II.

SHORT STONE CIST FOUND IN THE PARISH OF KINNEFF AND CATTERLINE, KINCARDINESHIRE.

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On 17th March 1923, Mr James Scott, residing at The Cottage, Upper Mains of Catterline, had occasion to be searching for sand for building purposes when he came upon a large stone 4 inches from the surface of a gravelly mound. Being aware that such a stone was not to be expected in this mound, with which he was familiar, he fortunately had the curiosity to make further excavation, and brought to view the short stone cist which is described in this paper.

The cist was situated in an eroded terrace of fluvio-glacial sand in a cultivated field belonging to the farm of Upper Mains of Catterline, 250 feet above sea-level, 130 yards west of the Stonehaven to Bervie road, close to the fifth milestone from Stonehaven, and midway between Stonehaven and Bervie.

The magnetic bearing of the main axis of the cist was N. 65° E. The magnetic variation for this part of Kincardineshire and for this year is 17° 30′ W. The true bearing is therefore 47° 30′ east of north.

The cist (fig. 1) was of an elongated form, quadrilateral in outline. The end slabs were vertical and parallel with one another. The side slabs converged towards the north-east end, and inclined towards one another to such an extent that the distance between them at the

floor level was 191 mm. (7½ inches) more than at the mouth of the cist. The inside measurements of the mouth of the cist were :—north-east end 730 mm. (2 feet 4¾ inches), south-west end 838 mm. (2 feet 9 inches), south-east side 1244 mm. (4 feet 1 inch), and north-west side 1193 mm. (3 feet 11 inches). The depths of the north-east and south-west ends were 730 mm. (2 feet 4¾ inches) and 635 mm. (2 feet 1 inch) respectively, while the depth of each of the south-east and north-west sides was 749 mm. (2 feet 5½ inches).

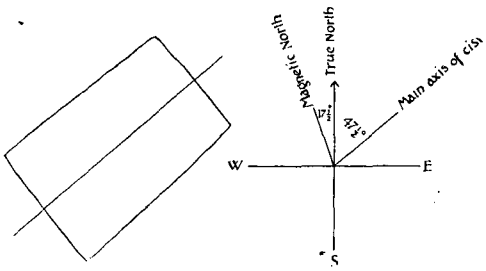

Fig. 1. Orientation of the Catterline Cist.

The roof or covering was roughly 914 mm. (3 feet) thick, and it was peculiar, when compared with the coverings of similar cists found in Aberdeenshire, in that, instead of its being formed of one layer of stones, it consisted of many such stones arranged in three layers (fig. 2). The uppermost was formed of two large flat stones lying about 102 mm.

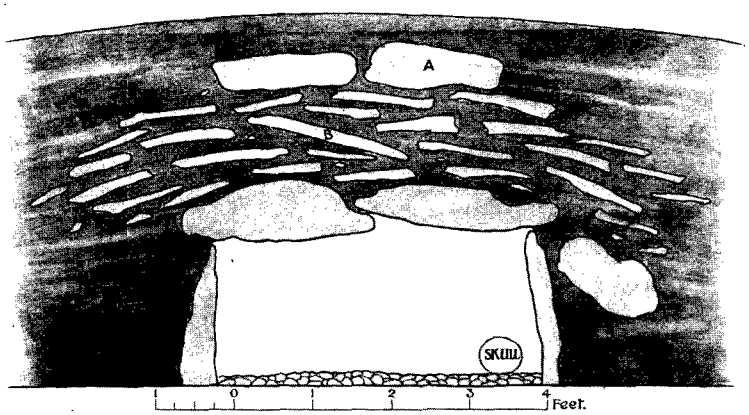

Fig. 2. Section of the Catterline Cist. A. Sculptured Stone. B. Perforated Stone.

(4 inches) below the surface of the ground. The upper surfaces of these stones bore scorings caused by plough and harrow irons, and were irregular and rough. The under surface of the one lying next the north-east end had been moulded and scratched by glacial action. This stone had all the appearance of being an erratic boulder, and bore on its under surface rude sculpturing (fig. 3). It seems likely that these sculptured

markings had been exposed to atmospheric weathering for a considerable period of time before the stone was utilised as a top covering for the cist.

Such figures are apparently rare on cist slabs, but a few other occurrences have been noted. In Anderson's *Scotland in Pagan Times*, pp. 87 ff., reference is made to these, and the circular figures on the cover of the Carnwath cist illustrated at p. 88 are similar in general appearance to those on this stone.

The second layer was about 16 inches thick, and was composed of about twenty flat stones embedded in sand. They were of irregular shape, varying in width from 152 mm. (6 inches) to 660 mm. (26 inches),

Fig. 3. Under surface of Cover Stone of Catterline Cist, showing sculpturing.

and about 51 mm. (2 inches) to 76 mm. (3 inches) thick. The largest of these, which measured 660 mm. (26 inches) by 508 mm. (20 inches), and in thickness varied from 38 mm. (1½ inch) to 83 mm. (3¼ inches), contained an extremely interesting feature by way of an artificial perforation countersunk from both sides (fig. 4). The diameters of this aperture on the surfaces of the stone were 83 mm. (3¼ inches) and 76 mm. (3 inches), and diminished to 32 mm. (1¼ inch) at the point where the two countersinkings met. The stones of this layer showed no evidence of weathering.

The third layer, which was in immediate contact with the mouth of the cist and at a depth of 914 mm. (3 feet) from the surface of the ground, was formed by two large, flat, roughly surfaced stones which, as they met over the middle of the cist, gave evidence of being very coarsely rabbeted (fig. 2). The north-east covering stone measured

762 mm. (2 feet 6 inches) by 1029 mm. (3 feet 4½ inches), the other 800 mm. (2 feet 7½ inches) by 1219 mm. (4 feet), and their thicknesses varied from 76 mm. (3 inches) to 152 mm. (6 inches).

Fig. 4. Cover Stone of Catterline Cist with countersunk perforation.

All the stones which formed the sides and roof of the cist were of local origin, belonging to a belt of flaggy sandstones and conglomerates of Lower Old Red Sandstone Age which can be traced along the slopes of St John's Hill about 1 mile distant from the mound in which the cist was found. A certain amount of dressing was evident upon the edges of the stones which formed the lips of the cist, and also rude chamfering was seen on the north-west side slab at its junction with the end stones.

No special packing of any kind was visible between the adjacent edges of the stones which formed the walls of the cist.

Outside the slab which formed the north-east end of the cist, a large boulder of conglomerate had been placed to help to keep the slab in position (fig. 2).

The total weight of the stones which composed the cist, including its coverings, was slightly over two tons.

The floor (fig. 5) consisted of the underlying glacial sand covered by a layer, about 76 mm. (3 inches) thick, of pebbles similar to those found at present on the sea-beach about 1 mile distant. Upon the floor lay a skeleton, an incomplete urn, and a small implement of quartzite embedded in a reticulated mass of roots of one of the higher plants (a Dicotyledon), which was coated with a white chalky-looking crystalline powder. A similar mineral substance was seen forming an incrustation over the lower portion of the north-west side slab.

Fig. 5. Catterline Cist with Skeleton and Urn *in situ*.

This fine white powdery substance was also to be observed on the crumbling edge of the urn. On chemical analysis it consisted of phosphate of lime. No charcoal was found, and careful sifting of the pebbles and sand on the floor failed to reveal the presence of any other artifacts.

The skeleton lay in a crouching position upon its left side, with its front facing the south-east and with its back parallel to the north-west wall of the cist, and its head lay near the north-east end.

The joints of the right upper and both lower extremities were flexed, so that the right hand lay near the front of the head.

The humerus of the left upper extremity was parallel with the trunk, the elbow and wrist being bent, with the hand situated near the middle of the left thigh bone.

The incomplete urn, with its mouth directed towards the south, rested upon a flat stone behind the neck of the skeleton, and a conical implement of quartzite was seen lying near the left hand.

The cist and its contents were presented to the University of Aberdeen by David Milne, Esq., Mains of Catterline, Kinneff and Catterline, and were removed to the Anthropological Museum of that University, where it has been reconstructed and its contents placed in position so that it may be seen by the general public.

Before the cist was reconstructed a careful examination of its contents was made in the Anatomy Department of the University, and the following is a record of the observations which were made:—

Skeleton—Skull (fig. 6).—The skull is that of a male. The greater part of its left side, which lay upon the floor of the cist, had crumbled away. Small fragments of the sphenoid, temporal, and superior maxilla were found on the floor of the cist under the skull. On the right side a triangular portion is missing in the squamo-mastoid region of the temporal and adjacent angle of the parietal. Fractures are seen in the right parietal and right frontal bones. These are post-mortem, and have increased in size in the process of drying of the skull after its removal from the cist. Only a small portion of the upper maxilla remains, and is attached to the malar bone. The ethmoid, lacrimal, palate, and vomer are missing. Only a small fragment of the right nasal is present, articulating with the frontal bone.

Externally the sutures of the vault are very delicate and intricate, the frontal and posterior two-thirds of the sagittal being completely closed. There is a circular Wormian bone, 11 mm. ($\frac{4}{10}$ inch) in diameter, near the right asterion. At the pterion the frontal is 14 mm. ($\frac{3}{5}$ inch) distant from the squamosal. Internally all the sutures of the vault are completely closed, and from this it may be inferred that the age of the skull at death was over forty years, assuming that the sutures of

the period in which the individual lived closed at the same age as those of the skulls of the present day.

All sites for muscular attachments are strongly marked.

The cranium has a capacity of 1600 c.c., and about 120 c.c. in excess of the average Scottish male skull of the present day.

Norma verticalis (fig. 7).—The external angular process of the frontal bone is markedly prominent, extending about 5 mm. ($\frac{1}{5}$ inch) antero-lateral to the cranial outline, the zygomatic arch being visible. The

Fig. 6. Skull from Catterline Cist.—Norma lateralis.

superciliary ridges are also markedly projecting. The outline is roughly pentagonal, with a relatively large bi-parietal measurement as compared with the bi-temporal. The skull is brachycephalic, with a cephalic index of 85 approximately.

Norma lateralis (figs. 6, 7).—The vault is relatively high and dome-shaped as compared with the modern Aberdeenshire skull. The frontal eminences are well marked, smooth, and rounded. The superciliary ridges are much pronounced in their whole extent. The inion is well marked, there is flattening of the parieto-occipital region, while the sub-occipital is fuller than in the Aberdeenshire skull of the present day.

Norma occipitalis (fig. 7).—The outline suggests that the intact norma occipitalis formed a pentagon, with vertical and horizontal diameters approximately equal. The parietal eminences are high up and well rounded.

Norma frontalis.—Little is left of this aspect. Face height cannot be gauged. The facial margin of the orbit is roughly rectangular, its

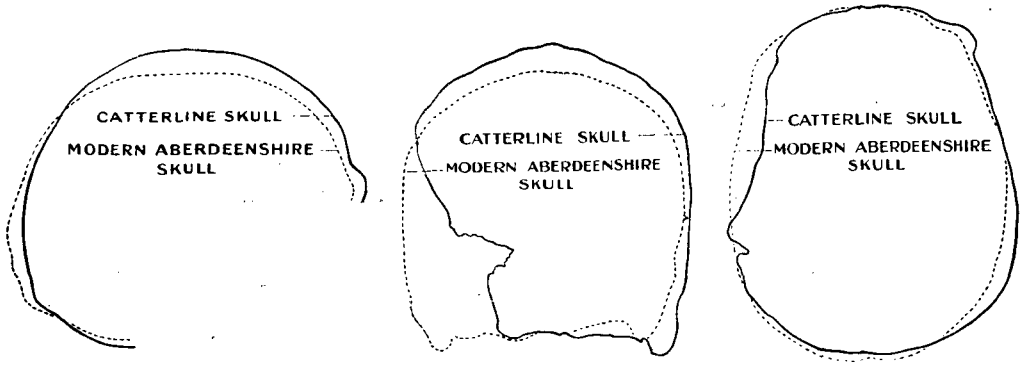

Fig. 7. Outlines of norma lateralis, norma occipitalis, and norma verticalis of Catterline Skull (continuous lines), superimposed on those of modern Aberdeenshire Skull (dotted lines). Skulls oriented in Frankfurt plane. (¼.)

long axis is directed downwards and outwards, but, from the incompleteness of its lower and inner walls, no reliable orbital index can be obtained.

Norma basalis.—The digastric groove and other sites of muscular attachment are well defined. A detached portion of the right superior maxilla shows the alveolar process supporting a canine, two bicuspid, and three molar teeth, and part of a large-sized antrum of Highmore, into which project fangs of the second and third molars, particularly the latter. The antrum extends well behind the fang of the third molar. The teeth are large, their grinding surfaces are much rubbed down, but no pulp cavity is exposed. There is marked post-mortem wasting of the outer surface of the alveolar process.

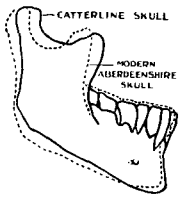

Fig. 8. Lateral aspect of mandible of Catterline Skull, superimposed on modern Aberdeenshire example. (¼.)

Mandible (figs. 6, 8).—This bone is well developed, with the chin prominent. All the teeth are present. They are large, free from caries, show marked attrition exposing dentine, but the pulp cavity is in no case visible. The alveolar process supporting the two posterior molars has an inward inclination, the teeth being inside the planes of the ascending rami. There has been much post-mortem wasting of the

outer plate of the body of the mandible, especially on the left side, the fangs of the teeth being freely exposed externally. The tubercles, affording attachment to the muscles of the tongue as well as other muscular markings, are very pronounced. The depressions for lodging the sublingual and submaxillary salivary glands are deep and continuous with one another. The right ascending ramus (the only one present) is somewhat broader from before backwards and shorter from above downwards than it is in the modern mandible. The coronoid process, which affords attachment to the temporal muscle, seems blunter, and the notch between that process and the condyle is shallower, and has a sharper margin than is seen in the present-day lower jaw.

Vertebræ.—The vertebræ present in whole or in part are the first two cervical, six thoracic, and five lumbar. They are large bones and, with the exception of the cervical, much decayed. They are covered, particularly on their eroded surfaces, with the white powder already mentioned.

Pelvis.—The first four segments of the sacrum are present, with the exception of the right side of the second, third, and fourth, lateral to the sacral foramina. The sacral curve is very slight and the anterior sacral foramina very large. The bone is much decayed in front. The coccyx is absent.

The left innominate bone is complete save for the portion which helps to form the pubic angle. Its iliac fossa is particularly cupped and hollow in the region over which the iliac muscle glides. The acetabular depression is large and shallow. Of the right bone, the acetabulum with the adjacent portions of ilium, ischium, and pubis alone remains.

When the sacrum and innominate bones are fitted together the measurements of the brim may be approximately obtained. The transverse diameter is found to be 118 mm. ($4\frac{7}{10}$ inches), the conjugate or antero-posterior diameter 110 mm. ($4\frac{3}{10}$ inches), and the right oblique diameter 117 mm. ($4\frac{3}{5}$ inches). The pelvic index is therefore 93·22. An index of 93·22 is mesatipellic, and considerably higher than that of the average European male, which is 80 (Vernau), implying that the inlet of the pelvis is considerably narrower than that of a present-day European male.

Extremities.—All the long bones are very strong and massive, have their curvatures much pronounced, and their sites for muscular and ligamentous attachment extremely well marked.

Clavicle.—Both clavicles are present, but the acromial end of the left is wanting. The length of the right clavicle is 167 mm. ($6\frac{3}{5}$ inches).

Scapula.—Both scapulæ are incomplete. The greater portion of the blade of the left bone is absent. The axillary border and lower angle of the right are present, and the sites of origin of the teres muscles

are very conspicuous. The suprascapular notch is broad, and shallow in the portion which remains of the left bone.

Humerus.—Both bones are present, exhibiting large deltoid eminences. The coronoid fossæ are not perforated. The length of the right bone is 351 mm. ($13\frac{4}{5}$ inches) and of the left 347 mm. ($13\frac{7}{10}$ inches). The torsion angle of each humerus is 19°.

Radius.—The right bone is complete. The upper third of the left is present, but much decayed. The length of the right radius is 273 mm. (10 inches).

Ulna.—The upper two-thirds of the right ulna and the upper third of the left bone are present. Both are somewhat decayed.

Bones of hand.—Of the bones of the right hand, the scaphoid, os magnum, trapezoid, metacarpal bones of thumb, index and middle fingers, together with three phalanges, and, of the left hand, the unciform, pisiform, second, third, and fifth metacarpals, and four phalanges are present. They are somewhat decayed, and seem to suggest that they are relatively small with regard to the size of the other bones of the skeleton.

Femur.—The left bone is complete. The head and neck with small trochanter, and the lower extremity are the only parts remaining of the right bone. These latter fragments are much decayed. The extreme length of the left femur is 515 mm. ($20\frac{3}{10}$ inches); the upper third of its shaft is pronouncedly flattened from before backwards, with a platymeric index of 66·25. The pilasteric index is 113·3.

Tibia.—The whole of the right tibia is complete; the middle third of the shaft of the left tibia is in fragments, covered with the white phosphatic substance and embedded in a matting of roots already mentioned, and a noticeable feature is that the calcium phosphate is deposited in the cancellous tissue of the fragments in large, clear crystals. The extreme length of the complete tibia is 417 mm. ($16\frac{2}{5}$ inches). Its shaft is flattened from side to side, so that its platycnemic index is 60·71. According to French statistics, this index is from 70 to 80 in white, and much below these figures in savage races. The head of the bone is somewhat retroverted, and the middle of the anterior border of the facet for articulation with the astragalus is unusually prolonged forwards and upwards.

Fibula.—The left fibula is complete, but only the upper two-thirds of the right remains. There is remarkable fluting of the shaft. The anterior border forms a projecting ridge bounding a large hollow surface for the attachment of peroneus longus and brevis muscles, and looks much more forward than usual. On the posterior surface the area for attachment of flexor hallucis longus is very extensive. The extreme length of the fibula is 414 mm. ($16\frac{3}{10}$ inches).

Patella.—The left patella is the only one present, and the appearance of the area for insertion of the quadriceps extensor cruris muscle indicates that this muscle has been a very powerful one.

Bones of the foot.—The astragalus and os calcis of the right foot, and all tarsal and metatarsal bones, with three phalanges of the left foot, exist. They are strong bones in a good state of preservation, with well-marked muscular and articular facets.

The right astragalus measures 64 mm. ($2\frac{1}{2}$ inches) in total length. The length of its neck is 23 mm. ($\frac{9}{10}$ inch). The index is 35·9, and the angle of its neck is 10°. The left astragalus is 63 mm. ($2\frac{1}{2}$ inches) in length, and the length of its neck is 23 mm. ($\frac{9}{10}$ inch). The index is 39·6, and the angle of the neck is 9°, while the modern adult European astragaloid index varies from 24 to 43 and the angle from 10° to 12°. In both astragali the trochlear surfaces project in a slightly pointed fashion upon the upper surfaces of the necks of the bones.

Sternum.—The presternal and mesosternal portions are present but separate from one another, the level of separation being that of the second costal cartilages. The approximate length of the pre- and meso-sternal portions together is 140 mm. ($5\frac{1}{2}$ inches), and the greatest width of the presternum is 74 mm. ($2\frac{9}{10}$ inches) and of the mesosternum 36 mm. ($1\frac{2}{5}$ inch).

Ribs.—The first and last ribs on the right side are the only ones present. On the left side the only one absent is the twelfth. The only feature particularly noticeable is that the upper edges of the necks project markedly upwards as well-marked crests, thereby affording better attachment for ligaments connecting the ribs with the vertebræ.

The stature of the individual, as calculated from the various bones, according to the formulæ of Professor Karl Pearson, is :—

From femur	1781 mm.	(5 feet 10 inches)
„ humerus	1722 „	(5 „ $7\frac{3}{4}$ „)
„ tibia	1777 „	(5 „ 10 „)
„ radius	1752 „	(5 „ 9 „)

The intermembral index of 67 points to the fact that the upper limbs were shorter than the lower limbs, and in proportion to the lower limbs are shorter than those of present-day Europeans. The retroversion of the upper extremities of the tibiæ, and the forward prolongation of the lower articular facets of these bones so that they may rest upon the necks of the astragali, suggest the idea that the individual may have assumed a squatting position when at rest, and may have walked with his knees somewhat bent.

The skeleton exhibits characters common to the other skeletal remains recovered from short cists and preserved in the Anatomical Museum of

the University of Aberdeen. The only characters in which it appears to differ from them is that its height (5 feet $7\frac{3}{4}$ inches to 5 feet 10 inches) is greater than their average height (5 feet 4 inches), and that the capacity of its skull (1600 c.c.) is larger than theirs (average 1458 c.c.).

Urn.—The urn (fig. 9) is an example of the low-brimmed type of

Fig. 9. Urn from Catterline Cist.

beaker or "drinking-cup," with a distinct neck about the junction of its upper and lower three-fourths. About three-fourths of the brim and nearly one-third of the side are missing. The external measurements are as follows:—

Height	. . .	191 mm.	($7\frac{1}{2}$ inches)		
Diameter of brim	. .	184	„	($7\frac{1}{5}$	„) approx.
„ neck	. .	165	„	($6\frac{1}{2}$	„)
„ bulge	. .	178	„	(7	„)
„ base	. .	95	„	($3\frac{3}{4}$	„)

The thickness of the wall is 19 mm. ($\frac{2}{10}$ inch).
The average thickness of the base is 18 mm. ($\frac{7}{10}$ inch).

The paste is very coarse and brick-red in colour externally, changing to a darker brown on the inner aspect. The surface of the urn shows four bands of ornamentation passing horizontally round the vessel, separated by unornamented areas. The pattern consists of horizontal, vertical, and cross-hatched lines, which had evidently been executed by a notched die impressed on the clay while soft.

Implement.—The implement (fig. 10) of quartzite, which rested near the

Fig. 10. Stone Object from Catterline Cist. (½.)

middle of the right forearm, on the floor of the cist, is part of a sea-beach pebble. It is conical in shape, with its sides very roughly chipped and its base formed by the smooth surface of the pebble. Its extreme height is 27 mm. ($1\frac{1}{10}$ inch), and the diameter of its base is 42 mm. ($1\frac{7}{10}$ inch).

TABLE I.

Measurements in mm. of Skull from Upper Mains of Catterline, Kinneff and Catterline, Kincardineshire.

	Sex	Male	
	Cubic capacity	1600 c.c.	
	Glabello-occipital length	184 mm.	
	Nasio-inional length	179 ,,	
	Cephalic index	85 approx.	
	Nasio-inional longitudinal arc	330 mm.	
Measurements of mandible.	Symphysial height	30 ,,	
	Coronoid height	61 ,,	
	Condyloid height	56 ,,	
	Gonio-symphysial length	98 ,,	approx.
	Breadth of ascending ramus	37 ,,	
	Condylo-symphysial length	131 ,,	

TABLE II.

Measurements in mm. of Bones of Extremities.

Sex	Male	
	Right.	Left.
Clavicle	167	...
Scapula	...	...
Humerus	351	347
Ulna	...	...
Radius	273	...
Radio-humeral index	77·78	...
Femur:—		
Maximum length	...	515
Platymeric index	...	66·25
Pilasteric index	...	113·3
Humero-femoral index	...	67·4
Tibia:—		
Maximum length	417	...
Platycnemic index	60·71	...
Femoro-tibial index	81 approx.	
Fibula	...	414
Intermembral index	67 ,,	

It is of interest to mention that the adjoining parishes of Kinneff and Dunnottar, particularly in the neighbourhood of the site of the Upper Mains of Catterline cist, have been very fertile in the production of cists of a similar kind.

About 200 yards north-east of the Catterline site, according to the information derived from local residents, four stone cists were found in a gravel pit on the farm in which the Catterline cist was discovered. Nothing is known of what became of them or their contents except that possibly the large cup-and-ring-marked stone noticed by Dr Barron of Dunnottar at the farmhouse of Upper Mains of Catterline, and now presented by him to the Anthropological Museum of Aberdeen University, may have been associated with these burials. That stone is now placed alongside of the Catterline cist in that Museum.

At Cosey Corner, 1 mile south and near the sixth milestone from Stonehaven, several cists and urns were recovered within living memory in a gravel mound that was being removed.

About 150 years ago the cairn on the St John's Hill was opened, and in it there was a stone cist containing "rich black earth having a mixture of half-burnt bones and bits of oak charcoal without any kind of urn." (*Statistical Account of Scotland*, 1796.)

At and near the Law of Largie, 2½ miles south, others are recorded as having been found.

On the farm of Auchindrich two cists were exposed—one between the

Law of Largie and the farmhouse of Auchindrich, the other further north (Ordnance Survey Map, 1901). Not far from these, in a field on the farm of Pitcarry, tradition has it that a stone cist was unearthed.

A stone cist was found near the site of Druid's Camp, Druidsdale.

In the parish of Dunnottar, and also within 3 or 4 miles of the Catterline site, the following finds have been recorded :—Stone cist and urn found at Kernoon; stone cist and urn on the farm of Lampool, near the north-west end of the Loch of Lumgair, in 1864; stone cist and urn 200 yards north-east of the last one, in 1859; stone cist and urns at Burns' grandfather's farm of Clochnahill; stone cist and urn at Brucklaywaird; stone cist and urn at Carmont; stone cist and urns at Garbertstrypes; stone cist and urn near Lindsayfield.

As to the date of "short cist" burials in the North-east of Scotland, it is impossible at present to come to any definite conclusion, but we agree with most archæologists in thinking that these burials date about the middle or perhaps the earlier part of the second millennium B.C.