Fig. 2. Enclosure 5, Aughinish Island: plan, showing extent of excavations.
Excavation of an Enclosure on Aughinish Island, Co. Limerick

HELEN HICKEY

The proposal by the firm of Alcan to build an alumina plant on the island of Aughinish, Co. Limerick, led to the rescue excavation of four sites in 1974, one of them being a stone enclosure in the townland of Aughinish East.¹ The excavation of this site, Enclosure 5, took place in August and September of that year, and thanks are due to Alcan for financing it and to the National Parks and Monuments Branch of the Office of Public Works for administering the excavation funds.

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Enclosure 5 had been shown as an antiquity on the first edition of the Ordnance Survey map of 1840. At the time of excavation its large, broad-oval, interior was

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¹ Parish of Robertstown; Barony of Shanid; O.S. 6-inch sheet 10; Nat. Grid Ref. R.282.530.
Fig. 3. Enclosure 3, Aughinish Island: graves and secondary structure.
partly enclosed by the original stone bank covered in grass and partly by a modern dry-stone fence. The entrance was through a narrow gap in the modern fence at the south and there were no surface indications of an original entrance. The internal dimensions of the site from mid-bank were 56.50 metres on the N-S axis and 45 metres on the E-W axis. It was sited above the 50 ft. contour on the exposed north-western slope of a long N-S ridge overlooking the River Shannon (Fig. 1). The enclosure was overlooked on the NNE by a higher ridge which was densely overgrown with hawthorn, blackthorn, ferns and brackens. In the immediate vicinity of the enclosure was an area of good pasturage.

THE EXCAVATION

Excavation (Figs. 2-3) revealed an absence of stratigraphy in the interior: the layer of topsoil was an average depth of 25 cm., and, apart from a pocket of reddish-brown colour overlying a rendzina layer in the south, was dark-grey in colour and apparently rich in organic material. It overlay either the limestone bedrock or a mixture of stones and boulders set in a hard subsoil of yellowish hue (Fig. 4). In the north part there was a notable sparsity of stone in the subsoil, possibly due to natural causes; alternatively it might be the result of stone clearance to provide building material for the enclosure bank. The presence of a few small holes in the subsoil of this area does suggest that at least some stones were removed. One of these holes contained a small fragment of burnt animal bone.

The bank was fully examined in two places, at N. and at SSE. It was built on a thin layer of topsoil (20 cm. thick) and was a dry-stone bank of flimsy construction (Fig. 4). It contained some large limestone boulders but there was no evidence for the careful construction of a solid core to the bank. It survived to a maximum height of 45 cm. The inner face survived well but an outward collapse of stones had destroyed the original outer face. At ENE the inner face was also uncovered, and the cutting at WSW showed the modern stone fence partly overlying the collapsed stones of the original bank (Fig. 2). The area outside the bank was examined for evidence of a fosse but none was found. Neither was there any evidence for post-holes or palisade trenches in the vicinity of the bank.

The enclosure bank at the South consisted of a wide scatter of stones, part of which was overlain by the footings of a long irregularly-shaped structure. This was orientated NW-SE, and at its south-eastern end, outside the enclosure bank, was a fairly well preserved sub-rectangular chamber (internal dimensions 3.60 m. by 2.40 m.). Its most noteworthy feature was the strength of the south-western wall which was more than twice as thick as the other surviving footings (Fig. 3). There were narrow opposing gaps in the middle of the north-western and south-eastern walls. The only surviving part of the structure which overlay the enclosure bank was the thick south-western wall (total overall length of this wall was 8 m.). This was clearly the remains of an insubstantial structure and no post-holes were found associated with it. The dry-stone footings of local limestone may have supported walls of mud or perhaps wattle-and-daub, and the thickness of the south-western wall suggests a lean-to structure. The absence of associated finds makes it impossible to date it closely, but since it post-dates the construction of the enclosure it may be of fairly recent date.
Fig. 4. Enclosure 5, Aughinish Island: section A-centre-B.
Eight graves were uncovered occupying a small area in the SW of the interior (Fig. 3). They were aligned E-W and set close together. The two most northerly ones (nos. 1 and 2) were cut into the limestone. They contained the skeletal remains of twelve individuals, male and female, whose ages ranged from infancy through adolescence to old age. The bones had been disturbed in antiquity and only one skeleton remained intact. Many of the displaced bones bore marks of a sharp instrument suggesting that the disturbance may have been due to agricultural activity on the site. A certain respect for the remains is indicated by the fact that the bones were not scattered but were replaced, albeit incorrectly, within the confines of the eight graves. The fact that more than eight skeletons were found in the eight graves can be interpreted in a number of ways. Some of the graves may have been reused for burial, in which case one would expect to have found the later burial less disturbed than the original one — such evidence was not noted at Aughinish although it may have been present before the burials were disturbed. The shallowness of the graves, none extending more than 40 cm. below the ground surface, would not necessarily rule out the possibility of their use for consecutive burial. It is also possible that some of the graves may have contained more than one primary burial. If so, the narrowness of the graves would indicate that the bodies must have been placed one on top of the other — again, the disturbance had destroyed any evidence for this which might have existed. Finally, it is just possible that four other graves are present, perhaps in the unexcavated area to the north of Grave 1.

The burials were examined both in situ and later by Dr. Máire Delaney. She found that many of these individuals had suffered from oral diseases, some of them losing teeth as a result. The next most common disease was osteoarthritis affecting the spine. While this evoked a vivid picture of the debilitating ailments suffered by this small community, the common occurrence of tooth decay also reflects a greater consumption of short chain carbohydrates. Such changes in diet became common as a result of trade in medieval times. About the same time dental health was beginning to be adversely affected by the tendency to cook more foods and eat less raw fibrous matter which used to have a hygienic action. On the basis of this evidence and the shape of the palates, Dr. Delaney has suggested that these burials date to not earlier than the middle to late medieval period, and possibly even later. There is no archaeological evidence for dating the burials either absolutely or in relation to the enclosure, but since the graves occupied such a small part of the enclosed area it is not thought likely that the enclosure was built to surround them. A much more plausible interpretation, in view of the apparent absence of a Christian graveyard on the island, is that the existing enclosure was chosen as suitable burial-place by a small local group. The castle bawn on Aughinish, for instance, was also used as a burial-ground. However, the osteological evidence would not preclude the possibility of the burials pre-dating the building of the enclosure. There is no osteological evidence, either, for the commonly held assumption that burials of this kind, apparently in unseconrated ground, were victims of famine or plague. Pressure of space in existing graveyards may have led to the use of other enclosures such as this one, perhaps informally consecrated, for Christian burial.

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*This site was excavated by Ann Lynch, University College, Cork, in 1974.*
Fig. 5. Enclosure 5, Aughinish Island: major finds.
THE FINDS

There were very few finds from the site and the only ones with any stratigraphical significance were animal bones and iron slag found beneath the enclosure bank. The more significant finds are illustrated in Fig. 5.

Pottery
Only two sherds were found, both in the centre of the enclosure underneath the humus. No. 5 is part of the lid of a brown-glazed earthenware teapot. No. 2 has a strap-handle attached and is from a wheel-thrown stoneware vessel, probably a flask or costrel. The fabric is grey in colour with a slightly purplish tinge. It has a yellow slip on its outer surface and a slip of yellow and orange stripes on its inner surface, neither a usual feature on this type of vessel. Another very uncommon feature is the application of its strap-handle horizontally rather than in the usual vertical manner. One end of the strap bears a finger imprint. The most likely source for this sherd is the area of Belgium or Northern France. It is probably of 16th or early 17th century date, although it could be earlier.

Stone
A rectangular block whetstone of fine-grained sandstone (no. 13) was found under the humus on top of the enclosure bank at north. Three of its long sides have been worked to a smooth surface; the remaining three sides are untouched. The side illustrated shows clear signs of wear in a diagonal direction. This kind of wear pattern distinguishes it from similar whetstones used in Ireland during the first millennium A.D., and further research may reveal it to be a diagnostic feature of medieval or later whetstones.

Iron
6½ lbs. of iron slag was found, all but 2 lbs. of it from the soil underneath the enclosure bank at north. This amount is relatively small, possibly representing the dross from only one firing. A small bit was found inside the bank at North and a large bit (1 lb. 13 ozs.) inside the bank at ENE. One of the samples found under the bank may be part of a furnace bottom (no. 17).

Three nail shafts were found each of different size (nos. 3, 4 and 10). The heads were missing and only one (no. 4) had a point. Nos. 3 and 4 from the centre of the interior, are of rectangular cross-section tapering towards the point. No. 10 is larger, has a circular cross-section and also tapers towards the point. It was found inside

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3 These have been deposited in the National Museum where they are registered as in fig. 4 with the pre-fix E 138 which identifies the site.
4 I am very grateful to Tom Delaney, Ulster Museum, for identifying this sherd and its probable place of origin. At a recent conference on medieval pottery several experts commented on its unusual features. A thin-sectioned sample of it is available for study at the National Museum by courtesy of Terry Bruton, Ulster Museum, I would like to thank Deirdre Warner for drawing this sherd; all other drawings are by the writer.
5 I am indebted to Lill O’Connor for this information.
6 I would like to thank Brian Scott, Conservation Laboratory, Queen’s University, Belfast, for considerable assistance and advice in dealing with the conservation and identification of the iron objects.
the bank at ENE near a badly corroded iron object (no. 9) which could be its head.

No. 12 is probably a hinge-pivot. It has a rectangular-sectioned tang which curves slightly, and a circular upright. It is comparable in size and shape with the smallest of three hinge-pivots from Basing House, Hampshire,⁷ and also with one from Thady's Hill, Ballycally, Co. Clare,⁸ which may have been used on cupboard doors or on window shutters. It was found inside the bank at ENE with another iron object, no. 11. This has a flattened rectangular cross-section and could be the tang of a hinge.

No. 2 is part of a badly corroded horseshoe, found on top of the bank at S. under the humus. One nail is still in position in the groove around the perimeter.

No. 1 is a knife from the centre of the interior. Most of the blade, triangular in section, is missing. The tang is rectangular in section and between it and the blade is a tapering bolster of broad-oval cross-section. This kind of knife with its tang and bolster made in one piece with the blade represents a method of hafting which was probably introduced about the middle of the 16th century and continued until at least the third quarter of the 17th century.⁹ A very close parallel to the Aughinish knife with its long bolster of broad-oval section is no. 5 from Basing House, Hampshire, a house occupied between c. 1540 and 1645.¹⁰ In Ireland, a knife of this type with a round-sectioned bolster came from an excavation of two medieval houses at Caherguillumore, Co. Limerick,¹¹ and can be dated by English parallels to the second half of the 16th century.¹² Four examples with lozenge-sectioned bolsters were found at a trackway in Rineanna South, Co. Clare, whose main period of use dated from the 17th century — the knives are thought to be either late 16th or early 17th century in date.¹³ Knives of this kind have also turned up during recent excavations at the Augustinian Priory of Clontuskert, Co. Galway.¹⁴ The most reliable dating of these knives comes from English sites and particularly from the London area where knives have been found bearing in addition to cutlers' marks the dagger mark of the City of London. Such a mark has not been identified on knives found in Ireland and it is not yet certain whether the Irish knives are imports or locally made.

Clay Pipe-stems

Five fragments were found. Nos. 6, 7 and 8 came from the central area, nos. 14 and 15 from the northern part of the interior. Measurements in millimetres:

⁴ Moorhouse, op.cit., p. 38 and footnote 6.
⁶ J. F. Hayward, English Cutlery, 16th to 18th Century, London 1956, p. 13, Pl. II. A very close parallel to the Caherguillumore knife dredged from the Thames at Queenhithe, it has a cutler's mark of a crown and can be dated to the second half of the 16th century.
⁷ Rynne, op.cit., pp. 268-271, fig. 11, nos. 41-44.
<table>
<thead>
<tr>
<th>Colour</th>
<th>Diam. of Stem</th>
<th>Diam. of Bore</th>
<th>Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 6</td>
<td>Brown</td>
<td>8.5</td>
<td>3</td>
</tr>
<tr>
<td>No. 7</td>
<td>Fawn</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>No. 8</td>
<td>Brown</td>
<td>8.5</td>
<td>4.5 x 3.2 (broad-oval)</td>
</tr>
<tr>
<td>No. 14</td>
<td>White</td>
<td>9</td>
<td>3 (off-centre)</td>
</tr>
<tr>
<td>No. 15</td>
<td>White</td>
<td>7.5</td>
<td>3.6</td>
</tr>
</tbody>
</table>

On account of the small number of stems from the site, no attempt has been made to date them by the statistical methods described by Oswald.

**Shells**

All the shells came from the same trench in the centre of the interior: Periwinkle (½ lb.), Mussel (2 oz.), Cockle (1), Oyster (1) and Banded Snail (*Helix nemoralis*) (1).

**Animal bones**

These came from two separate strata, from the interior of the enclosure and from underneath the enclosure bank at N. and ENE. The significance of the second group is that they pre-date the construction of the enclosure, although their stratigraphical position does not suggest that much time had elapsed between their deposition and the building of the bank. The animals represented are ox, sheep or goat, pig, horse, dog and hedgehog. Edelgard Harbison-Soergel made a very thorough study of these bones and an account of her findings is contained in Appendix II. Her suggestion that the bones from Enclosure 5 reflect the changes which took place in Irish agriculture as a result of the Cattle Acts of the 17th century would not conflict with the other archaeological evidence from the site. Some of her findings may indeed shed a little light on the purpose of the enclosure, notably her observation that the amount of sheep bones from the interior showed a marked increase on the number from the pre-enclosure level. As well as suggesting an intensification of sheep-breeding at this period, it might also lead one to consider that the enclosure may have been built as a sheep-fold. While the more usual purposes of a sheep-fold — an enclosure for assembling the flock for examination and shearing — would leave no trace in archaeological evidence, there is a suggestion from the high percentage of teeth from the interior that the enclosure may have served as a place for slaughtering sheep and cattle.

**SUMMARY**

The excavation of this enclosure has revealed four separate activities on the site. One of these — some iron smelting — occurred before the building of the enclosure. The enclosure appears to have been built, not for human occupation but probably to contain animals. The osteological evidence suggests that it was a sheep-fold rather than a cattle enclosure. Part of the interior was used for a period as a burial ground and finally, after the enclosure had fallen into disrepair, an insubstantial hut or shelter was erected beside it, partly overlying its collapsed wall.

This structure has been deliberately classified as an enclosure rather than a cashel, for it has none of the cashel's distinguishing features. While some excavated raths

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have lacked evidence for human occupation and may therefore have been animal enclosures,16 this site on Augnish, with its flimsy wall, its large uneven interior and its exposed position, seems quite apart from the rath or cashel tradition. The finds probably span a period from the 16th to the 19th century but since, with the exception of some iron slag and animal bones, they bear no stratigraphical relationship to the enclosure their value is limited and they provide no close or certain dating for the main use of the enclosure. More important in this matter of dating the construction and use of the enclosure is the evidence from the animal bones which suggests that the most likely date for the use of the enclosure as a sheep-fold was between 1666 and c. 1750. The small number of unstratified finds suggests that the amount of human activity on the site was never very intensive — possibly little more than a meal or two of shellfish and some pipesmoking when the enclosure was in use as a sheep-fold and slaughter-place. At a later date some agricultural activity is suggested by the finding of a whetstone and the disturbance caused to the burials. As for the iron objects and the sherd of imported pottery, they may have been discarded by the inhabitants of the adjacent castle of Augnish, or have reached the site as re-deposited refuse used to fertilize the soil.

**Acknowledgements**

I would like to record my thanks in particular to Lil O’Connor for much of the photographic work, to Ellen Prendergast for her helpful advice, and to Rita Harte for site-drawings of many of the finds; much assistance was also given by Winifred Glover both during the excavation and in later research work. I am also, of course, indebted to the many others who also assisted with the excavation: Larry Becker, Catherine Bligh, Sylvia Carthew, Philip Culhane, Deirdre Dixon, Roy Dixon, Edward Enright, Patricia Friel, Cathy Hammond, Thomas Hynes, Eileen Laffan, William McTiernan, Jeremy Millin, Paul O’Brien, Tim O’Connor, Dennis Stanley, Patrick Wallace, Michael Windle, and Jim Woods.

**APPENDIX 1**

**A REPORT ON THE HUMAN REMAINS IN ENCLOSURE 5, AUGNISH**

Máire Delaney, M.B.

The burials were inspected in situ and subsequently studied in detail.17 Only one skeleton (in Grave 7) was complete and all the graves contained re-deposited bones and bone fragments. Articulated bones were found in Graves 2, 4, 5 and 8 and in

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17 This detailed report and the bones have been deposited in the National Museum.
these the disturbance mostly affected the lower limbs. The re-deposited bones were neatly placed within the confines of the graves on top of the undisturbed parts. Very few bones were scattered and none were found below the undisturbed inhumations.  

The bones were generally a pale yellowish colour although some, mainly skull fragments, were a dark grey (notably in Grave 5). The cortex of a few of the long bones was beginning to decay as were the outer tables of some of the skulls which were all in a fragmentary condition. Few of the bones were intact and all of the fractures had occurred post mortem, most in antiquity. Some of the bones were light and brittle, and some of the ancient fractures had been made by a sharp instrument. This was particularly evident on the cancellous parts such as the proximal and distal ends of the long bones and parts of the pelvis. Damage had also occurred in antiquity to the shafts of a few long bones, notably the anterior surface of the left humerus in Grave 7, apparently the result of a glancing blow.

The remains of at least twelve individuals were present (12 occipital protuberances and 12 right distal ends of humeri). Both sexes were represented, and the age ranged from infancy (1 fragment of infant parietal bone from Grave 3), through adolescence (an almost complete skeleton from Grave 5) to old age. Different physical types are represented. A long slender tibia was found in Grave 1, and very robust and short but essentially normal ones in Grave 6. The adolescent bones in Grave 5 were long and the youth had not finished growing (the remains of three different individuals were represented in this grave).

The decayed and fragmentary condition of many of the bones prevented an accurate measurement being taken of the length of the bones and only the following measurements were obtained:

<table>
<thead>
<tr>
<th>Grave</th>
<th>Femur (cms)</th>
<th>Tibia (cms)</th>
<th>Humerus (cms)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>40</td>
<td>36.5</td>
<td>29.5</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>30.2</td>
<td>27.7</td>
</tr>
</tbody>
</table>

The burial in Grave 7 was interesting in that it revealed a marked muscular development in the upper and not in the lower limbs. The humeri were strong with a very large ridge for deltoid insertion. The forearm bones also indicated strong muscular development. This suggested that this individual was habitually engaged in some activity such as pushing which involved the use of both hands.

Several pathological conditions had affected these remains, the most widespread being oral pathology. Osteoarthritis was also common. It was found in one vertebra in Grave 2 and in four in Grave 4. Most of the adult vertebrae in Grave 5 showed changes ranging from slight lipping and osteoporosis in the upper thoracic vertebrae

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18 Some of the graves were vandalized shortly after excavation: bones were removed and some may have been replaced in different graves.
to very severe lipping, waisting and obvious osteoporosis in the lumbar vertebrae. Grave 5 also contained fragments of femoral heads with osteophyte formation around the articular surface. Areas of eburnation, not very extensive, were found on a femoral head and on femoral condyles in the same grave. Two pairs of fused adult vertebrae were found in Grave 5, one of which appeared to be a congenital anomaly. It consisted of two cervical vertebrae fused from the left articular pillar along the lamina to form one spine. The articular pillars and lamina are separate on the right side, but the upper right lamina tapered almost to a point leaving a small gap between it and the single spine. The second pair of vertebrae were mid-thoracic and were fused at the anterior edge of the bodies. This may be due to arthritis or infection although there were no osteoarthritic changes. A severely osteoarthritic vertebral column was represented in Grave 5 but it is not possible to say whether these fused vertebrae were from the same column.

Four of the thoracic vertebrae in Grave 7 had a transverse groove across the middle anterior aspect of the bodies, probably of pathological origin although of an unknown kind. In Grave 3 a left tibia was found showing some evidence of new growth on the cortex, especially along the anterior margin. It narrowed medio-laterally but did not have the appearance of true platychemia, but rather of periostitis.

Circumscribed areas of erosion on fragments of skulls in Graves 2, 3 and 7 while superficially giving the appearance of pathology revealed no evidence of either periosteal reaction, healing or new bone growth. These changes are almost certainly post mortem phenomena probably occurring on the side nearest the ground. This is almost certainly the case in Grave 7 where the shattered skull was lying on its right side and the areas of erosion were on the right frontal bone. In this connection it is worth noting that the soil at Aughinish is limy. An infective process seems to have affected the meninges on the fragment of frontal bone in Grave 7, with some healing occurring on the erosion just left of the mid-line internally. Deep erosions on the right side, however, showed little reaction. Erosions are also present on the internal table of a frontal bone in Grave 4, some showing new bone growth.

Portion of the vault of the skull found in Grave 4 — medial parts of two parietal bones — were solidly fused along the sagittal suture, forming a slight "keel" and sloping away from the suture. This evidence is strongly suggestive of microencephaly. Metopic sutures were found in Graves 2 and 3 and wormian bones in the immature skull of Grave 5.

From the slight degree of reconstruction possible it would seem that the palates were not excessively broad. Slight torus formation was found in only one mandible in Grave 5. Many of the teeth were affected by caries, generally on the occlusal and buccal surfaces. A number of teeth had been lost during life, due to caries and to periodontal infection which was widespread. Wear was marked on most teeth and was severe on what were presumably elderly remains. Calculus formation was present to some degree in most cases but was nowhere very extensive. From the shape of the palate and the poor condition of the teeth it is possible to suggest a date for these burials, not earlier than the middle to late medieval period, and possibly later (palates of an earlier date tend to be broader, and tooth decay less common).
APPENDIX II

A REPORT ON THE ANIMAL BONES FROM ENCLOSURE 5, AUGHINISH

Edelgard Harbison-Soergel

1035 bone fragments were recovered of which 445 were identifiable as follows: Ox 293 (66%), Caprovine 118 (26.5%), Pig 22 (5%), Horse 10 (2%) and one bone each from a dog and a hedgehog. 130 bones came from Stratum A (under the enclosure bank) and 298 from Stratum B (the interior of the enclosure). The results of the examination must be qualified by the reservation that the number of bones on which they are based is relatively small.

The most notable difference between the two strata is the considerably larger amount of sheep/goat bones present in the younger material, which certainly suggests an intensification of sheep-breeding in the period in question. Some of the animals were slaughtered at 18 months, but the majority were killed when they were 4-8 years old—a distribution which would lead to the conclusion that the sheep were kept primarily for their wool. The animals were comparatively small in stature, having a shoulder height of around 50-55 cms, and thus certainly no bigger than their continental counterparts. In all cases where it was possible to determine with certainty the exact species of the caprovine bones, they were of sheep, and it is highly probable that all other caprovine bones are from sheep and not from goats.

The slaughter graph for ox shows important differences in the two strata. In Stratum A the animals (based admittedly on a graph made up with the remains of only 12 individuals) were mainly killed in two separate age groups: at 1-2 and at more than 4 years old. In contrast, the slaughter graph of Stratum B (based on 22 individuals) shows a maximum where Stratum A has only one individual to show for itself, namely in the 2-4 year olds. In addition, there were fewer animals more than 4 years old in the younger material (Stratum B). It could be concluded from this that the breeding of cattle served different purposes in the two periods represented. In the older material, more emphasis was laid on dairying, combined with meat production and the use of the animals for draught purposes, whereas in the younger material the objective would appear to have been a quick meat yield. The oxen of both strata were, in comparison to the medieval ox population of England and central Europe, of good medium size (shoulder height of about 110-120 cms), and certainly bigger than many continental ox-finds of the 13th-16th century. In both complexes, pigs played only a small role. In size, they would appear to fit the stature of the small medieval pigs of the period. What few equine bones there are suggest that horses, too, were comparatively small.

An unusual feature is the high percentage of teeth among the later material, particularly of sheep, but also of ox. As a possible explanation the redeposition of refuse is suggested, or alternatively that we are dealing here with the remains of slaughtering, and not with the remains of meals which is what the osteologist normally expects to find. The extraordinarily intensive chopping-up of the bones could also possibly be explained in the same way.
The differences between the two complexes in the bone material may be the result of the introduction of the Cattle Acts (1664-66), which blocked threequarters of Irish exports by forbidding the import of Irish livestock, meat and milk products into England. The acute economic depression which this produced caused two changes in the Irish economy:

(a) Sheep husbandry was considerably intensified because the export of wool was not affected by the Cattle Acts.

(b) Instead of exporting live cattle (mainly young bullocks between 2 and 4 years old) to England, the Irish concentrated on the production of beef (from more than 4 year old cattle) which, shortly afterwards, they exported to the Continent in large quantities. On the basis of this interpretation, the bones of Stratum A derive from a period prior to the introduction of the Cattle Acts, while those of Stratum B date from after 1666.

Pig-breeding, which flourished in the 16th century, was brought to a virtual standstill during the 17th century, because Ireland — deprived of her forests during the Elizabethan wars and without a sufficient amount of tillage — could no longer provide the prerequisites for pig-breeding. It was not until the middle of the 18th century, when tillage began to increase in Ireland, that pigs once more became important to the Irish economy. In view of the small number of pig bones in the Aughinish finds, we can presume that Complex A scarcely dates from before the beginning of the 17th century and Complex B not earlier than 1666 and scarcely later than 1750. We can draw the same conclusions from the evidence of the sheep-bones. Although wool production was still flourishing in the first decades of the 18th century, the introduction of the linen industry (1730) and the encouragement of agriculture (from 1740) onwards, led more and more to a decline in the number of sheep kept in Ireland.

The standard of Irish husbandry in the 17th century is reported to have been quite primitive; bad husbandry, diseases and murrams, the lack of winter fodder, etc., produced only small animals: "little black cattle", small sheep, and draught-horses, which were of low stature. This is confirmed by the osteological findings from Enclosure 5, Aughinish.