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DID A DENTAL PROFESSION EXIST IN ANCIENT EGYPT DURING THE 3RD MILLENNIUM B.C.?

As Professor Ghalioungui has intimated,¹ my studies of the dental pathology revealed in collections of ancient Egyptian dry skulls have caused me to reject the current belief that an organized dental profession existed in the time of the Old Kingdom. The arguments I have adduced to support my contention have been set out in a series of articles published during the past few years.² However, since the publication of Ghalioungui's reappraisal of the subject, I have devoted further study to the philological and other supporting evidence which is quoted by the advocates of the hypothesis that an ethical dental profession did in fact exist.

As Ghalioungui so rightly points out, the interpretation of Old Kingdom hieroglyphs is a subject that can be debated only by philologists. Unfortunately there are but few scholars who specialize in Old Kingdom hieroglyphs and these appear to be divided into groups accepting the tenets of one or other of previous scholars. So the scholars who follow the lead of Junker, are prepared to accept his reading of the Old Kingdom hieroglyph of the elephant's tusk as representing a human tooth, and from that continue to agree with him when he avers that the elephant tusk sign joined to the hieroglyph representing the royal household should be understood as indicating the holder of an appointment of dentist to the Pharaoh.³

On the other hand, there are philologists of equal eminence, Kaplony *et al.*, who are unable to accept this rendering,⁴ as on some monuments this title is associated with others which in the context would be inconsistent, and who therefore prefer to translate the symbol of the elephant's tusk as a reference to an office of state.

Objects made of elephant ivory were in daily use at that period of Egyptian history and so there must have been dry skeletons of elephants to be examined especially in the southern outposts and the possibility of an observer appreciating the relation of a tusk to a human tooth. Nevertheless, I cannot accept the idea that the ancient Egyptian knowledge of comparative dental anatomy was so highly developed that the people could equate the huge ivory tusk of the *Loxodonta africana* (measuring as much as 11 ft. long and weighing some 250 lbs.) with a counterpart in the human dentition. Still less is it easy to believe that in the earliest days of ideograms, in spite of possible associated phonograms, that the elephant's tusk should be used to represent the human tooth and during the same era to be used as the symbol of a specialized healing profession.

It is hoped that by pin-pointing this difference of opinion scholars might be encouraged to devote further study to the problem, and a more firm conclusion be reached.

There are two further items of evidence to support the belief in the existence of a dental profession. One arose from the observations made by A. E. Hooton after his examination of an Old Kingdom mandible exhibited in the Peabody Museum at Harvard University.⁵ This mandible showed two so-called 'borings' from the external part of the alveolar bone to the apices of the first molar. If Hooton had been able to study the dental pathology revealed in the large collections of dry skulls in European

museums, his conclusion might not have been that the evidence of this one specimen 'seems to establish beyond all reasonable doubt the existence of a rudimentary knowledge of oral surgery'. These canals occur so frequently and in so many different positions and related to every tooth in the dentition, that they are obviously sinuses caused by the dissolution of the bone by pus, subsequent to infection of the apical regions of a tooth after the death of the dental pulp. This infection invariably arose, not from caries as it would at the present day, but from irritation and/or exposure of the organ by attrition.

The second piece of evidence used by the adherents to the hypothesis, is the existence of an alleged dental prosthesis, in the shape of two teeth joined together by gold wire. This was found by Junker when he was excavating at Giza in shaft No. 984. In the rubble surrounding the remains of a skeleton were found two teeth joined together by gold wire twisted into a figure of eight, and with further twists of wire around the constriction of the loops. Junker's initial conclusion, published in his first report in 1914, was that the gold wire had been used after death, during mummification, to join the two teeth together. He later received and accepted the conclusions of Professor Euler,⁶ who made an examination of the teeth at the request of the Director of the Roemer-Pelizaeus Museum, Hildesheim, where they are housed. Briefly, after a detailed examination Euler concluded that although the teeth were not found *in situ*, nevertheless the wire had been twisted round the two teeth during the life of the patient, in an endeavour to retain in its place the more distal tooth, which had lost its roots through pathological absorption. His arguments are exhaustive and convincing to the lay reader who can have no knowledge of the operative procedure involved, and who could learn little from the photograph which accompanied the text.

Through the courtesy of the Director of the Roemer-Pelizaeus Museum the writer has now had the opportunity of making a complete and detailed examination of the object.

Unfortunately, since it came to the Museum, the junction of the two loops of wire has broken. As it is now, the double loop of wire remains around the gingival margin of one tooth, and with it the uniting twists of wire, whilst the other loop of double wire remains in the same position around the gingival margin of the second tooth. As these teeth are now separated, examination is greatly facilitated, and far more is revealed than at the time Euler made his conclusions on the subject.

The following is a summary of my findings—

1. There are now no accretions whatsoever around the gold wire* as reported by Euler. This is particularly unfortunate, as it is now impossible to ascertain whether the accretion was an organic deposit—i.e. a deposit from the saliva—or an inorganic one, consisting of a concretion formed by association with various mineral salts that were present in the substance of its immediate resting place in the shaft.
2. The pronounced attrition on the occlusal surface of the tooth with the completely absorbed roots has so changed the gross anatomy that it is quite impossible to assign its place in the dentition.

* The gold wire is 0.35 mm in diameter. Its tubular construction is demonstrated by the seam along its length. Magnification x8 of some of the fractured ends revealed its central bore.

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3. The dark grey colour of the enamel of this tooth indicates that the irritation caused by attrition created an inflammation of the dental pulp which resulted in its necrosis. This condition is frequently associated with pain which, combined with the discomfort arising from the tooth's mobility, would certainly have caused a great desire for its removal. And such was the absorption of the roots that the tooth could indeed have been dislodged with minimal lateral pressure.
4. Several twists of the wire had been made around the junction of the two loops. My experience as an oral surgeon for more than a decade makes it impossible for me to accept the theory that this wire had been twisted round the teeth during the lifetime of the patient. The problem of access to the teeth would have prohibited such a knot. If the retaining twist had been made on the anterior buccal side of the more anterior tooth of the two, the assumption would have been acceptable.

I can appreciate much of the reasoning that led Euler to conclude that this wire was applied in order to retain a mobile tooth in position in the mouth, but I am convinced that this reasoning is based on a false premise. Consequently, I cannot accept the hypothesis that this specimen is an example of Old Kingdom dentistry.

It should be pointed out too, that no examination of skulls from any period of pharaonic Egypt has revealed instances of surgical interference to prevent the pathological sequence of dental disease—and this includes examinations made by Sir Marc Ruffer and other palaeopathologists. There are a few cases to be seen where teeth have been lost ante-mortem. Because of the condition of the tooth supporting tissues, it is obvious that osteomyelitis was the predisposing cause, but in the remainder, the condition of the healed sockets provides no clue or reason for their absence. This however cannot invalidate the above findings.

In spite of the fact that I can so far find no acceptable evidence to support the theory that an organized dental profession existed in those days, my admiration for the advanced status of Egyptian arts and sciences makes me hope that one day the proof of such an assumption may be revealed.

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