THE JOURNAL OF Egyptian Archaeology

VOLUME 58

AUGUST 1972

PUBLISHED BY

THE EGYPT EXPLORATION SOCIETY

3 DOUGHTY MEWS, LONDON WC1N 2PG

Price to non-members £5·00

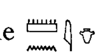
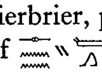
THE JOURNAL OF
Egyptian Archaeology

VOLUME 58

PUBLISHED BY
THE EGYPT EXPLORATION SOCIETY
3 DOUGHTY MEWS, LONDON, WC1N 2PG
1972

CONTENTS

		PAGE
Editorial Foreword		1
An Open Letter to Dr. Rosalind Moss	T. G. H. James	5
Excavations at Kasr el-Wizz: A Preliminary Report, II	George T. Scanlon	7
The Rock Inscriptions of Buhen	H. S. Smith	43
The Egyptian Name of the Fortress of Semna South	Louis V. Žabkar	83
Coffin Texts spell 313	R. O. Faulkner	91
The Letter to the Dead, Nagʿ ed-Deir N 3500	Hans Goedicke	95
An Early Egyptian Guide to the Hereafter	Dieter Mueller	99
Teeth and Bread in Ancient Egypt	F. Filce Leek	126
Zur Funktion des *sḏm·ḥr·f*	*Von* Friedrich Junge	133
Some Problems Relating to the Pwenet Reliefs at Deir el-Baḥari	Abdel-Aziz Saleh	140
Some Readings and Interpretations in Sundry Egyptian Texts	John W. B. Barns	159
Royal Bronze Shawabti Figures	Peter A. Clayton	167
Recherches sur quelques Scarabées de Ramsès II	Mostafa El-Alfi	176
Ramesses VII and the Twentieth Dynasty	K. A. Kitchen	182
A Second High Priest Ramessesnakht?	M. L. Bierbrier	195
Notes Concerning the Position of Arms and Hands of Mummies with a View to Possible Dating of the Specimen	P. H. K. Gray	200
Another Hieratic Manuscript from the Library of Pwerem Son of Ḳiḳi	Ricardo A. Caminos	205
Landmarks in Cushite History	B. G. Haycock	225
Eine neue Elefantengott-Darstellung aus dem Sudan	Inge Hofmann	245
Two Inscribed Objects in the Fitzwilliam Museum, Cambridge	John Ray	247
Two Demotic Memoranda	E. A. E. Reymond	254
Triremes and the Saïte Navy	Alan B. Lloyd	268
Major Macdonald, a Victorian Romantic	John D. Cooney	280
R. T. Rundle Clark's Papers on the Iconography of Osiris	John Baines	286
The Bibliography of Walter Bryan Emery	E. P. Uphill	296

Brief Communications: *Ḥmt* 'woman' as a feminine suffix, *by* R. O. Faulkner, p. 300; The meaning of the group  in the inscription of *Ḥr-wr-rʿ* (Sinai, No. 90, 8), *by* W. V. Davies, p. 300; A Middle Egyptian word for 'measure', *by* Dieter Mueller, p. 301; The  measure, by S. Aḥituv, p. 302; The length of the reign of Sethos I, *by* M. L. Bierbrier, p. 303; Further remarks on statuettes of Atum, *by* John Baines, p. 303; The meaning of  in Papyrus Harris 500, verso (= Joppa) 1, 5, *by* Stephan W. Gruen, p. 307; The so-called galleys of Necho, *by* Alan B. Lloyd, p. 307; The *Gm* of Memphis, *by* John Ray, p. 308.

PAGE

REVIEWS

E. J. BAUMGARTEL, *Petrie's Naqada Excavation, a Supplement* . . . . Reviewed by Barry J. Kemp . 311
J. VERCOUTTER, *Mirgissa I* . . . . . . Barry J. Kemp . . . 312
A. M. LYTHGOE, ed. D. DUNHAM, *The Predynastic Cemetery N 7000* . . . . Geoffrey T. Martin . . 315
I. E. S. EDWARDS, C. J. GADD, N. G. L. HAMMOND, ed. *The Cambridge Ancient History. 3rd edn.* . . . Geoffrey T. Martin . . 316
C. BLANKENBERG-VAN DELDEN, *The Large Commemorative Scarabs of Amenhotep III* . . . . . Geoffrey T. Martin . . 316
ELMAR EDEL, *Die Felsengräber der Qubbet el Hawa bei Assuan. II* . . . . C. H. S. Spaull . . . 317
T. G. H. JAMES, ed. *The British Museum. Hieroglyphic Texts from Egyptian Stelae etc. Part 9* . . . . C. H. S. Spaull . . . 319
W. HELCK, *Materialen zur Wirtschaftsgeschichte des Neuen Reiches, VI* . . . . C. H. S. Spaull . . . 319
K. A. KITCHEN, *Ramesside Inscriptions, Historical and Biographical* . . . . C. H. S. Spaull . . . 320
Studies in Honor of John A. Wilson . . . . . C. H. S. Spaull . . . 320
R. GIVEON, *Les Bédouins Shosou des documents égyptiens* K. A. Kitchen . . . 322
SARAH I. GROLL, *The Negative Verbal System of Late Egyptian* . . . . John Baines 324
S. SAUNERON, *Le Papyrus magique illustré de Brooklyn* . Kate Bosse-Griffiths . . 327
FAYZA M. HAIKAL, *Two Hieratic Papyri of Nesmin, Part I* R. O. Faulkner . . . 328
P. R. SWARNEY, *The Ptolemaic and Roman Idios Logos* J. David Thomas . . . 329
M. NALDINI, *Il Cristianesimo in Egitto* . . . . J. David Thomas . . . 330
R. E. WITT, *Isis in the Graeco-Roman World* . . J. Gwyn Griffiths . . . 331
G. GRIMM, *Die Zeugnisse ägyptischer Religion und Kunstelemente im römischen Deutschland* . . R. E. Witt 333
M. GRONEWALD, ed. *Didymos der Blinde: Psalmenkommentar*; J. KRAMER, *Kommentar zum Ecclesiastes* . S. P. Brock 334
B. V. BOTHMER and J. L. KEITH, *Brief Guide to the Department of Ancient Art* . . . . . . E. P. Uphill 335
Le Voyage en Égypte de Pierre Belon du Mans 1547 . E. P. Uphill 336
Other Books received 337

LIST OF PLATES

PLATE I — Dr. Rosalind Moss . . . . . . *Frontispiece*
PLATES II–XIII — Excavations at Kasr el-Wizz . . . *between pp.* 16 *and* 17
PLATES XIV–XIX — Excavations at Kasr el-Wizz . . . *between pp.* 24 *and* 25
PLATE XX — Rock Inscriptions of Buhen . . . *facing p.* 43
PLATES XXI–XXII — Rock Inscriptions of Buhen . . . *between pp.* 44 *and* 45
PLATES XXIII–XXVI — Rock Inscriptions of Buhen . . . *between pp.* 60 *and* 61

PLATE XXVII	Semna South	*facing p.* 84
PLATES XXVIII–XXXII	Teeth and Bread	*between pp.* 128 *and* 129
PLATES XXXIII–XXXIV	Royal Bronze Shawabti Figures .	*between pp.* 170 *and* 171
PLATE XXXV	Recherches sur Scarabées de Ramsès II .	*facing p.* 178
PLATES XXXVI–XLI	Papyrus B.M. 10288	*between pp.* 208 *and* 209
PLATE XLII	Graffito vom Tempel T300 in Musawwarat es Sufra	*facing p.* 246
PLATES XLIII, XLIIIA	Petubastis drawing-board and Gold decree-case	*between pp.* 248 *and* 249
PLATE XLIV	P. Fitzhugh D1 and D2	*facing p.* 256
PLATE XLV	From the Collections of Major Macdonald .	*facing p.* 284
PLATE XLVI	Necklace-Pendants in the Louvre . .	*facing p.* 308

TEETH AND BREAD IN ANCIENT EGYPT

By F. FILCE LEEK

SUGAR, especially refined sugar, has been blamed by many investigators for causing much of the dental disease which is so universal in modern times. Pathological changes in teeth and their surrounding tissues, however, are not confined to the present generation, as they are to be seen in all populations commencing with neolithic man.

This is especially true of the ancient Egyptians. Students of the human remains found in the Nile Valley have discovered, in the skulls they have examined, evidence of the presence of every pathological and non-pathological abnormality known today.[1] Yet sugar cane and other sources of refined sugar were unknown prior to the Arab conquest in A.D. 640. Honey was extensively used as a sweetener in that country, but its use would not have had the same deleterious effects upon the teeth.

Examination of ancient skulls taken from cemeteries dating from pre-dynastic until Ptolemaic times reveals the fact that the fundamental cause of dental disease at that time was widely different from the origin of dental disease in modern man. In the latter instance the disease is initiated by a breakdown of the enamel of the tooth, i.e. by dental decay. In ancient Egyptian skulls cavities in teeth are infrequently seen, but in all age-groups there is gross attrition, that is, wear on the biting surface of the tooth. This was frequently so extensive, even in early adult life, that the dental pulp became exposed. This tooth-forming tissue became infected in the course of time by pathogenic organisms and died. The infection then passed into the surrounding apical tissues, resulting in abscess formation.

Another type of dental abscess sometimes seen today is the result of inflammation causing the breakdown of the gingival tissues around the margin of the tooth.[2] In ancient times, this type of abscess formation was extremely common, but again for a different reason. Unequal wear of the biting surface of the teeth, due to the attrition, caused abnormal pressures on the supporting tissues during mastication. This led eventually to degeneration of the tissue and abscess formation. Thus in ancient times there were two types of dental abscess, apical and periodontal, the former due to the death of the pulp and arising at the apex of the root; and the latter due to the break-down of the supporting structures and arising at the side of the root. In both instances the abscess was initially due to wear of the biting surface of the tooth.

Attrition is seen today even in our western civilization, where food is so soft that only rarely does it require mastication to divide the particles before they are swallowed. Its

[1] Elliot Smith and Wood Jones, *Report on the Human Remains* (Archaeological Survey of Nubia. Report of 1907–1908, Cairo, 1910).

[2] H. H. Stones, *Oral and Dental Diseases* (Edinburgh, 1948), 254–62.

causes come under a variety of headings amongst which are, (1) hypoplasia; (2) habit; (3) lateral movement of the mandible; (4) skeletal pattern.

Hypoplasia is an imperfect development of the enamel. Even in early life this results in the loss of the highly calcified covering of the tooth. An example of habit is Bruxism, i.e. the unconscious gnashing or grinding of the teeth, often limited to sleeping periods but sometimes occurring during mental or physical strain. Tobacco and betel-leaf-chewing are both predisposing causes. The Eskimos, whose teeth are used for a variety of reasons not usual in our culture, are very prone to this condition. Another reason which can be included under this heading is the loss of masticatory surface caused by the premature removal of teeth, whereby additional strain is put on the remainder.

With regard to lateral movement it is quite clear from studies of comparative dental anatomy that in dentitions that exhibit no such movement of the mandible, attrition is non-existent. The tendency to lateral movement in man depends upon, first, the interlocking of the canines. The canine teeth are the longest in the dentition, both in the height of the crown and the length of the root, and consequently the strongest. The freedom of lateral movement of the mandible is lessened in proportion to the amount of interlocking of opposing canines. Secondly, the shape of the tempero-mandibular joint is a factor. This in early life prevents excessive lateral movement of the mandible, but muscular forces can exert pressures which will cause a remodelling of the surface, so allowing greater freedom.

Three relative positions of the skeletal pattern and their gradations are possible: (*a*) where the maxilla is anterior to the mandible; (*b*) where the maxilla is vertically above the mandible; (*c*) where the maxilla is posterior to the mandible. The position in the first section is that which prevails for the greater part in our western civilization, and little or no attrition arises. In the section where the maxilla is vertically above the mandible, and consequently the incisor teeth bite edge to edge even with modern soft diet, attrition can be surprisingly excessive. In the last section, which is the reverse of the first, and where the same lack of attrition might be expected, the teeth frequently do not articulate to advantage; much lateral movement is therefore needed for mastication, and attrition can follow. In African races, another incisor relationship is seen, a bi-maxillary protrusion, characterized by a forward inclination of the crowns of both upper and lower teeth. In such cases again occlusal wear can be marked.

Although there is a proportion of ancient Egyptian dentitions that exhibit all the needed characteristics to promote attrition, so many do not, that the explanation must be sought elsewhere. It has been suggested that the food eaten in those days could have been of a more fibrous nature, and this would have been a predisposing cause of the attrition. Since, however, the same degree of attrition seen on the teeth of the ancient Egyptians is not to be found on the teeth of other early populations eating a hard and fibrous diet, this hypothesis cannot be accepted. Again, occlusal wear is seen not only on permanent dentitions but also on deciduous ones, therefore the causative factor is one that is independent of the type of occlusion and one common to all ages.

In order to try to find an explanation for this phenomenon it was decided to examine any evidence that could offer any hope of revealing the causative factor. As bread is the basis of meals in most communities, its choice as the first subject of the investigation became apparent. This choice was helped by a paragraph in Ruffer's book, *Food in Egypt*, which reads,

> The most important food of the Egyptians was bread made of various cereals, wheat, barley, and possibly, as well from lotus seeds and dum-palm dates. The fondness of Egyptians for bread was so well known that they were nicknamed 'artophagoi', or 'eaters of bread'; it was the food *par excellence*, and the word was and has remained synonymous with food in this country. The most terrible curse was 'They shall hunger without bread and their bodies die.'

Later in the chapter, he wrote, 'Bread and oil formed the main food for the people. The troops and the King's messengers were given 20 deben (about 4 lbs.) of bread daily as rations, which was carried by numerous parties accompanying the march.'[1]

We were aided in this investigation, as indeed in many other inquiries that arise in Egyptology, by the scenes painted on the walls of a number of the tombs of the nobles at Thebes. Noteworthy examples are to be found in the tombs of Nakht, Menna, Sennedjem, and Rekhmirēʿ, nobles who lived during the New Kingdom period *c.* 1567–1085 B.C. Methods of sowing the grain, and of reaping the corn with a sickle mounted with flint teeth are to be seen, as well as the subsequent beating, threshing, and winnowing of the harvested grain.

Examples of the ensuing processes in bread-making, that of grinding the corn, mixing the dough, and baking the bread, are even more realistically presented, by examples of three-dimensional sculpture and wooden models, showing precisely the methods used. These statuettes are to be seen in Cairo and other world museums. In the Louvre, Paris, and the Rijksmuseum, Leiden, are examples of Middle Kingdom (*c.* 2134–1786 B.C.) moveable wooden toys, illustrating actions involved in the preparation of dough. Only the string is not original, and this, when pulled, moves the hinged joints of the models. Garstang, who excavated at Beni Hasan in Middle Egypt for three seasons from 1902, found a number of wooden models depicting methods of making bread and beer during the Twelfth Dynasty (*c.* 1991–1786 B.C.).[2] In the times of the earliest dynasties, ivory and clay were the materials used for the figurines, but by the time of the Fourth Dynasty these had been superseded by limestone, and many such figures are extant. During the First Intermediate Period and the Middle Kingdom many realistic wooden models of corporate scenes were made. The earlier limestone statuettes usually depicted a servant, man or woman, kneeling behind a stone slab with a bowl containing the grain resting between the legs. The servant is leaning forward grasping a hand-stone, and at the lower end of the saddle-stone is a groove into which the cereal falls as it is ground. The pose is both purposeful and efficient.

The most primitive method of crushing corn was the use of a hand-stone on a convenient stone or rock. This was followed by the use of a pestle in a suitable hollow, and undoubtedly the use of a mortar was a natural sequence of the idea. By the time of the Old Kingdom, saddle-stones were in vogue, and there are many wooden and limestone statuettes extant depicting servants using these. It is interesting to note that in parts

[1] Sir A. Ruffer, *Food in Egypt* (L'Institut d'Égypte, Cairo, 1919), 45–51.

[2] J. Garstang, *Burial Customs of Ancient Egypt* (London, 1907), 126–9.

of Africa such methods of grinding corn are still being practised. It is difficult to date the introduction of grinding by rotary or circular motion, for which credit is given to the Romans, but there are undoubtedly many querns existing in Egypt which can be reliably dated to Ptolemaic times. It is impossible to date the reuse of the Shabeka Stone (to be seen in the British Museum) as a nether millstone, but it could have coincided with or even preceded this era. Bedouin women in Sinai and monks in monasteries in Wadi Natrûn still use the hand quern, and larger querns rotated by donkeys or other animals can be seen in some country districts of Egypt. As might be expected, a wide variety of stone was employed for these purposes, and examples of granite, sienite, mica schist, quartzite, limestone, sandstone, and basalt have been reported. In Europe today French burr stone is a frequent choice for milling, as it is most resistant to wear, but such stone was unknown in ancient Egypt.

Since bread was so popular as food for the living Egyptian, it is not surprising that it was a common practice to place some in the grave of the departed to support life during the hereafter. It has been found in the graves of the common people, in the tombs of the nobles, and even in the tomb of the Pharaoh himself. Several pieces of bread were found by Howard Carter during his excavation of the tomb of Tutʿankh-amūn, placed there for the sustenance of the resurrected King.[1] It is not surprising that he also found a model of a hand-mill for grinding corn.

Because of the lack of humidity in desert necropolises a number of loaves and pieces of ancient bread have survived. These are distributed amongst world museums, but are of such rarity and interest that samples are not freely available for scientific investigation, more especially if destruction is involved in the process. It was fortunate that application to some museums had a positive response, and although these were not numerous, the samples covered a wide range of both date and site of origin. When some twelve samples had been received, it was considered that enough material had been collected to warrant an investigation.

Museum contributing sample	Origin of Bread	Age	Condition of sample
Ashmolean (England)	Badari	*c.* +3000 B.C.	Crumbled
Ashmolean (England)	Thebes	*c.* 1420 B.C.	Intact
Leiden (Holland)	Thebes	1567–1085 B.C.	Intact
Leiden (Holland)	Thebes	1567–1085 B.C.	Intact
Louvre (Paris)	Thebes	1567–1085 B.C.	Intact
Louvre (Paris)	Thebes	1567–1085 B.C.	Intact
Metropolitan (U.S.A.)	Thebes	*c.* 2050 B.C.	Crumbled
Manchester (England)	Deir el-Baḥari	2134–1991 B.C.	Intact
Manchester (England)	Gurob	1567–1085 B.C.	Intact
Manchester (England)	Sedment	2232–2052 B.C.	Intact
Royal Scottish (Scotland)	Qurnah	1550 B.C.	Intact
Turin (Italy)	Thebes	*c.* 1370 B.C.	Intact
Turin (Italy)	Thebes	*c.* 1370 B.C.	Intact

It was decided to include in the investigation some samples of modern bread obtained from various sources to act as comparisons:

[1] H. Carter, *The Tomb of Tut-ankh-Amen*. Vol. 3 (London, 1933), 212.

(1) English whole wheat stone ground; (2) as eaten by the *fellahîn* at the Egypt Exploration Society's excavation at Saqqâra; (3) coarse 'village bread' as eaten by the dogs at Prof. and Mrs. Emery's house at Saqqâra; (4) sample obtained from a Coptic monastery in Wadi Natrûn; (5) English modern white bread, plastic-packed. A microscopical examination of the ancient samples of bread was carried out, and almost every piece revealed on the outer surface a preponderance of whole grains of corn. The examination of a line of fracture in some samples revealed the presence in some, and the absence in others, of a cellular structure, whilst here and there were particles of mineral matter which reflected light. When fragments of the samples were softened and the result examined, it was seen that what appeared to be whole grains of corn were in fact only husks. This would seem to imply that the ancient methods of grinding corn by hand were more efficient than at first appeared. Such, however, is not the case, as during the passage of time, oxidization and other atmospheric effects, whilst not causing any visible change to the fibrous husks, cause a change of consistency of the enclosed endosperm. As a result of this change, when a sample of ancient bread is placed in water, the husks float out, and the changed endosperm is left in the sodden mass.[1]

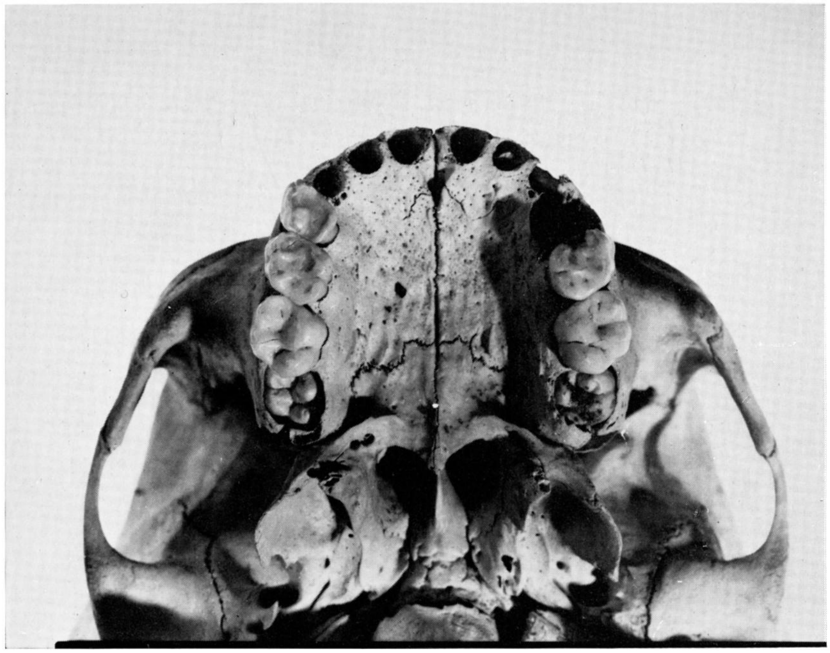
As nothing further could be gained by microscopical examination it was decided to make a radiological examination of the internal structure and the gross composition. This was carried out at King's College Hospital Dental School, London. Because normal X-ray techniques give rise to loss of definition, due to penumbra effects, an XX90 modified Cossler-Nixon fine focus X-ray tube was used. ×4 magnification, using Cronex 510 film, clearly showed the presence of inorganic particles in many of the specimens.

Stereoscopy showed that these particles were present within the substance of the bread and were not surface contaminants.

Result of Microradiographs

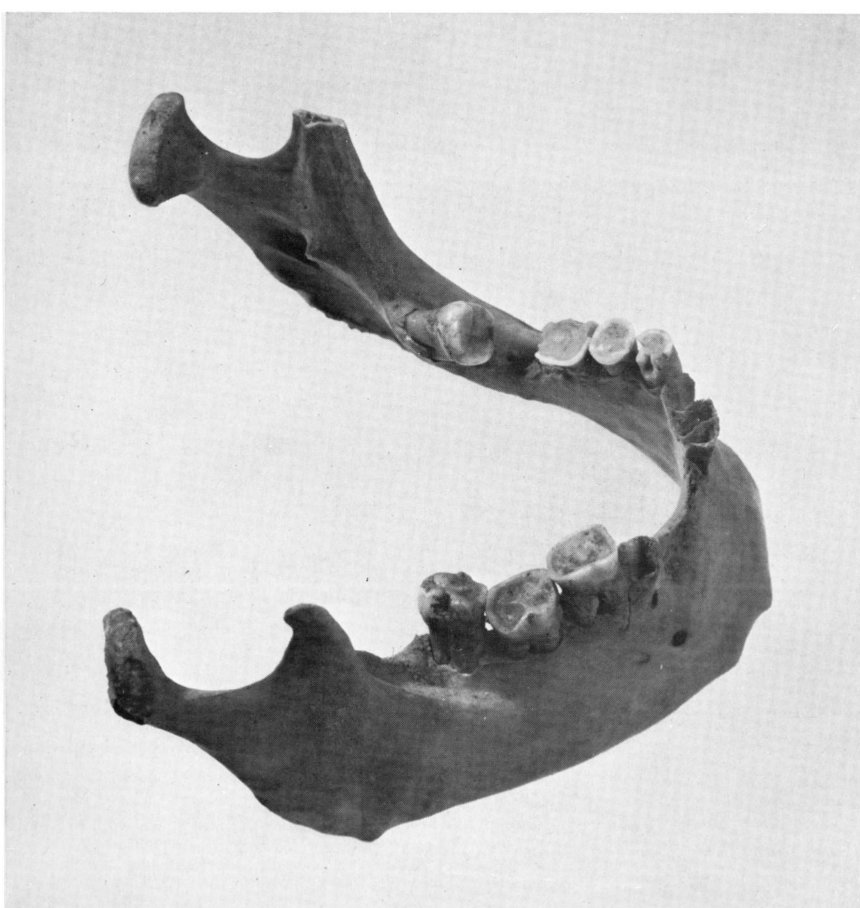
Sample	Inorganic fragments
Ashmolean	++++
Ashmolean	+
Leiden	++
Leiden	++
Louvre	++
Louvre	++
Metropolitan	++++
Manchester	+++
Manchester	++
Manchester	++
Royal Scottish	+++
Turin	++
Turin	++
English stone ground	Nil
Fellahîn's bread	++
Dog bread	+
Monastic	+
English modern white	Nil

[1] A. J. Amos (private communication).



1. The maxilla of a child, approx. 10 years old. Because of conical roots, the anterior deciduous teeth have no retention in their bony sockets, and have been lost post-mortem. The attrition of the remaining deciduous molar teeth, even at this youthful age, is pronounced. Giza, Ptolemaic

Courtesy of the Duckworth Laboratory, Cambridge

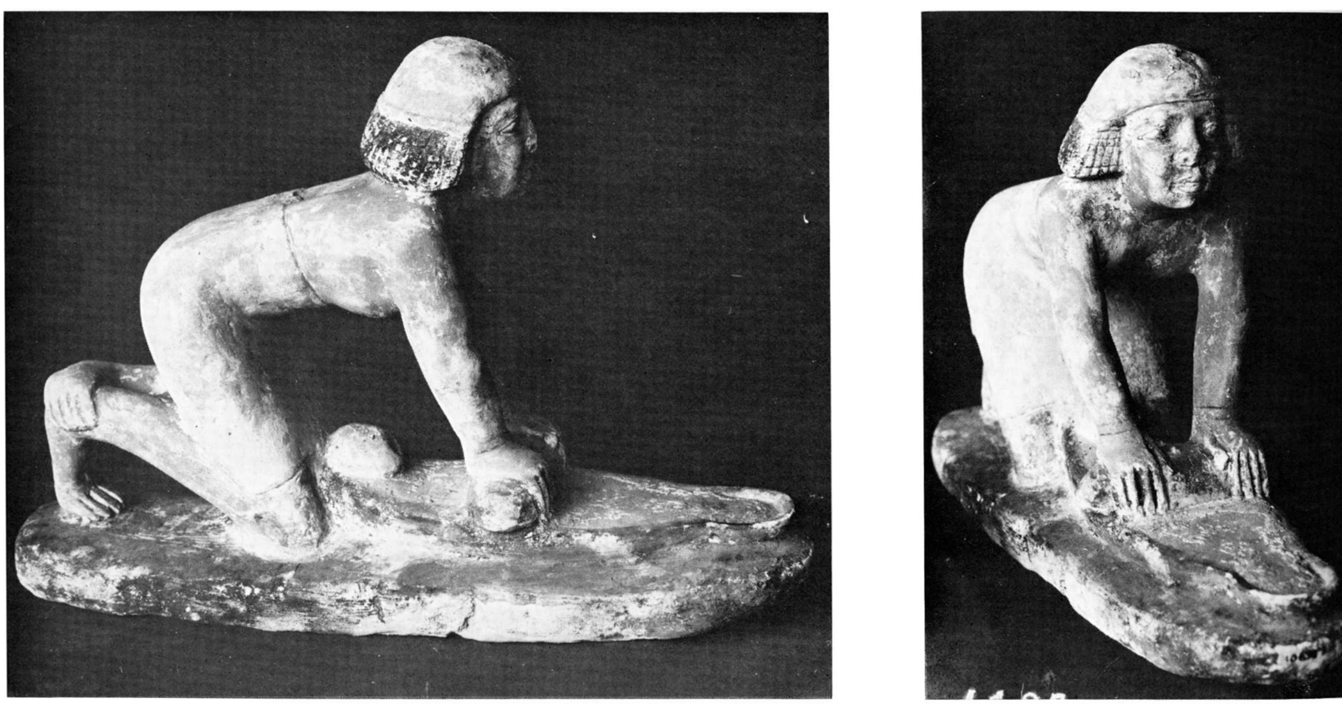


2. Mandible, showing gross attrition on all cusps. The thin alveolar bone in the anterior region suggests that the teeth in this area had been lost as the result of an accident, removing at the same time the outer alveolar plate. For other examples of attrition see *JEA* 52, pls. 11 and 12; 53, pl. 7. Giza, Ptolemaic

Courtesy of the Duckworth Laboratory, Cambridge

1. A primitive granite quern, still being used in a monastery in Wadi Natrûn

Courtesy of Violet D. Macdermot



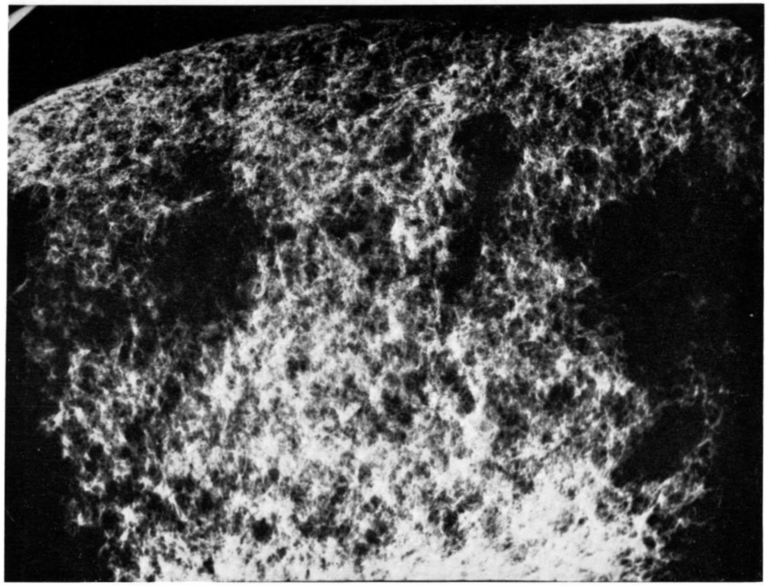
2. Old Kingdom limestone statuette of a woman servant making dough. Part of the Nanupkan group

Courtesy of the Oriental Institute, Chicago

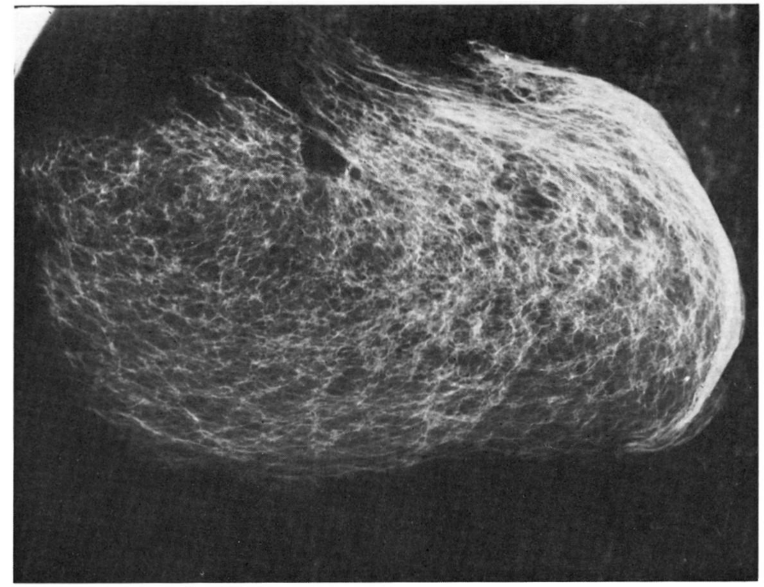
1. Fifth Dynasty wooden model of a servant woman crushing corn
Courtesy of Manchester Museum

2. Old Kingdom limestone statuette of a man servant making loaves
Courtesy of Rijks Museum, Leiden

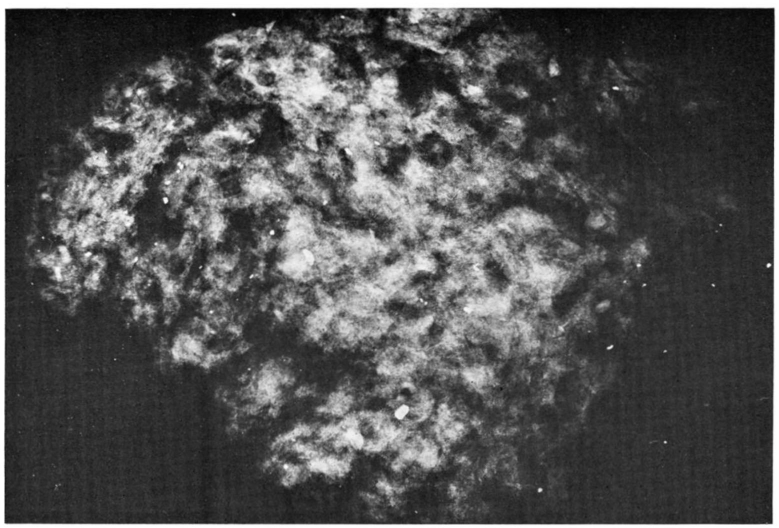
TEETH AND BREAD



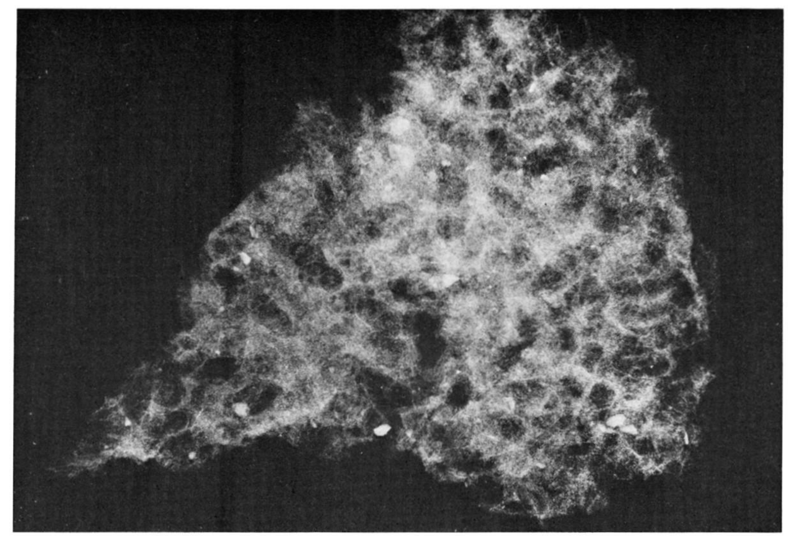
1. English home-baked whole wheat, stone-ground flour



2. English modern white, mass-produced



3. Sample from Thebes, New Kingdom, Leiden Museum

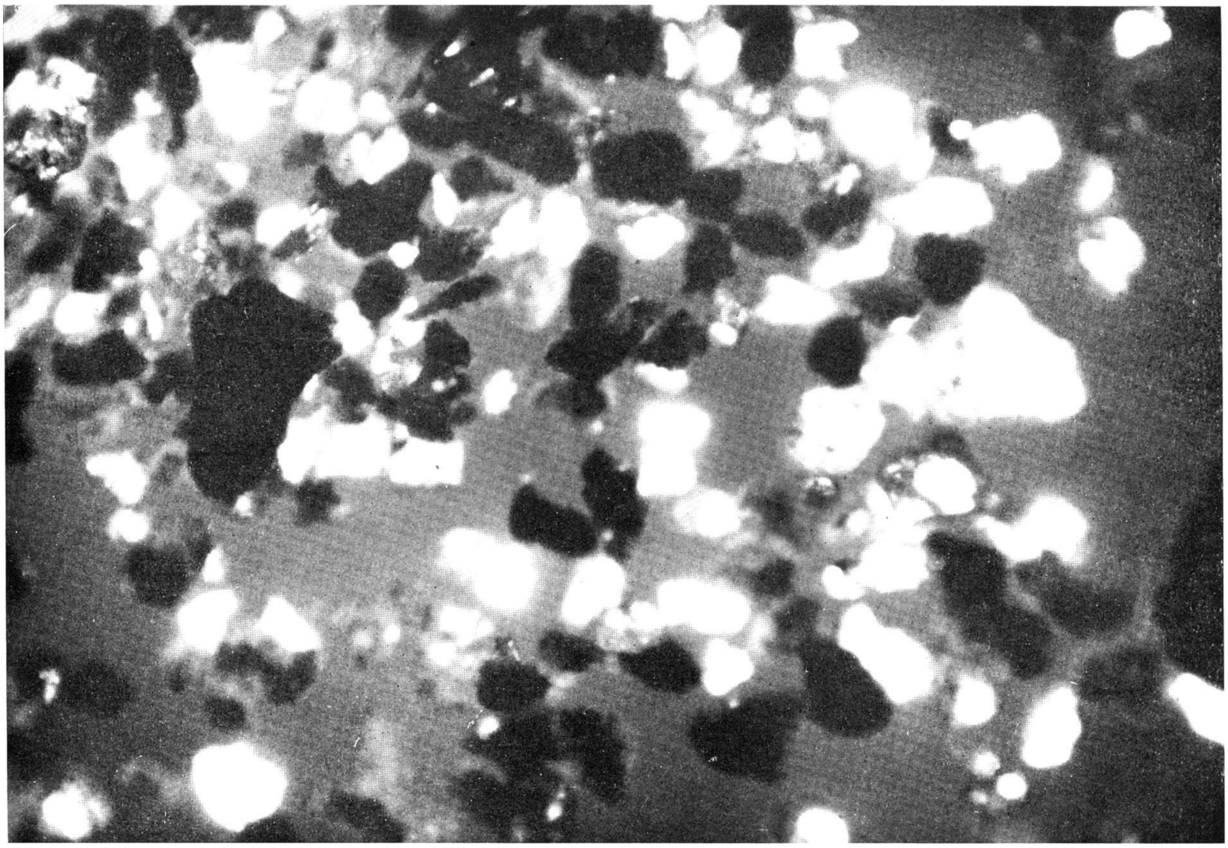


4. Sample from Sedment, 1st Intermediate Period, Manchester Museum

Courtesy of King's College Hospital Dental School

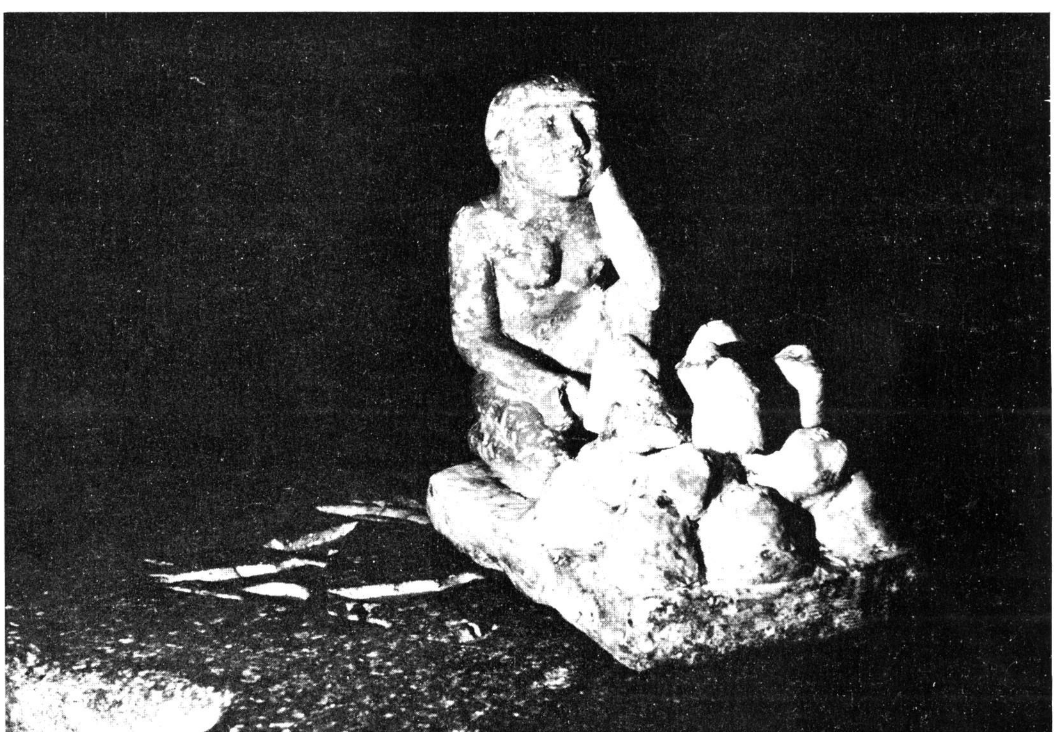
X-ray photographs of bread samples taken with modified Coslett–Nixon fine-focus tube

TEETH AND BREAD



1. Collection X 105 of inorganic residue with rounded and sharp-angled fragments recovered from Theban sample, New Kingdom, Leiden Museum

Courtesy of the Lord Rank Research Centre



2. Coloured limestone statuette of the Fourth Dynasty, recovered by Steindorff in Giza, 1905. Baker with loaves in front of fire. The pose suggests thoughtfulness, possibly prompted by fears that his product may be contaminated

Courtesy of Cairo Museum