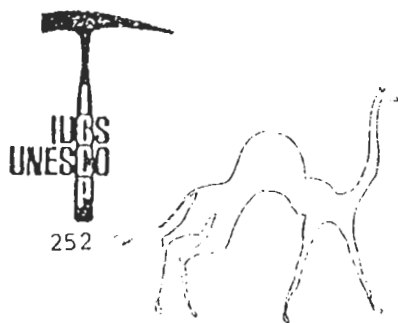


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THE ARCHAEOLOGICAL SITE OF "CUEVA DE VILLAVERDE"
(FUERTEVENTURA). HOLOCENE PALAEOENVIRONMENT AND HUMAN
OCCUPATION IN A VOLCANIC TUBE.

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ABSTRACT

Inside a volcanic tube, emitted during Upper Pleistocene, appear four different levels. The lower level could be related with a paleodune of El Quemado (site studied by PETIT MAIRE *et al.* 1986, 1987). Level 2, rich in organic matter shows a humid climate, related with a cessation of eolian processes and a fixation of the dunes by vegetation. The presence of pyroclastic fragments, is related to the Holocene volcano of Bayuyo. Level 3 contains fragmented land gastropoda and rodent fossils. Level 4 is formed by human occupation.

The archaeological area is near the natural entrance and is limited by an artificial wall. This area has circular and semicircular stone structures. The human remains found are of an adult man and a child. Radiocarbon dates on vegetal coal are between 1703 ± 50 B.P. and 1070 ± 50 B.P. The archaeological material, in

study, is hand made pottery of rich and varied decoration. Basaltic stones, bones and shells are used for tools. The food remains are molluscan shells, fish and mammal bones. Goat remains are numerous. Pig and a left mandible of seal appear too.

INTRODUCTION

The preceding archaeological studies on Fuerteventura are scarce and do not show a complete picture. They were done by SERRA RAFOLS (1945) who mentions sporadic discoveries, principally vessels, JIMENEZ SANCHEZ (1946, 1952, 1953) and more recently CASTRO ALFIN (1972, 1975). LEON HERNANDEZ published the archaeological map in 1987 but there is now another map being produced.

An important problem is the large number of spoliations of archaeological sites and unknown source of many museum pieces. However historical documentation should be compared with the archaeological findings.

The Villaverde site (28 31'10" latitude N and 10 12' 30" longitude W) in La Oliva, near the 30 km mark along the Puerto del Rosario - Corralejo route, was discovered accidentally in 1979 by construction workers. The site was only disturbed during the first few days and the remains of a burial site were particularly affected.

GEOLOGY

On a mainly plutonic basement (cretaceous), four principal volcanic episodes are represented in Fuerteventura by different basaltic lava series (FUSTER et al. 1958). The Miocene "old basalts" were generated by the eruption of large lava flows with pyroclast intercalated (300-600 thick), crossed by a lot of dikes that occupies nearly the whole of the island surface. The "basaltic table land formation" (HAUSEN, 1958) presents forms with a characteristic stepping relief. Pliocene and Pleistocene series (MECO and STEARNS, 1981) differ in the stage of preservation of the volcanic edifices, so the Holocene series show a typical aspect a

recent lava field named "Malpais". These series contain a lot of lapilli and cinder cones, and are principally located in the middle and the north of the island (fig. 1). Except on the recent lava fields, on the surface of the island appear various calcareous crusts ("caliche") indicative of arid climate conditions.

El Quemado section (PETIT-MAIRE *et al.* 1986, 1987), near the archaeological site of Villaverde cave (fig. 1), shows three levels with hymenoptera nests and terrestrial mollusc shells in the paleodunes testifying to a cessation of eolian processes and to the fixation of the dunes by vegetation. The upper nests level is related with the nests level of Jandia section dated by radiocarbon ages 9800 ± 140 B.P. This level of El Quemado is above ochre paleodune and below "sol brun", indicating a humid climatic change, and pyroclast of Bayuyo Volcano.

The archaeological site of Villaverde is inside a volcanic tube emitted during Upper Pleistocene. Here appear four different levels (fig. 2).

The lower level (1) of light brown silty-mud could be related with ochre sands or El Quemado section, without pyroclastic grains and organic matter. However the dark brown sandy-mud level (2), rich in organic matter (17.18%) with coprolites of earth-worm shows a humid climate probably related with the "sol brun" of El Quemado. The presence of pyroclastic fragments, is related with the Holocene volcano of Bayuyo. The light brown-clay level (3) with fragmented land gastropoda contains abundant fossils of rodents. These rodents came later when human occupation occurred (4).

ARCHAEOLOGY

The archaeological works began in 1979 and have continued until the present day with a few interruptions. Five excavation works have been carried out inside and outside the cave, the latter was done to find the natural entrance and to facilitate future excavation works.

The cave (fig. 3) is 190 m. long. Only 16 m. of the western part is an archaeological zone. This is separated from the rest by a dry stone wall made without mortar and with a narrow gap.

Before excavation all that could be seen on the surface were circular and semicircular stone structures, loose stones from these constructions, abundant

archaeological matter related with technology and economy and finally a grave *in situ*.

As the cave is not very high and has irregular walls and roof, the excavation method consisted of marking a 0.50 m. wide passage through the centre of the cave in direction west to east. At both sides of the passage the space was divided into 2 m. long squares whose width depended on the distance from the cave walls. A testimonial space of 0.50 m. was left between each square. The squares on the right were assigned the letter A and those on the left the letter B. At the end of the cave a narrow space full of stones was discovered. This was not numbered and later, in 1983, was found to correspond with the natural entrance. This was cleaned out in 1987. During the 1979, 1980 and 1987 works the squares A1, A2, A3 and A4 were excavated. The floor of the volcanic tube is only visible in square A1 (The cross section in fig. 2).

In square A1, there is a semicircular structure next to the natural wall of the cave. This was formed by large and small dry stones. Its length is 1.70 m. and its width is 1.20 m. The thickness of the wall varies between 0.20-0.50 m. The structure of square A2 has the same characteristics, but its length is 2.50 m. and its width 2.10 m. In square A4 there is a structure with a semicircular tendency formed by a row of irregular and flat stones, these could have been used as chairs and they were surrounded by a wall which varied as much in height as width. In square A4 appears the only grave. It is that of an adult man and a child. It was done in an oval structure (fig. 4) of 1.50 m. by 0.70 m. (GARRALDA *et al.* 1981). The human remains are in poor condition.

The radiocarbon dates in vegetal coal are:

C.S.I.C. 554 - CV II,2 - Square A3. Surface level:
 1070 ± 50 B.P. (= 800 A.D.)
 C.S.I.C. 555 - CV II, 510 - Square A3. Level II:
 1260 ± 50 B.P. (= 690 A.D.)
 C.S.I.C. 556 - CV 401 - Square A2. Level II:
 1730 ± 50 B.P. (= 220 A.D.)

Consequently human occupation of the cave must have lasted at least 660 years. However, as the cave is not very comfortable it is probable that this occupation was not continuous.

In order to find the natural entrance to the cave in 1979 a 4 by 3 m. hole was cut (number 1) 25 m west of the artificial entrance. Here appeared abundant archaeological material. However the entrance was not found. Finally in 1982 the natural entrance appeared, after two more holes (2 and 3) had been made, it faces southwest. At the same time fireplaces were discovered made up of irregular charcoal marks of variable thickness. Radiocarbon dates are as follows.

Teledyne Isotopes New Jersey I-12, 411 ExVII-2339:
 1080 \pm 80 B.P. (=870 A.D.)
 Teledyne Isotopes I-12, 412, ExVII-2371:1350 \pm 80 B.P.
 (=600 A.D.)
 Teledyne Isotopes I-12, 413, ExVII-2390: 1390 \pm 80 B.P.
 (=560 A.D.)

Consequently it is certain that this site was occupied from 560 to 870 A.D. and was used as a home. As the remains (signs of fire inside and outside the cave, stone structures, pottery, tools, circular stone grinders, sea and land animals for food) indicate daily activity. It is difficult to know if human occupation was simultaneous inside and outside the cave or alternated between the two.

The cave's only grave in the stone structure of square A4 implies that this structure had lost its original function and could coincide with the closure of the cave.

The archaeological materials, in study, are numerous. Hand made pottery with ovoid, globular and simple concave forms, are rich and variable in decoration. The design (figs. 5 and 6) is geometrical and occupies about the upper half of each piece of pottery. The materials used for tools are basaltic stones, bones and molluscan shells. Hanging and other ornaments are also found.

Preliminary results of mammal studies (MECO et al. 1982) show that the remains of goat (Capra) and probably sheep (Ovis) are numerous, about a hundred individuals, half of them are kid. Remains of five individuals of pig (Sus), a small number of teeth and a third phalax of dog (Canis) and a humerus and left mandible of seal (Monachus, clasified with aid of Ch. de MUIZON) appear too (fig. 7).

Some different food remains are fish bones (Sparisoma, and others), a sea turtle's rib, and abundant molluscan shells (Patella, Monodonta, Mytilus, Spondylus, Thais, etc.). Finally there are some bird bones.

It implies a good use of natural resources, principally the sea, and the arrival of resources (cattle) with the first inhabitants whose impact on the environment is required to be evaluated (the rodent for example, in study by N. LOPEZ).

The palinology (in study by P. LOPEZ) and the relationship with other near sites of human occupation like the Cuevas de Huriane (HERNANDEZ and SANCHEZ-VELAZQUEZ, 1983) will contribute to our knowledge of the origin of the Canarian people and their paleoenvironment.

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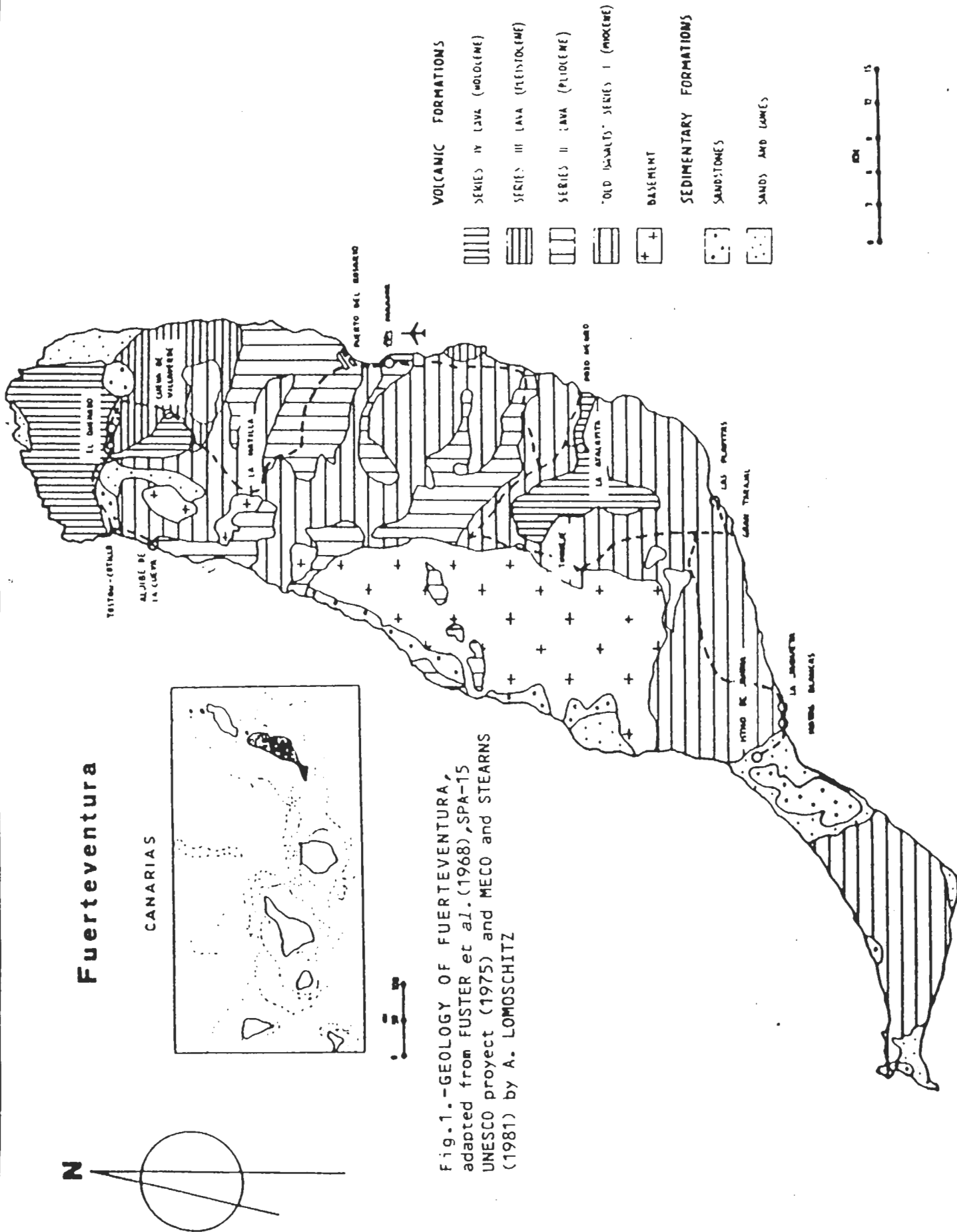


Fig.1.-GEOLOGY OF FUERTEVENTURA, adapted from FUSTER et al.(1968), SPA-15 UNESCO project (1975) and MECO and STEARNS (1981) by A. LOMOSCHITZ

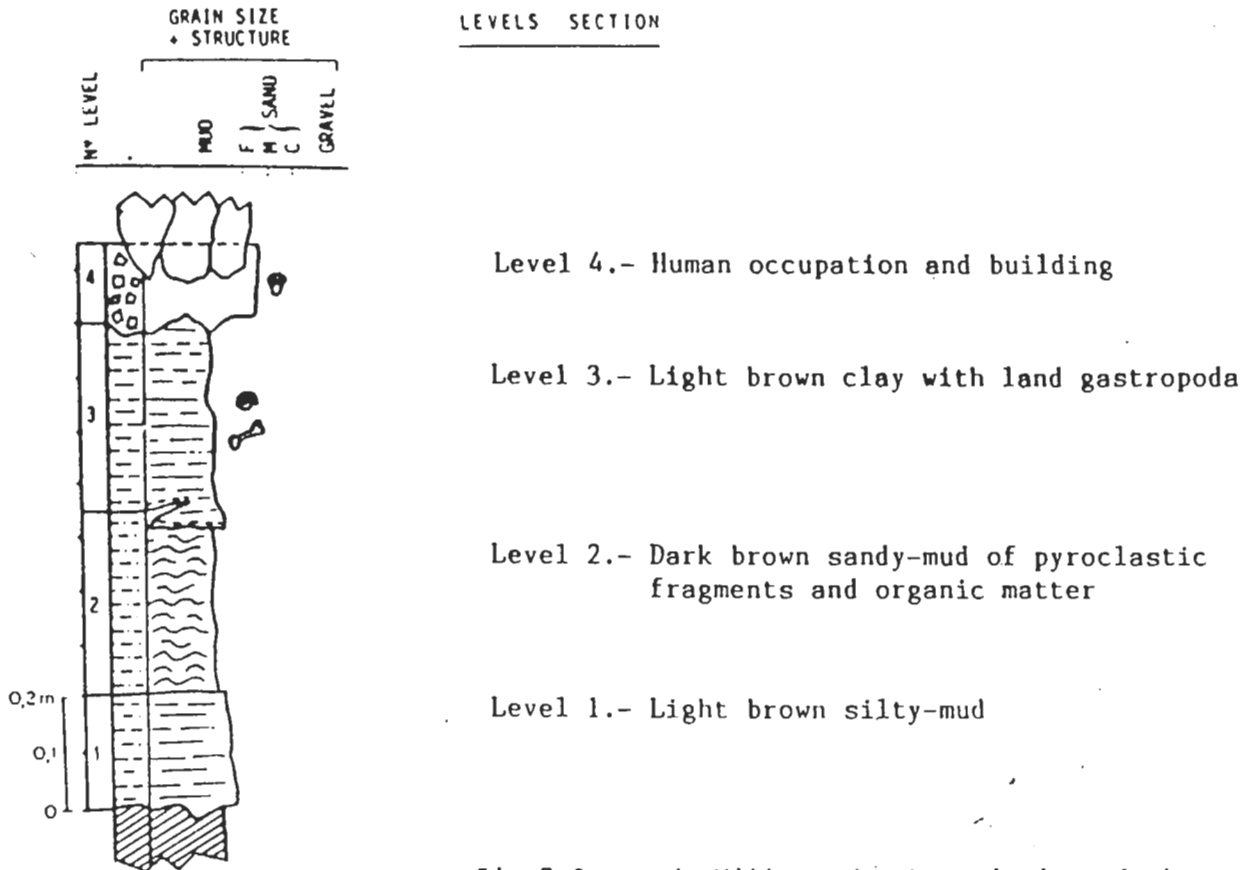


Fig.2 Cueva de Villaverde. Description of the Section.

Base.- Upper Pleistocene basalts, bottom of the volcanic tube.

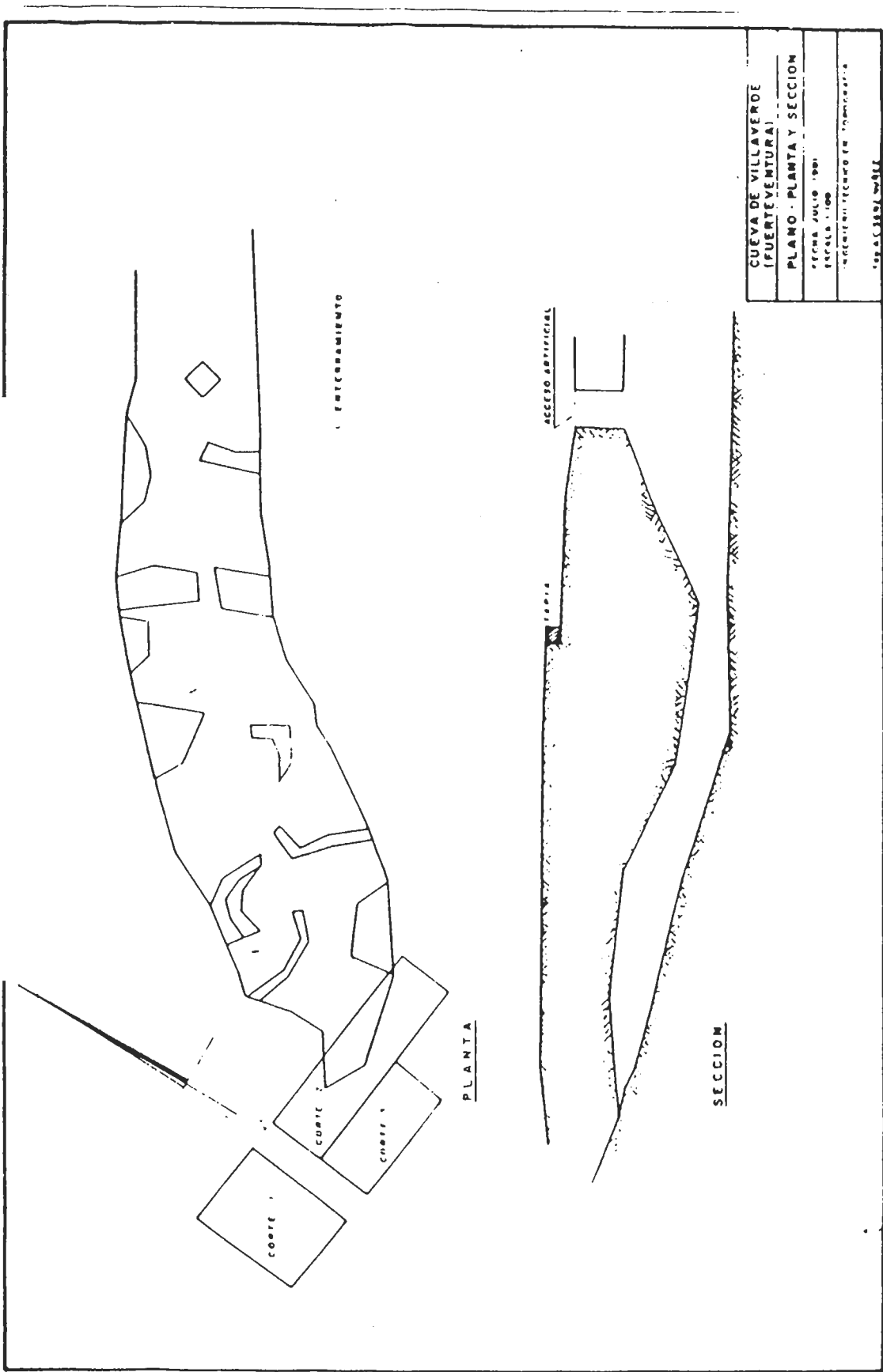
Level 1.- 0.2m of light brown silty-mud, flat laminated, with 54.85% of clay. pH is lightly acidic (6.54), very poor in organic matter (0.45%) and does not contain carbonates.

Level 2.- 0.3m of dark brown sandy-mud of pyroclastic fragments (Max. size=1cm and Mid. size=2mm) with 56.15% of clay and coprolites of *Oligocheta*. Lamination, lightly wavy, coprolites and efflorescent sulphates are due to postsedimentary processes. High content in organic matter (17.18%) and Fe oxides, pH is neutral (6.94) and does not contain carbonates.

Level 3.- 0.35m of light brown clay with fossil fragments (10%) of land gastropoda and rodent (teeth and bones), and basaltic grains (10%, Max size=0.5cm and Mid. size=3mm). A little bit sandy in the base, is in general very clayey (64.96%), pH is neutral (7.36), organic matter percent is low (4.92%) and carbonate content is low too. Lamination is flat.

Level 4.- Argillaceous filling 10-30cm thick with remains of human occupation (pottery, human bones, etc.) and human building.

Sedimentology.- Fine grain size, flat lamination and non-erosive surfaces show that the volcanic tube was refilled in three different phases of fluvial low energy currents and upper reworked by human occupation.



CUEVA DE VILLAVERDE (FUERTEVENTURA)
PLANO - PLANTA Y SECCION
FECHA JULIO 1991
ESCALA 1:100
INGENIERO TECNICO EN ARQUITECTURA
DR. A. J. J. J. J.

Fig.3.- Ground plan and section of Cueva de Villaverde.

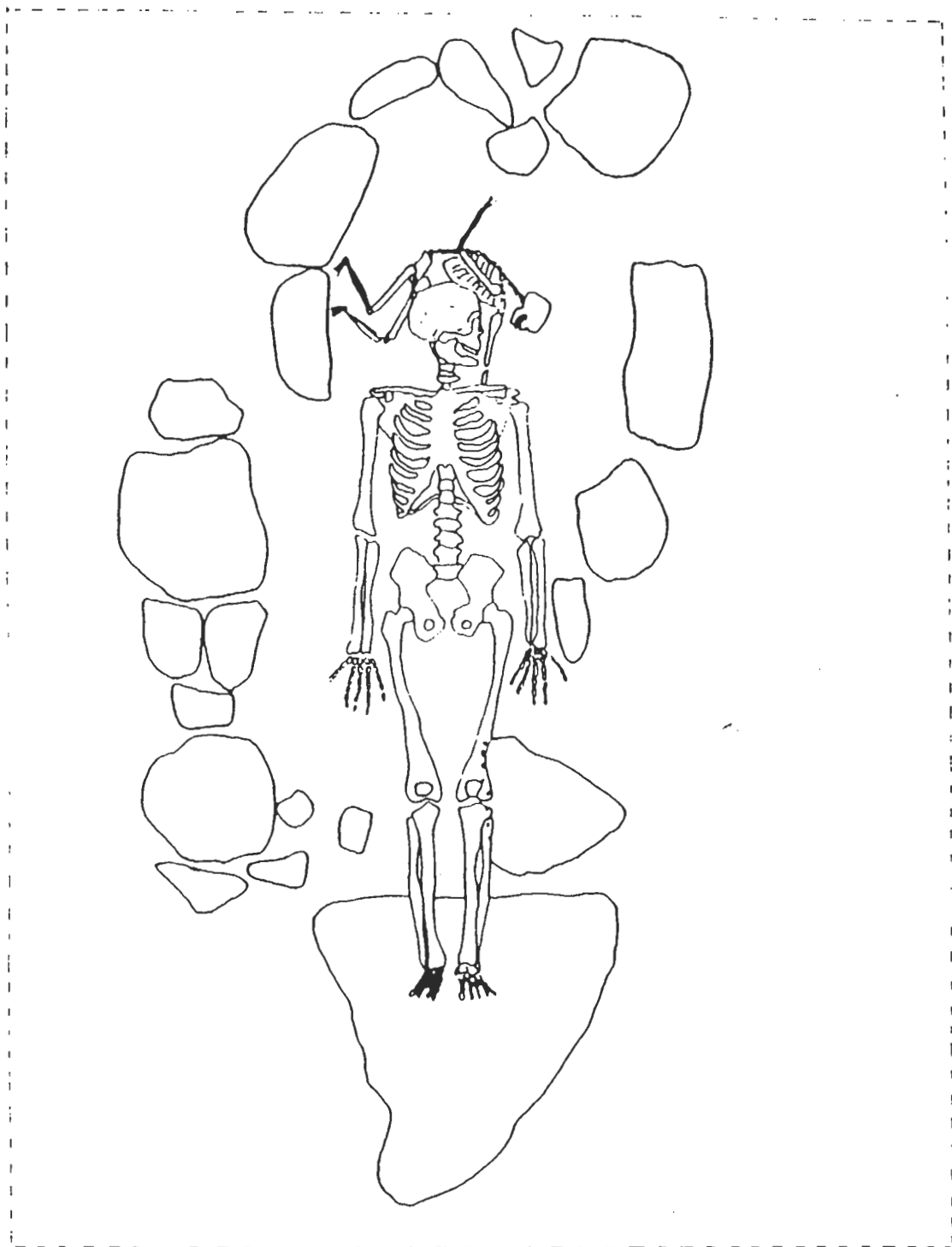


Fig.4.- Human grave of the Cueva de Villaverde (GARRALDA *et al.* 1981)

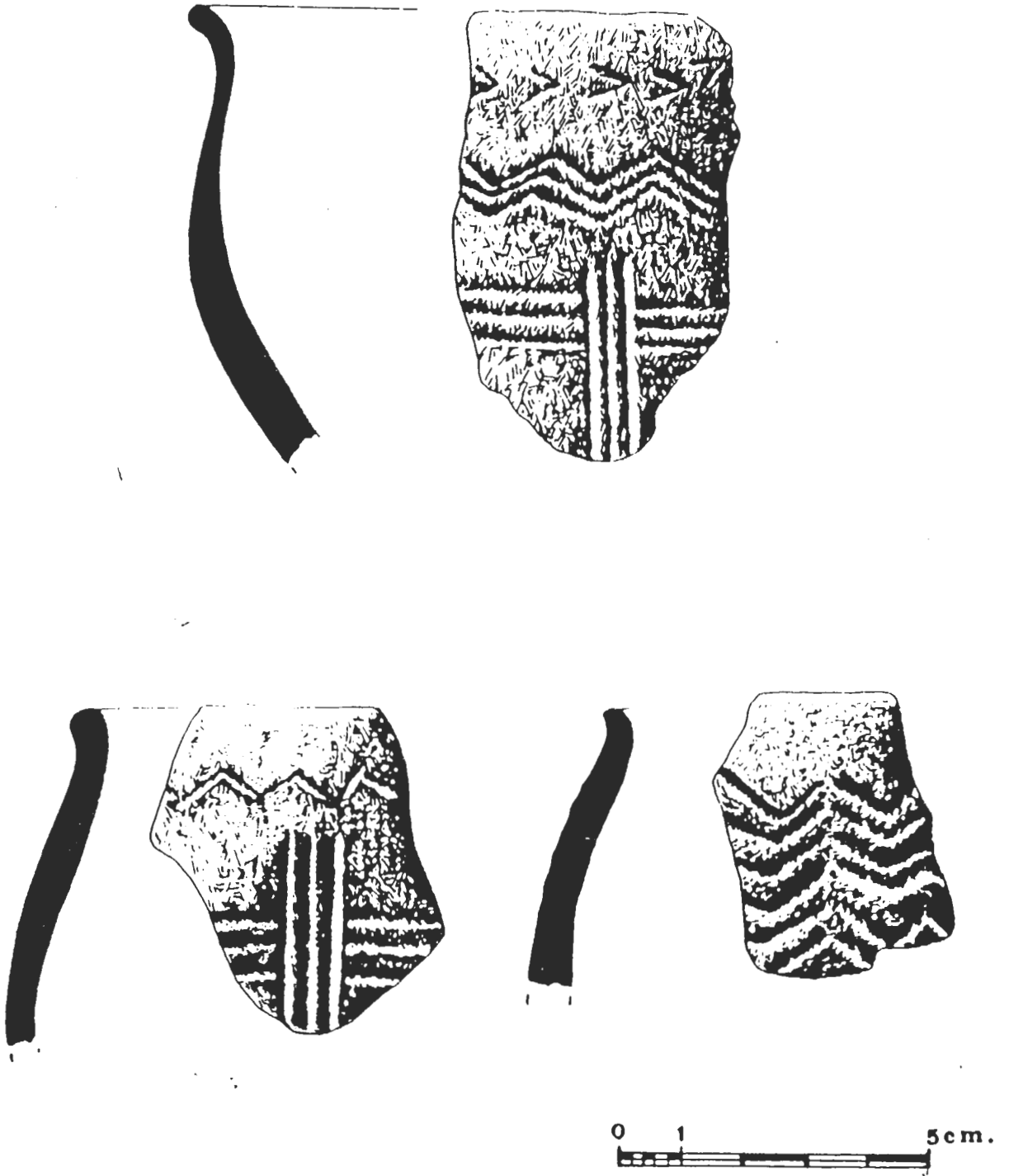


Fig.5.- Fragments of hand made and decorated vessels.

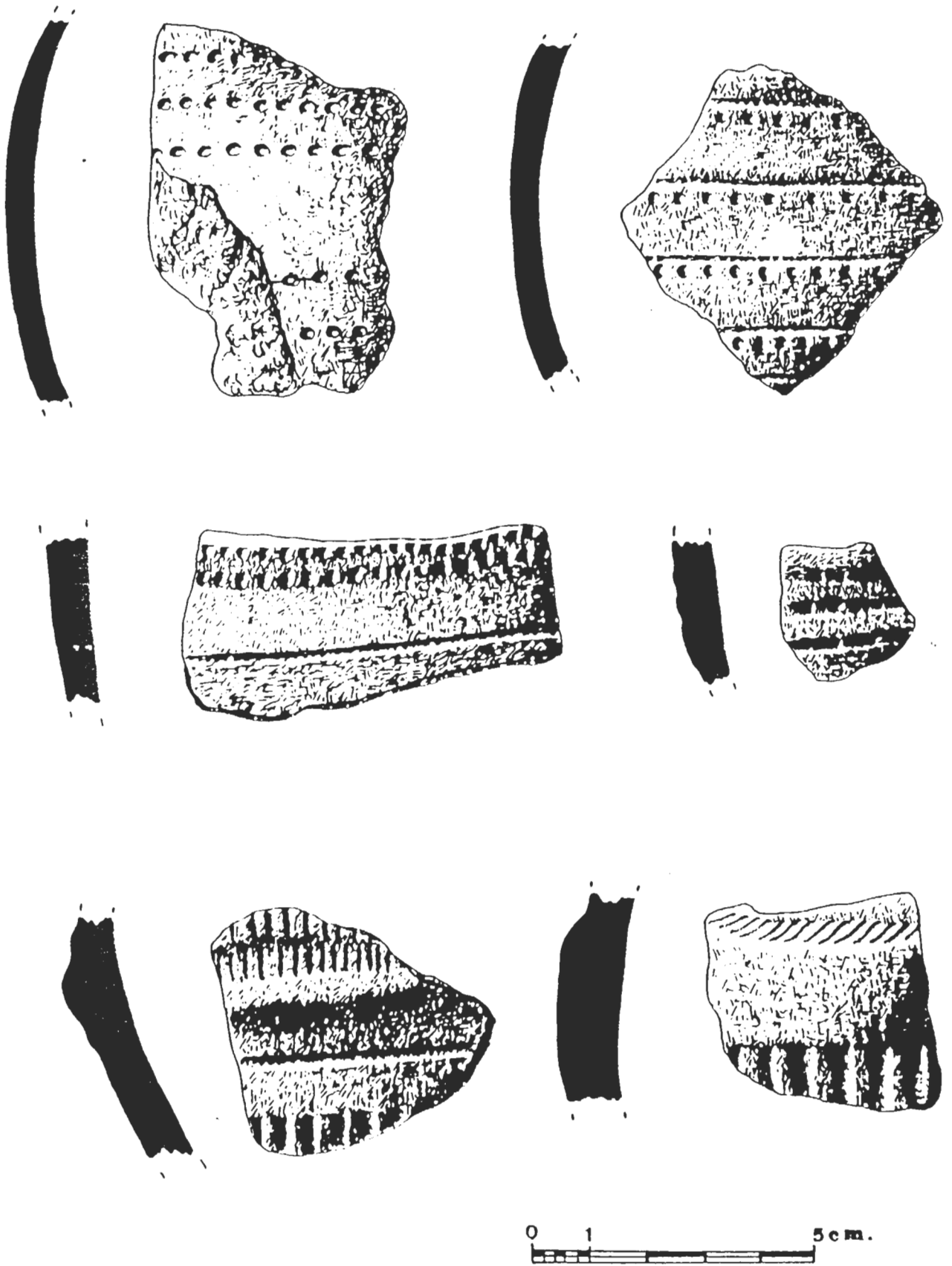


Fig.6.- Fragments of hand made and decorated vessels.

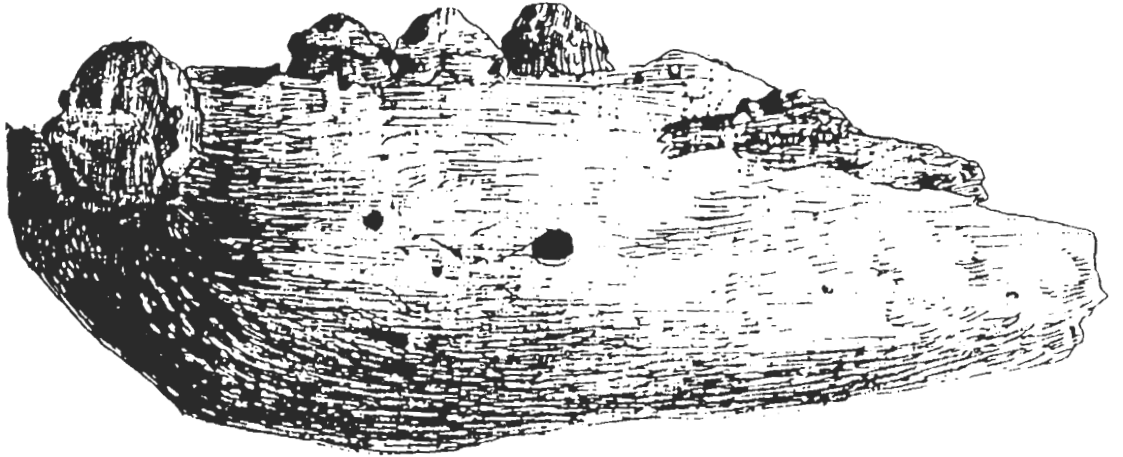


Fig. 7 = Left mandible of seal (*Monachus monachus*). It is the only rem known. Seals were numerous in Canary Islands and disappeared du the XV Century.