In a general way, the Fogg wild goat stands between the Luristan bronzes and animal of the "Classic" (Persepolis) period of Achaemenid Art. It is very much sturdier and bulkier than the Luristan examples (70), less demoniac and more of a real animal. While he shares with Achaemenid work some important features of stylizations - the outlining by "straps" for example; yet most Achaemenid metal animals (71) appear to be of slighter build and more natural form. His bulky angularity is found to some degree in two Iranian bronzes from Azerbaijan, formerly in the E. J. Holmes Collection and now given to the Fine Arts Museum, Boston (72). They seem to display a similar lack of structural articulation between the body and legs of the animal. There is also similarity of detail: the

sche Standbilder (1935) 58, figs. 224 f. P. J. Riis, *Acta Archaeol.* 10 (1939) 5 ff., 19, no. 9, 8, calls the New-York pieces Etruscan.

(70) A. U. Pope, *Survey of Persian Art*, vol. 4, pl. 70.

(71) Pope, *Survey of Persian Art*, pl. 11. H. Otto, *Zf A* (1944) 9 ff., fig., 1.

(72) A. U. Pope, *Masterpieces of Persian Art* (New-York, 1945) pl. 17 b, c, attributed them to Luristan. M. Bahrami, *Cat. of Works of Iranian Art from American Collections Supplementing Iranian*, attributes to Azerbaijan, ca IX century.

beard falling onto the chest which projects between the forelegs.

Other details such as the angular horns (73) can be paralleled by Luristan bronzes. They may also be paralleled on a goat from Ziwiye (74 a), but the downward curving wing, the lower part of which is patterned by a series of vertical parallel lines, is most perplexing. Luristan, Ziwiye, and Assyria do not seem to offer any outstanding examples. A pectoral from Ziwiye depicts winged animals with somewhat similar patterns on their bodies, but their wings turn upward (74 b). The little flaps growing from the foreshoulders suggest similar stylizations on the lions from Arslan-Tash (75). The parallel hatching about the legs can likewise be matched on certain Luristan pieces (76). This stylization also appears in a group of bronzes, of which one can be dated by its association with "Assur Attaschen" - a lion formerly in the Baumeville and Duthuit Collections (77). If the last comparison is just, the bronze workshop that made the lion and the goat was active around 700 B.C. Its products may have reached Greece; but its own location cannot be safely determined.

(73) Pope, *Survey*, pl. 70.

(74) a. A. Godard, *Le Trésor de Ziwiyé* (Haarlem, 1950) 49, fig. 39.

(74) b. Godard, *op. cit.*, 25 ff., fig. 15, 16, 21-23.

(75) Thureau-Dangin et al. *Arslan-Tash*, Haut-Commissariat de la République Française en Syrie et au Liban, *Sérvíce des Antiquités. Bibliothèque archéologique et historique* 16, pl. 6.

(76) Pope, *Survey*, pl. 32, A.

(77) W. Fröhner, *Coll. A. Duthuit, Bronzes antiques* (1897) 8, no. 6, pl. 10. He says that the figure is cast solid.

REPORT ON THE TECHNICAL EXAMINATION OF BRONZE HEAD OF A NEAR EASTERN BULL, FOGG MUSEUM ACC. NO. 1943.1321 BY RUTHERFORD J. GETTENS

This head is hollow and appears to have been cast. The metal throughout seems sound and it is only superficially corroded. The sides of the hollow interior are covered with a thin layer of red and green copper corrosion product. The red is crystalline cuprous oxide (cuprite) and the green is chiefly basic copper chloride (atacamite). The presence of chloride indicates the object came from an arid region. The exterior of the object, however, is smooth and little pitted. It is mostly natural bronze in color interrupted with areas of black tarnish and streaks of red and small particles of green. There is evidence that the outer surface was originally corroded like the interior, but the corrosion products have largely been abraded or dissolved away.

In 1950 the extant left horn became detached; this necessitated repair. The right horn was already missing. It was seen that the horn had previously been detached; soft solder and glue around the base indicated the repair was recent. Both bases were formed square and flush with the head. Each horn base is hollow for a depth of about 1/4 inch. The bottom of the recess is a rough bronze surface as if a plug had been driven into the horn socket and had been broken off. It was at first thought that the base of the left horn was shaped as a plug and had been driven into the head and had later been broken off. The irregular broken base end of the horn and of the broken interior seemed to register. A hole was drilled into the base of the horn and into the floor of the recess and repair was made with a

brass dowel and with a cement made from vinyl acetate and chalk.

The borings from the dowel holes were given to Dr. H. C. Harrison of Rhode Island State College for spectrographic analysis. The analyses showed that the metal of the horn is different in composition from the head. The metal of the horn contains, in addition to copper and tin as principal constituents, also a fair amount of zinc, whereas the metal from what appears to be the stump of horn has no more than a trace of zinc. His first estimates were as follows:

1 — Metal from stump of horn in head: Cu, Sn over 10 %; Ni, 1-0 %; Ca, Pb, Ag, As, Sb, Bi, 0.1-0.01 %; Si, Al, Mg, Mn, Ti, Au, Cd, 0.01-0.001 %.

2 — Metal from horn: Cu, Sn, over 10 %; Zn, 10-1 %; Cr, Ni, 1-0.1 %; Si, Ca, Pb, Ag, As, Sb, Bi, 0.1-0.01 %; Al, Mg, Mn, Ti, Au, Cd, 0.01-0.001 %.

Further samples for spectrographic analysis were taken both from the horn and from various parts of the head to check the preliminary results. These results likewise show that the amount of zinc alloy of the horn is greater than in the alloy of the head, although in this series the amount of zinc (1-0.1%) reported in the horn is not so great as that reported above.

To check the question about the possibility that the metal in the holes of the horn bases are stumps of horn driven in from outside and not part of the head, x-rays of the head were taken at the Watertown (Mass.) Arsenal through the courtesy of Mr. F. L. Brackley.

Several films taken with exposures up to 400 KV, 5 milleamperes and 3 minutes showed that the metal in the region of the horn sockets is solid and

there is no evidence that stumps of horns exist.

It appears then that the single horn was cast separate from the head. In addition to being of different composition the metal of the horn seems more yellow (brassy) than the metal of the head. On close examination of the horn it was seen that it bears patches of the same abraded-down red cuprite and green that one can see on the head. It is also interesting that with some magnification one can see on the surface of the fracture at the tip of the horn a dendritic structure which shows that it is cast metal.

Attention was called to patch-like areas on the hollow interior opposite the horns; removal of the patina in small areas showed no difference in metal color. Spectrographic analysis of the drilling taken here showed it has the same composition as drillings from other parts of the head.

The thick portion of the neck which bears three rivets was examined. The edge was scraped. It appears that the thick rim is a broken-off piece of the body or form to which the head was joined with rivets. The lower edge however, which would be visible on the side, cannot be seen, presumably because of deep corrosion which has cemented the seams together. Spectrographic analysis of a sample of the attached piece show that it has approximately the same composition as drillings from the head. The heads of the rivets are covered heavily on the inside with corrosion product.

It is felt that the object is old and that it is genuinely and deeply corroded.

The presence of the element nickel in all specimens supports, but does not prove, the supposed Near Eastern origin of the head.