

SKELETAL REMAINS FROM THE BALLYNOE STONE CIRCLE, CO.  
DOWN, IRELAND <sup>1</sup>

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INTRODUCTION

In 1940 Van Giffen put the skeletal remains<sup>3</sup> which were found during his excavations at Ballynoe (Groenman-van Waateringe & Butler, 1976) at the disposal of the Anatomical Embryological Institute of the Groningen University, where they came to me for investigation. The aim was to find out the number of persons buried, their respective length, age and sex, to establish whether the bones were burnt before burying or not, to see if there were any signs of pathology and furthermore to collect as much other information as possible.

The monument consists of a ring of standing stones, ca. 33 m in diameter, within it a long cairn with two marginal chambers, no. I at the E edge, no. II at the W edge, and a peristalith around the E end of the long cairn. The bones came from the chambers I and II, from the neighbourhood of chamber II and from cremation pockets outside the long cairn. For most of the bones the exact provenance is unknown.<sup>4</sup>

The bones proved to be intensively mixed with stones and stone dust, while here and there some charcoal pieces were seen. The preservation state was bad. Most bones had crumbled. We followed the method of examination as described earlier (Dijkstra, 1938; 1941).

The bones were immersed in hot water. The charcoal floated and could be separated. In 1940 the radiocarbon dating method was still unknown and so these charcoal pieces which hardly ten years later could have given us exact indication of the time of burying unfortunately were discarded. The bone pieces were then dried and recognisable pieces sorted out.

As to the question of burning of the bodies before their burial two positive points were found:

1. The relatively high content of charcoal, higher than was found in comparable remains from the "kringgrepuurnenvelden" we previously had investigated from the province Drente in the Netherlands.
2. Effects of burning were clearly visible on the bones themselves. Some chalky-white parts were burnt black, while the burst lines on the bones showed the same patterns as we had found on the fresh bones we had burnt in Groningen to examine the shrinkage in the burning process. In the shaft of the long bones these bursts run archwise around a centre in the direction of both epiphyses as can be seen from fig. 1.

Where possible, pieces of bone were measured. From a number of such measurements the total length of the individuals concerned were calculated with the aid of Martin's tables (1928). In cases where this was impossible the pieces found were compared with the corresponding places in a series of recent skeletons of different sizes. This sometimes gave a proper impression of the length of the individual the pieces came from.

For *age* determination the general quality of the bones was of importance: stony or chalky, corresponding with adult and child; epiphysary lines in the leads of the long bones indicate youth. After that the teeth were investigated. Proportion of the thickness of their dentine shafts and the width of the pulpa canals reveals much about the age as Szabó (1900), Trueb (1909) and Wagner (1927) have shown. Physiological dentin formation con-

tinues during the whole lifespan in both horizontal and vertical directions. Although this might not be a completely regular action, one can in general say that a tooth is older when its dentine shaft is thicker and its pulpa cavity is smaller. With advancing age the height of the pulpa chamber diminishes. These facts and the form of the foramen apicale of the roots can give important information. For proper judgment of all these dental factors specialized odontological knowledge of the individual teeth is required. Mr. M. Hut, State University, Groningen, was so kind as to help us here.

For sex determination there were but few indications in these rather crumbled bones. After burning procedures, however, one can often find a part of the pelvis containing the incisura ischiadica maior which is more curved in the male than in the female (Derry, 1924). Dorsey (1897) and Dwight (1905) have found other sex differential diagnostics in the dimensions of the caput humeri and femoris. As we have to deal in our case with only fragments of these bone parts, from which we have to reconstruct and calculate the diameter, the caput femoris, having an oval shape, is not of much use. The caput humeri which is practically round can help us better. Construction of two middle perpendiculars from three points of the surface can give us the radius and therefore the diameter of the caput. Dwight (*op.cit.*) measured fresh bones with the cartilage still on. For burnt bones we therefore have to add 2-3 mm. As the shrinkage of the bones by burning is only about 0.7-0.9% (Dijkstra, 1938) addition of 3 mm to the calculated diameter seems to be about right to make the numbers comparable with Dwight's indications. A caput femoris with a diameter less than 46 mm is female. More than 48 mm is classified as male. Between 46 and 48 mm sex determination is impossible on these criteria. Dwight found in 400 cases only nine exceptions to this rule, which is less than 2%.

Racial information could not be obtained from the material present.

#### DESCRIPTION OF THE MATERIAL

##### Contents of chamber I

1. parts of the skull with an average thickness of

- 5.2 mm;
2. parts of long bones of moderate robustness;
3. capitulum mandibulae sinister with a rather round top, which should be characteristic for youth (Martin, 1928);
4. part of the joint surface of the caput femoris, calculated diameter  $48 + 3 = 51$  mm : male;
5. part of the maxilla with alveolus;
6. part of the processus mastoideus with cellulae;
7. processus zygomaticus sinister, comparable with the same part of a recent adult skull.

Among the remains there were only a few parts of the long bones. No teeth were found.

Conclusion: according to 3, 4, 5 and 6 and the total aspect we have to do here with an adult young man, probably about 25-30 years of age. The length could not be determined (see, however, Groenman-van Waateringe & Butler, 1976, note 20).

##### Contents of chamber II

These were put at our disposal in four boxes, which we marked A, B, C and D.

##### Box A:

1. radix of a tooth without information value;
2. parts of long bones of rather robust character.

##### Box B:

1. parts of a skull with an average thickness of 4.8 mm;
2. parts of long bones, as robust as those from box A;
3. a tooth, probably a molar tooth  $M_{3, \text{sup}}$  with tight canals, hardly a foramen apicale, but with a wide pulpa room, giving us an age indication of about 30 years;
4. part of the alveolus wall of the mandibula from the right, near  $P_2$ ;
5. part of the same, sinister, near  $I_1$ ,  $I_2$ , C with spina mentalis not as robust as the same part of a modern comparison skull;
6. epistropheus with dens;
7. processus zygomaticus sinister with facies articularis mandibulae;
8. phalanx from a finger;
9. two parts of ribs.

Nrs. 6 and 9 fit about in a recent female skeleton of 150 cm high. The skull and the long bones are

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thinner than those of chamber I.

Box C:

1. parts of the skull with an average thickness of 4.7 mm;
2. parts of long bones of moderate robustness;
3. capitulum mandibulae sinister, smaller than the comparison mandibula. Its top was round, consequently youthful;
4. part of the joint surface of the talus, small, fitting into a female comparison skeleton of 150 cm high;
5. pars petrosa of the os temporale dexter;
6. dens epistrophei of the same size as that from box B;
7. arcus zygomaticus sinister;
8. part of the diaphysis of the radius, rather thin;
9. phalanx I from the little finger, very thin;
10. a number of parts of joint surface of long bones on which sex determination is impossible.

Box D:

1. parts of a skull, with an average thickness of 4.5 mm;
2. parts of long bones of moderate robustness;
3. part of a mandibula sinistra near P<sub>1</sub>, P<sub>2</sub>, C;
4. part of a rib fitting in a female recent skeleton of 150 cm high.

Conclusion: A, B, C and D contain burial remains of a certain uniform character. The thickness of the skull fragments is about the same. So is the quality and the robustness of the long bones. B<sub>6</sub>, B<sub>9</sub>, C<sub>4</sub>, C<sub>8</sub>, D<sub>4</sub> all fit in the female skeleton of about 150 cm. According to the occurrence of B<sub>5</sub> and D<sub>3</sub>, B<sub>6</sub> and C<sub>6</sub>, B<sub>7</sub> and C<sub>7</sub> there must be two persons here.

The odontologist diagnoses one individual as being about 30 years of age. C<sub>3</sub> gives us a clue to young, the general impression is adult. The fine structure of the bones (C<sub>9</sub>) and the fact that the parts of the skull are thinner than those of chamber I give us the impression that both here are female. No exact proof for this could be found however.

Bones surrounding chamber II:

We got two boxes, which we marked A and B.

Box A:

1. parts of a skull with an average thickness of 5.5 mm;

2. very robust long bone parts.

This and the quality of the bone indicate that the individual concerned is certainly adult.

Box B:

1. parts of a skull of which the thickness varies from 5.0 to 6.5 mm;
2. parts of the long bones of very robust nature;
3. pars petrosa of the os temporale sinister;
4. protuberantia occipitalis interna, thickness 9 mm.

Conclusion: A and B are probably from one individual, who was certainly adult. In comparison with the bones from chamber II and modern skeletons the impression is that we are here concerned with a man.

Two boxes marked nr. 2:

The first one we marked A, the second one B.

Box A:

1. parts of a skull with an average thickness of 5.0 mm;
2. parts of long bones, rather robust; general impression: adult;
3. part of caput femoris, calculated diameter  $45 + 3 = 48$  mm: male;
4. part of the alveolus wall of the mandibula;
5. pars petrosa of the os temporale sinister;
6. part of a rib;
7. part of a phalanx;
8. part of the os ischii incisura ischiadica maior: male.

Box B:

1. parts of a skull with an average thickness of 5.2 mm;
  2. some parts with cellulae mastoideae: adult;
  3. parts of the long bones, very robust;
  4. pars petrosa of the os temporale sinister;
  5. idem dexter;
  6. part of the mandibula;
  7. idem with indeterminate tooth-alveolus;
  8. some parts of ribs;
  9. some parts of phalanges;
  10. a molar tooth-crown and a right molar tooth, M<sub>8111</sub>, with tight canals and pulpa room. Age according to the odontologist about 60 years.
- The parts of the skull had very robust ridges.

Conclusion: There are two individuals (cf. A<sub>5</sub> and B<sub>4</sub>). Both must be adult, while one of them is

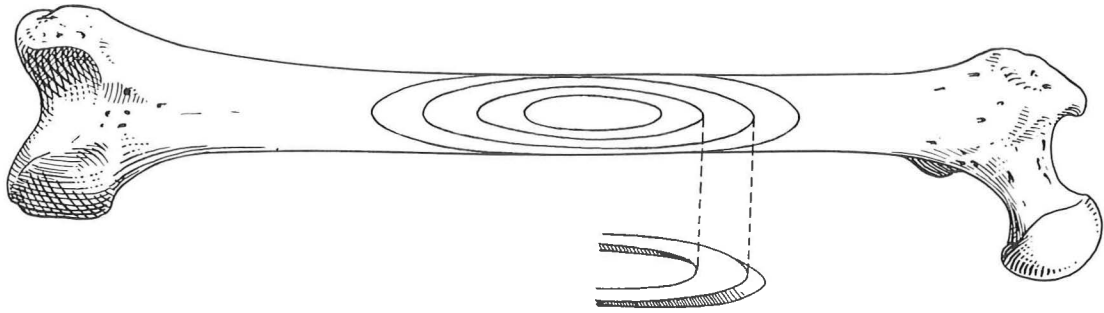


Fig. 1. Burnt fresh long bone with archwise running bursts. Drawing Anatomisch Laboratorium, State University, Groningen.

Fig. 2. Ballynoe Stone Circle. General plan and situation of chambers I and II.

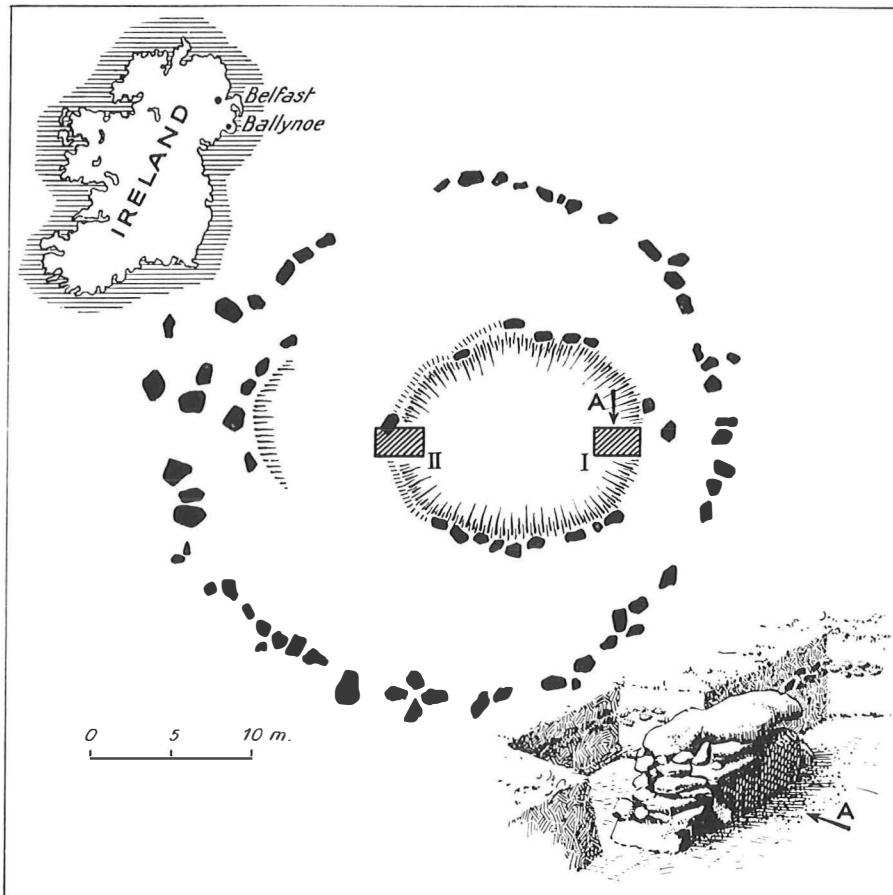


TABLE I.

Place	Number of individuals	Age	Sex	Length	Other data
Chamber I	1	25-30	♂	?	
Chamber II	2	c. 30	♀ ?	c. 150 cm	
		young adult	♀ ?	c. 150 cm	
Around Chamber II	1	adult	♂ ?	?	
Nr. 2	2	60	♂	?	remains of a small ruminant
		adult	♂ ?	?	
Bones in <i>oerzand</i>	1	3	?	?	
Total	7				

certainly a man ( $A_3$  and  $A_8$  and the robust crests on the skull support this diagnosis). The other one is most probably also a man. Their length could not be determined. The age of the second one is circa 60 years.

In box B there were found animal remains too.<sup>5</sup> One was a trochlea [of a humerus?] of a very small ruminant (according to Dr. L. D. Brongersma, then Rijksmuseum van Natuurlijke Historie, Leiden). Miss Dr. A. Schreuder, then Zoölogisch Museum, University of Amsterdam, thought it might have been a dwarfgoat (*Torfziege*), an animal much smaller than the present European goat.<sup>6</sup> In the small box with remains from 'oerzand' (= iron pan material?) we found a pars petrosa of the os temporale. The remains were very small and slender, chalky and therefore very youthful, a child in the first years of life.

#### SUMMARY (see also table I)

Burial remains from the Ballynoe Stone Circle, County Down, Ireland, were examined. Only fragments of the bones were left. It was shown that seven individuals were buried here after a burning ritual. Two of them were certainly male, two others most probably male, two of them were probably adult women of about 150 cm high. One of them was a very young child. Racial data could not be obtained.

## NOTES

- 1 Manuscript closed October 1940, save some minor improvements.
- 2 Formerly assistant Anatomical Embryological Institute, State University, Groningen, The Netherlands, now Head E.N.T. Department Kalafong Hospital, University of Pretoria, South Africa.
- 3 Only part of? See Groenman-van Waateringe & Butler, 1976, note 20.
- 4 For a detailed description of the monument and its finds, see Groenman-van Waateringe & Butler, 1976.
- 5 Could no longer be traced.
- 6 In most cases, however, it is impossible to determine between sheep and goat.

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