

On magnetic grounds it is most likely that the Ipswich Kiln I lies midway between these two structures, but within the 95% limit of confidence it is just possible for it to be contemporary with either.

### *Comment*

The archaeomagnetic data obtained was of great value in itself in indicating (it was sampled before Torksey and Christ Church) the large Easterly Declination in the period concerned. If better dated structures in this period can be found for archaeomagnetic sampling, then it will be possible to ascribe a date to Ipswich I (as well as to Torksey and Christ Church), perhaps to  $\pm 20$  years.

The same would apply to the other four kilns on the site, had it been possible to sample them. This would have put Ipswich ware and Thetford ware in chronological relation, with perhaps an indication of the duration of each. These other four kilns represent therefore a regrettable lost opportunity for archaeomagnetic dating in this period and for extending our knowledge of the past behaviour of the earth's magnetic field in general.

## THE HUMAN SKELETON

by CALVIN WELLS, F.R.A.I., PH.D., M.R.C.S., L.R.C.P.

### *General Observations*

The remains are those of a male aged  $32 \pm 5$ . The skeleton is almost complete and well preserved. The skull is mesocranial with a Cranial Index of 75.1. All teeth were present at death except the mandibular left first molar which was lost during life. Dental caries is absent but attrition is heavy and the teeth are encrusted with tartar. Stature can be calculated to be about 1,692 mm. (5 ft.  $6\frac{1}{2}$  ins.).

The bones of the skeleton as a whole are lightly built but substantial muscle attachments have been developed throughout the body. A general impression is given of a lithe physique with strong muscles.

### *Physical type*

It is not possible on physical characteristics to assign this individual to any specific period. He could be duplicated, apart from personal idiosyncrasies, among the modern population of Suffolk. Certain features of the Iron Age-Romano-British transition period are found but on balance the skeletal characters point most strongly to a Late Saxon or Early Mediaeval time—especially the latter.

*Pathology*

Moderately severe osteophytosis is present on the 4th and 5th lumbar vertebrae.

*Congenital anomalies*

The atlas shows an interesting congenital abnormality (Plate XLIII). The posterior arch is wholly lacking on the left side and postero-medially on the right side as far forward as the sulcus arteriae vertebralis. The rest of the bone is normal and well formed. Presumably associated with this the axis is also deformed. The laminae are strongly fused posteriorly, not at all bifid, and a substantial process or tubercle of bone rises from the left one towards the space left vacant by the defective posterior arch of the atlas.

*Injuries*

The skull (Plate XLIV) shows a fracture extending from the base of the zygomatic process of the left temporal bone, up through the vertex and almost symmetrically down to a similar level at the base of the corresponding process of the right temporal bone. The upper part of this wound, about 63 mm. in length, has been cleanly cut on the fresh bone by a sword or similar weapon. The lower parts are extensions of the fracture beyond the limits of the incision.

Although it is a severe wound there is no doubt that it need not have been immediately fatal. It is clear, however, from its appearance that, in fact, death quickly supervened: not the slightest trace of healing is present.

A wound such as this in which the blow fell almost vertically downwards on to the summit of the skull is not easy to inflict unless the aggressor is on a higher level than the victim. This raises the question as to whether the victor might have been on horseback. Alternatively it is possible that before the blow fell the victim had already been brought to his knees. It is important, therefore, to look for evidence which might resolve the problem.

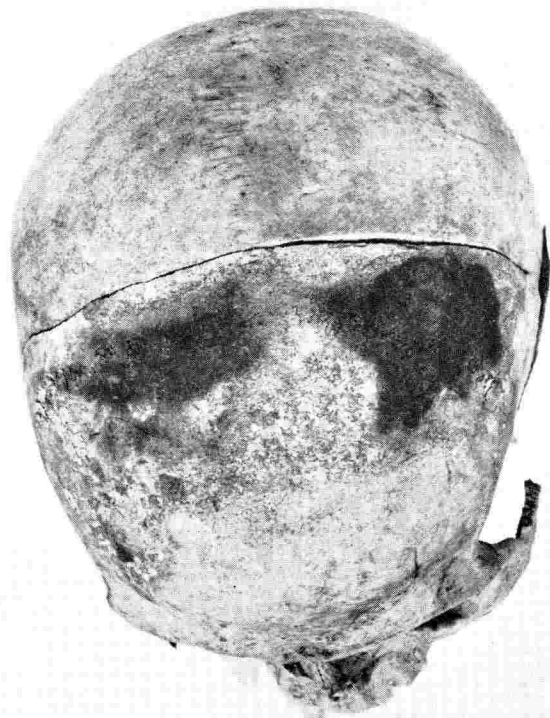
The left femur (Plate XLV) provides the answer. This bone has a small cut on its antero-lateral surface a little more than half-way down it. It is typical of a sword cut and is interesting because it was delivered slightly obliquely from below upwards. A blow in this direction can be landed on an adversary's left thigh by a right handed opponent swinging a sword under his guard and sweeping upwards thereafter. It would sever the two main elements of the quadratus femoris muscle which is the paramount extensor of the leg. With these muscles severed a standing man drops to the ground and this may well have been the first step in the destruction of our present victim.

PLATE XLIII



Atlas and axis.

PLATE XLIV



Skull, showing sword cut.

PLATE XLV



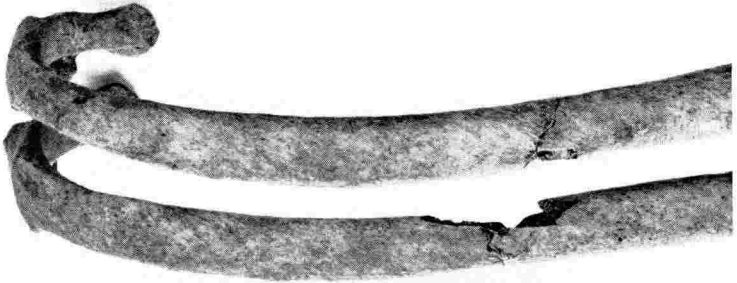
Left femur.

PLATE XLVI



Left innominate bone.

PLATE XLVII



Eighth and ninth ribs.

PLATE XLVIII



Right scapula.

PLATE XLIX



Ulna and radius.

This particular femoral injury is one which commonly results when a foot soldier attacks a mounted man. Many examples of it were found among the remains of those who fell at the battle of Wisby (1361). If the foot soldier is standing on the left of the horse's head—which is the side where he *tries* to position himself—a blow aimed at the rider is very likely to fall in just the position we find on this specimen. (Position 15 in Figure 177 in Inglemark, B. E., 'Skeleton finds from the warrior graves outside Wisby'. Uppsala, 1939. But in this Figure, the equivalent position on the right femur is shown).

The result in terms of leg function is identical, however. Extension becomes impossible, no counter-thrust against the stirrup can be obtained and the victim is easily toppled or dragged from his mount. Which ever way we reconstruct the event we now have our subject on the ground and his assailant could certainly have inflicted the vertical wound on the vault of the skull. Some further support for the suggestion that he may have been wounded whilst on horseback is given by a curious wound of the anterior part of the left iliac bone, immediately below the anterior superior iliac spine (Plate XLVI). This wound, though perhaps not of great consequence to him, must have injured if not entirely severed the sartorius muscle and also have cut the inguinal ligament. Wounds in this position are commonly sustained by mounted men.

Apart from the nature of these injuries it is interesting to look for any other evidence which might suggest that this man was accustomed to ride horses. Three items emerge. Firstly, small squatting facets are present on the distal articular surfaces of both tibiae. These, despite their name, can be produced by other occupations than squatting. Riding is one. But the evidence here is slender and must not be pressed too far. Secondly, when we examine the right leg we find that at some earlier time this man sustained a fracture of the proximal end of the fibula. It healed soundly but as a result of the break some tearing occurred in the crural interosseous membrane which unites the tibia and fibula; this produced an extravasation of blood and we can now recognise the injury by the ossification which extended into it from the distal lateral surface of the tibia. This fracture and the ligamentous tear could well have been caused by being thrown from a horse. But as other types of fall could also have produced the same effect it is worth noting that, in fact, the injury looks very like one which is the result not of a fall but of a direct blow. A mounted man (if he is right-handed) usually tries to bring the right side of his horse up against an adversary and wounds of the right leg are, therefore, more common than those of the left. It is possible, but of course not certain, that this fracture followed a blow on the leg in just this way in some earlier engagement. Thirdly, a stronger piece of

evidence is found in the left femur (Plate XLV). Here, at about the same level as the sword cut, on the posterior surface close to the *linea aspera* there is a small, craggy outgrowth of bone which is obviously pathological. At this point some fibres of the *vastus lateralis* muscle and of the short head of the *biceps femoris* take origin. Tearing of the fibres of these muscles and their adjacent *fasciae* and underlying *periosteum* is a characteristic injury of riders. The *exostosis* to which it gives rise has long been known as the 'Rider's bone' and although our present example is slightly more lateral than the commonest type (which is usually produced by tearing of the *adductor* muscles) there is little doubt that it could have been produced in the same way.<sup>12</sup>

It seems possible, therefore, that this man was a regular horseman and this increases the likelihood that he met his end in a cavalry foray.

So far, however, we have not yet determined the cause of death since there is a fair possibility, as we have seen, that the cranial wound, though severe, may not have been immediately fatal. Although I have spoken of this as falling vertically on the upper parietal region close inspection shows that it was delivered with a very slight (perhaps 10 degrees) forward slant. This, in a man with one useless leg, would be sufficient to throw him forward, face down or on his hands and knees. He then becomes catastrophically vulnerable. His back is now uppermost and we ought to look for a wound which could be inflicted in this position. A first choice is the neck and here we find that, although no injury to any of the cervical vertebrae can be detected, the fifth one is missing. It is possible, though perhaps unlikely, that a sword-cut could have damaged this one bone and thereby led to its post-mortem disintegration and subsequent loss. (The only other missing vertebra is the third lumbar).

The blade of the right scapula is also defective and although the damage as we now see it is obviously recent it may be that this is an extension of some ancient wound no longer detectable.

Finally we must examine the ribs. On the left they are all present except the twelfth. Six are fractured but each is a recent break probably done at the time of excavation. All twelve of the right ribs are present and on this side two of them are broken—the eighth and ninth (Plate XLVII). But here the appearance is quite different. The eighth shows a clean, sharp cut into its inferior margin about half-way along the body of the rib. The ninth also shows the remains of a clean cut, inflicted when the bone was fresh, half-way along its superior border. The injuries to the two ribs correspond precisely and are clearly the result of one

<sup>12</sup> Calvin Wells, *Bones, Bodies and Disease* (London, 1964).



dagger or lance thrust which penetrated the eighth intercostal space into the thorax.

The direction of this blow is revealed by the eighth rib and shows that it must have been inflicted at about 45 degrees from behind and possibly slightly upwards—a likely angle of incidence if the victim had already fallen face down. Such a wound, if of any depth, would penetrate the right lung and liver. Bleeding from the latter would be profuse and probably rapidly fatal. We need look no further for the lethal blow.

We may wonder what resistance this man put up when attacked. Some slight additional evidence can be adduced. It is almost, but not quite, certain that another blow fell on his right shoulder and amputated the tip of the acromion process of the scapula (Plate XLVIII). This would sever some of the fibres of the powerful deltoid muscle which has the function of raising the arm above the head to initiate a sword or axe stroke, etc. But, much more serious, it would destroy the efficiency of the coraco-acromial ligament which is a major structure in giving stability to the shoulder joint and also the acromio-clavicular ligament which secures the shoulder blade to the collar bone. This injury must have greatly reduced his fighting capacity. And yet it seems that he struggled on. The remaining evidence comes from the right forearm, presumably his sword-arm (Plate XLIX). Both the ulna and radius have their distal ends missing but although there has been some post-mortem fracturing it is clear that both bones have been partly cut through by a common blow. The two injured surfaces lie very close together when the radius is rotated into the mid-position about half-way between pronation and supination, and it seems likely that the hand was raised by a strongly flexed elbow joint but with a downward directed humerus when the injury occurred. This is the position of a man incompletely drawing up his sword arm in an effort to strike or to guard his head from an impending blow.

We can never know with certainty the events of those last dramatic moments. This is a tentative reconstruction from facts which admit of slight ambiguity of interpretation. Enough remains, however, for us to sketch the outline of a young, vigorous, energetic man who had probably led a not unadventurous life and finally died in some bloody foray fighting desperately and it would seem not ingloriously.