

THE CARVED STONE BALLS OF SCOTLAND: A NEW THEORY AS TO
THEIR USE. BY LUDOVIC MACLELLAN MANN, F.S.A. Scot.

Interest centres round these balls because they are carefully carved and decorated, and are found practically only in Scotland. They have formed the theme of much, and perhaps futile, speculation as to their age and purpose. They first began about 1850 to be noticed by archæologists, and now some two hundred specimens are known to exist. All are of stone, except a bronze specimen from Lanarkshire. Superficially cut discs, usually six in number, are sculptured on the greater number. Some are cut with many small knobs, while others have a surface without protuberances, but bearing incised lines and other ornamental work. Some perfectly plain spherical stones have been inadvertently classified with them; and also a few perforated carved balls, which seem to belong to a different category.

Dr J. Alexander Smith was inclined to place these balls in a somewhat late chronological position—in the earliest Christian centuries (*P.S.A.S.*, vol. xi., 1876, p. 56); Sir John Evans, referring to one specimen, expressed the opinion that it “would seem to belong to the Bronze Period rather than to that of Stone” (*Anc. Stone Imp.*, 2nd edn., p. 421); and Mr J. Romilly Allen held that the Towie

ball " belongs clearly to the Bronze Age " (*Reliquary*, N.S., vol. iii. p. 105).

Dr Joseph Anderson hesitates to place them so far back as the Bronze Age (*Iron Age*, p. 172).

Others writers, some quite recently, give these relics a wide chronological range, extending back to the Stone Age.

The alleged finding of specimens in interments of the Stone and Bronze Ages has caused confusion. A misconception of the decorative features on two specimens, the Towie ball and the Lanarkshire bronze ball, has not infrequently caused these two specimens to be assigned to a period too remote. In both these specimens the decoration seems to me to be characteristic of a time not earlier than the Early Iron Age. On the Towie specimen is cut an isolated group of three small dots or depressions arranged in a triangular manner. This *motif* of the triple dots occurs on several early Scottish Christian monuments, is common in the early Christian illuminated manuscripts, and is found on a silver chain (*P.S.A.S.*, vol. x. p. 330), which bears also one of the Pictish symbols. Thus the ball seems to be linked up chronologically with the Early Christian sculpturings. Its decoration is " late Celtic " in style, and of a late phase of that style.

The carved work on a specimen in Perth Museum is very like the " thistle-heads " of the silver pins and brooches which have been found in Scotland with coins of the tenth century. A beautifully carved ball, which I obtained in Lanarkshire (*Prehistoric Catalogue*, Scot. Nat. Exhib. (1911), Glasgow, p. 858), has a row of small punctuations set marginally on one of its discs in the style of the rows of dots set medially in bands in the decorative work in metal and on vellum of the earlier medieval centuries.

The style of decoration on the balls and their discovery in earth houses, near brochs, and on sites occupied during the early centuries of this era, such as the Fort of Dunadd, Argyll, testify that these relics have as a probable centre point in their chronological range the

first two or three centuries of the Christian era. They may be classified as protohistoric, and I see no grounds for assigning any of them to the Bronze or Stone Periods. But some writers hold out strongly for an extension of their period back to those ages. The sole reason for this seems to be the supposed association of specimens in one or two cases with prehistoric interments.

There are only three cases in which it seems worth while to examine the statement that has been made that carved stone balls have been found in true association with prehistoric interments. In 1850 Sir Daniel Wilson (*Prehistoric Annals*, 2nd edn.) was told that two plain round stones were got with a burial in Dumbartonshire, and he refers to a statement in the *Statistical Acc.* (Kirkcudbright), vol. iv. p. 332, that a ball of flint is stated to have been found in 1809 with some other important things in a cairn on Glenquicken Moor. These balls, even granting they were in true and direct association with the interments, would probably be rejected (if they were now available for scrutiny) as coming within the category of the carved balls under discussion. I have from Aberdeenshire a smooth and almost perfectly spherical ball of flint which some people would take to be one of the carved stone balls, but the stone is simply a natural nodule conforming to the shape of the flint fossil. The third case in which a prehistoric association for these objects is alleged is that of three specimens said to have been found at a cairn at Ardkeiling, Elgin. They have been described by the late Mr Hugh Young (*Reliquary*, Jan. 1897, p. 46, and N.S., vol. iv., 1898, p. 119); but his information was got second-hand, and he did none of the discovery work himself.

One of the specimens seems to have been found in the usual way in the surface soil of a field, but two of them are supposed to have been associated with a burial cist some distance from the cairn. The discovery of two of these relics together is an excessively rare phenomenon, and is in itself sufficient to raise suspicions as to the genuineness of the association. Mr J. Muill, the farmer at Ardkeiling, who seems

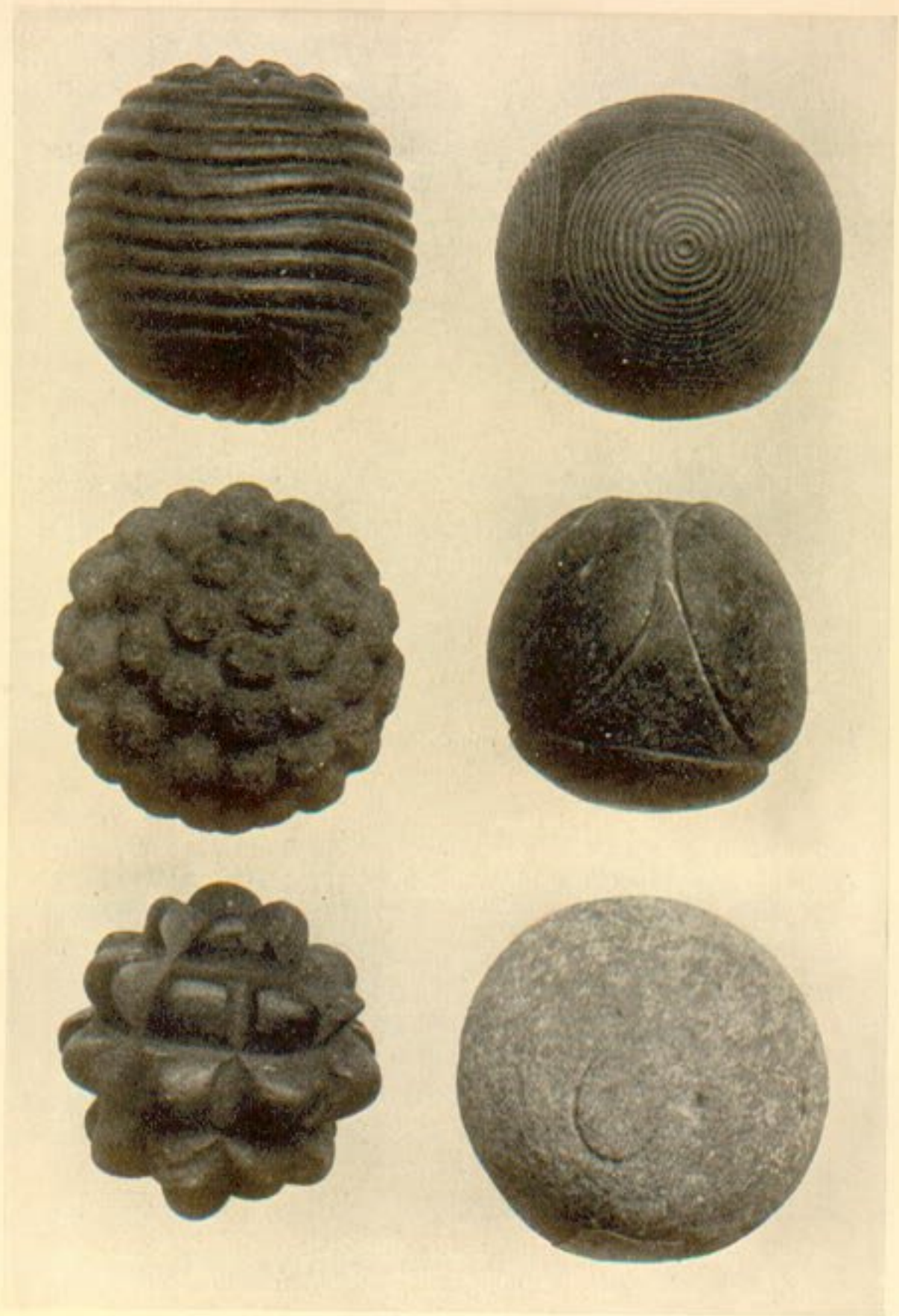


Fig. 1. Scottish Ornamented Stone Balls (4).

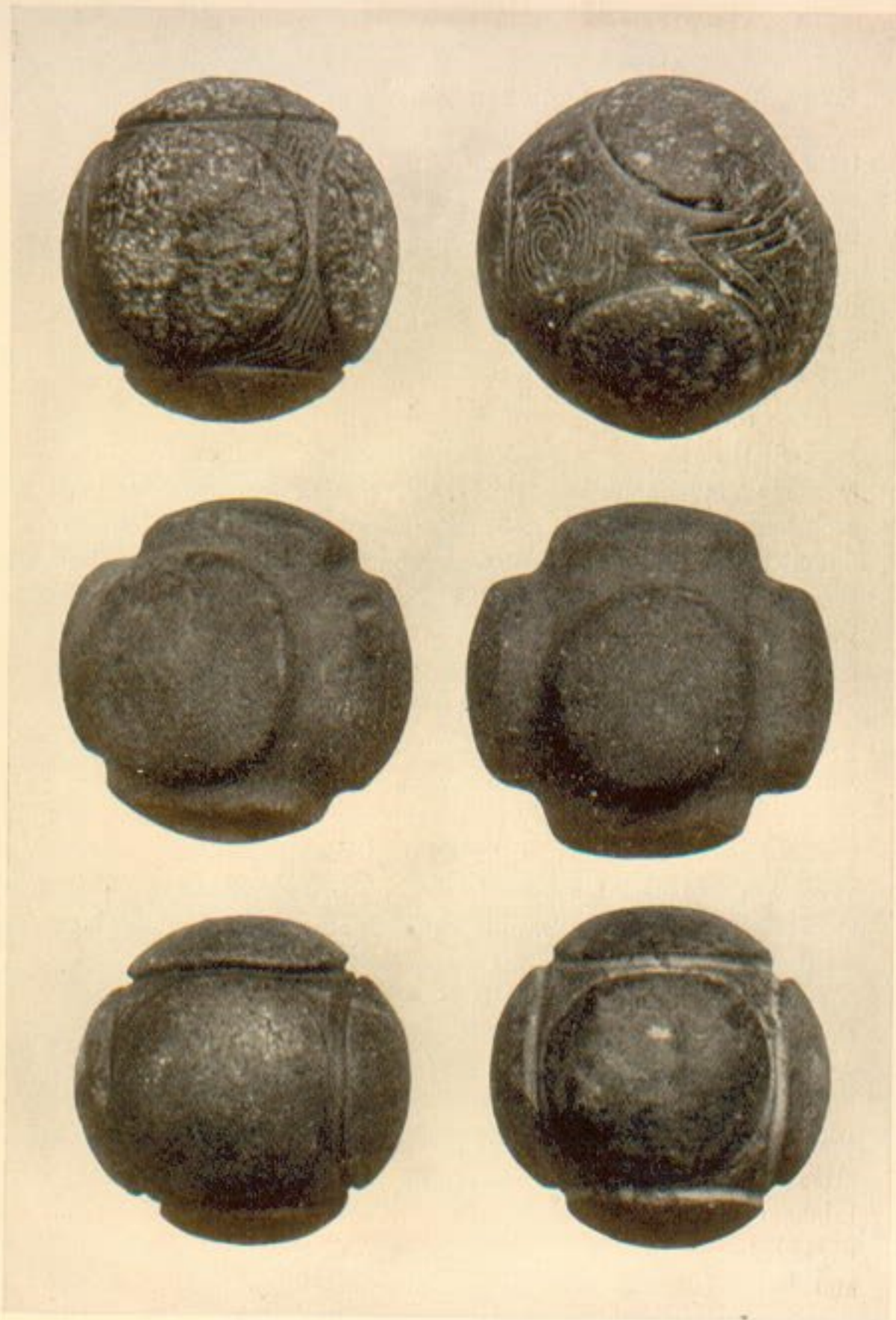


Fig. 2. Scottish Ornamented Stone Balls (4).

to have told Mr Young of the incident, inclines to believe that they actually came out of the cist, as I have seen a letter from Mr Muill to this effect, to an Edinburgh correspondent.

It seems highly desirable, however, to have further evidence as to this discovery, but it may be too late to secure it.

In a few other cases the reports of the finders as to the stone balls having been picked up near a cairn or stone circle are of little value.

As to the possible purposes of these stone balls, it has been conjectured that they were used in some game or amusement. They are almost invariably found singly, a fact which does not strengthen such contention. If made to be rolled about, it is clear that so much fine and easily injured carved work would not have been put upon them, an argument which also weakens the hypothesis that they were employed either as loose missiles or as weapons attached to sticks by thongs.

An investigator has put forward the idea that the balls played some part in magical or religious ceremonies. It is, however, mere guesswork to say they were used in divining (*Arch. Assoc. Journal*, vol. xvii. p. 20), and indeed they possess no characteristic leading up to such an idea. The remarks, by Dr J. Alexander Smith (*P.S.A.S.*, vol. xi. p. 59) suggest a possible use of the stone balls as heads of sceptres or episcopal staffs, but there is not a jot of evidence to fortify such a suggestion.

Perhaps less improbable is Dr Smith's adopted suggestion that these balls were mounted or tied to rods and used flail-like as weapons. As the balls are of somewhat late period, it becomes necessary to inquire as to the records of the use of such objects. He instances the use of some such weapons at the Battle of Hastings and draws attention to drawings of them in the Bayeaux tapestry. It is scarcely thinkable that much minute and laborious work should have been expended on an object to be subjected to the most violent impacts and to rough usage which would destroy the beautifully carved

surface. As is shown in the tapestry, the clubs were sometimes thrown bodily at the enemy and were admittedly rude weapons.

Dr Smith held that he had restored to its place a supposititious stone-mace "which," he states, "must have been brought in great numbers with the Saxons when they flocked in early times into Scotland." But why have none of these stones been discovered in England, and why are they so scarce in Southern Scotland, and why relatively common in districts farthest removed from Saxondom such as the Orkneys? Why, for example, is the Kilpheadry ball from Sutherland, made of native sandstone if it is of Saxon manufacture? Did the ball from Dunadd Fort, Argyll, come in with the Saxons? By no stretch of fancy can one think of these enigmatical balls as heads of a characteristic old Saxon weapon or having been used at the Battle of Hastings.

If attached to thongs like the South American bola, which consists of one or more stones coated with leather attached to a thong—a form of weapon foreign to Britain and Europe—we have the old objection to fine carved work being exposed to severe usage; and again, the necessarily strong leather thong, no matter how arranged, would cover much of the decorative work.

We must obviously look for suggestions in other directions.

If heads of weapons, it is strange that in the cases of knobbed specimens the protuberances are so low. If the knobs and discs were of greater prominence and sharpness, it is clear that the effectiveness of the stones as weapons would have been greatly increased.

I have reviewed all the suggestions that have been recorded, but all of them have weak points, and none has ever received hearty or unanimous acceptance.

The hypothesis I now venture to set out is one which will explain the many peculiarities of these relics, and is one which, I think, presents a better solution.

Several years ago, on examining some old Scottish weighing beams,

I found that associated with each of them was a roughly-cut stone which hung upon the beam and served as a movable poise or weight. At the same time I had been puzzling over the probable purpose of the carved stone balls; and it then occurred to me that their use could best be explained on the hypothesis that they were movable poises on primitive weighing machines.

In ancient times there were three main kinds of weight measurers. There was the familiar balance, favoured for small objects, where the weights are loose, furnished with a pan hung at each end of the beam, and having the swing point and point of suspension of the beam at the centre of the beam. Another method was that of the steelyard (a word not derived from "steel" as indicating a metal used in its construction), where the object to be weighed was placed on a hook or hooks or in some receptacle suspended at one end of the wooden beam, while a poise (a weight of stone or other material) was moved to and fro on the beam at the other end, and the required weight ascertained from that graded mark on the beam at which the poise had to be brought to effect a balance. In another of the appliances (sometimes styled the bismar) the poise was fixed, while the fulcrum or swing point was movable along the wooden beam. In these and other intermediate appliances a suspended weight was necessary. All the contrivances with poises were anciently very widely distributed. Like many other neo-archaic appliances, they survived in their primitive style in the remote districts of Scotland long after they had been modernised in other parts. Specimens of the "bismar," as it is called in Scotland, Iceland, and Scandinavian countries, might until recently have been secured as curiosities in the northern isles and down the east coast of Scotland to Berwickshire.

The poise was a roughly dressed stone either hung by an iron hook or by a network of string. Mr H. Ling Roth has written about them ("Oriental Steelyards and Bismars," *Tr. Roy. Anthropol. Inst.*, vol. xlii.), and shows that the appliance was in use so far away as China and

Japan. They were evidently widely distributed in remote times. In the Far East the stone poise was often hung by strings of hair or silk from the beam. He describes a specimen from Yarkand, China, where the travelling poise is an orange-shaped stone of granite, 1.37 kilogrammes in weight, with a wooden beam 73 cm. long. The poises of Chinese steelyards in the British Museum are often six-sided, and one has oval discs cut upon it. Some of them remind one of the carved stone balls of Scotland, which is suggestive that the latter may have been used as poises. The knobs, sunk interspaces, and channelled gutters on the Scottish specimens are highly ornate, but would have been useful in allowing the poises to be securely and artistically suspended by a network. Experiment demonstrates how easily and elegantly the Scottish balls can be encased by a network. The strands, in the case of the ball experimented with, were arranged in the cut-out interspaces and brought into one string for suspension to the beam. Some of the Scottish specimens have a slight flattening of, or an absence of decoration on, one side, and it is noticeable that the stones sit naturally on that side which was probably opposite to that from which the suspension cord was likely to have run upwards. This method of suspension would in no case interfere with the decorated surface, but would enhance the ornate character of the poise.

The carefully sculptured work seems appropriate in a thing which was to be handled daily and seen by many, at a period when the people delighted to have even simple objects of domestic and utilitarian use elaborately ornate, and were accustomed to lavish much time and artistic skill upon them. The completely decorated surface of many of the balls is not remarkable if one supposes the stones were hung from the beam suspended in a delicate network of strings, leaving practically every part of the surface open to view, the strings being arranged so as to enhance the appearance. A scrutiny of those balls which have escaped weathering conveys the impression that they

have been smoothed, hand-soiled, and blackened as if by continuous handling, and this feature has been remarked upon by Dr John Alexander Smith (*P.S.A.S.*, vol. xi. p. 55), though the significance of it did not apparently occur to him. Some other writers have also noticed that they have been so much handled, rubbed, and blackened by wear of the hand as to disguise the texture and natural colour of the stone.

If beam poises were widely distributed, why is it that the ornate poises are to be found only in Scotland? It would appear that in some areas the people did not care to decorate the poises. In England their place seems to have been taken by burnt-clay weights, which were easily perforated; and it is curious that just as in the border counties of Scotland the carved stone balls are very scarce, and the clay weights are not uncommon. It is clear also (if the hypothesis put forward is correct) that while the primitive form of weighing-beam continued in use in Scotland from early medieval times to almost the present day, the stone poises became degraded in shape and decoration until for many recent centuries an ordinary rough stone often with an iron hook sufficed. The wooden framework of the early bismar would not often survive, and the only vestige of such a contrivance would be the weight alone, and if that consisted of a rough stone it would at once lose its identity and be ignored. If the weight were well made and decorated and became lost and discovered in the soil at a later period, it would at once be brought home and treasured, and give rise to much speculation as to its purpose, just as the relics *under discussion* have done during the last half-century.

Since writing this paper I applied to Mr Alex. O. Curle for permission to arrange for the weighing of the carved balls in the Scottish National Collection, as the data so obtained might throw light on the problem. Mr Curle told me, however, that this work had just been undertaken by Mr Wilfrid Airy, B.A., M.Inst. C.E.

I have since been favoured by Mr Airy's paper "On the Ancient

Weights of Britain," read to the Institute of Civil Engineers (*Excerpt Minutes of Proceedings of the Institute of Civil Engineers*, vol. xcxi., Session 1912-13, Part I.).

Mr Airy gives a history of the three pounds (Avoirdupois, Roman, and Troy—the only recognised pre-Norman weight standards of Britain), and the various weights in clay, lead, and other metals, and in other materials, found on Romano-British and other early sites.

In many English museums are objects of burnt clay and of chalk and limestone made into the form of truncated cones, triangular slabs, cylinders, and rings, nearly always perforated as if to facilitate suspension, and ranging in weight from $\frac{1}{2}$ lb. to 12 lbs. They have been got on Romano-British sites and on sites occupied for a few centuries before the Roman occupation of Britain. A very few have been got in the southern parts of Scotland. Mr Airy shows they could hardly have been net-sinkers or loom weights, and were almost certainly trade weights following in their units the Avoirdupois system.

He attempts to establish that the commercial weights began to come into use in Britain some little time before the Roman invasion. He does not refer at all to ancient beams and their movable poises, but states that the balls "must be supposed to have served some generally useful purpose by themselves alone."

Mr Airy remarks upon the frequent occurrence of perforated clay objects (presumably weights) in England, and their great rarity in Scotland. It seems clear that weights were made of clay and less often of chalk and limestone in England, and of stone in Scotland. He holds that "while the antiquarians have not as yet formed any reasonable conjecture as to the use and object" of the carved stone balls peculiar to Scotland, they were "either trade weights or were at any rate made in accordance with a trade-weight standard, the Avoirdupois pound." From a table, prepared by Mr Airy of carefully ascertained weights of 81 stone balls in Edinburgh, Aberdeen, and

London, they appear to fall into four divisions—an eighth, a quarter, one-half, and one-pound weights; but by far the largest number approximate to the denomination of 1 lb. Avoirdupois.

Mr Airy goes no further, however, than to offer the suggestion that the Scottish stone balls were employed as trade weights. But his suggestion is extremely helpful in working out the hypothesis that they were used as poises on weighing-beams.

The distribution respectively of weights of clay and weights of stone in Britain suggests that the ancient bismar, while used throughout Britain, differed in various areas in respect of the material used in the movable poises. I have never heard the suggestion that the perforated clay weights of England were used on the bismar, but this would now appear to be probable.

It is only by this hypothesis (that the balls were employed as beam-poises) that one can explain all the peculiarities of the relics :—

1. They are practically always found singly, as each small community would not require more than one weighing-machine.

2. There is a total absence of well-authenticated cases of their occurrence in graves, but they have often been discovered at domestic sites.

3. The decoration of knobs, incised lines, gutters, hollow and intercommunicating interspaces between discs, is not only highly ornate but assists in allowing the fixing of a network for suspension.

4. Their confinement to Scotland, and the confinement of burnt-clay weights to the areas where the balls are not found, simply means that in different territories different styles of poises were in vogue in ancient times. The nature of the material used for the poises dictated generally whether they were to be perforated or not. Soft material, such as clay, limestone, and chalk, induced perforation.

5. Their employment in a service which did not expose them to violent usage and impact induced fine surface workmanship to be lavished upon them.

6. The base and top, often recognisable either as a slight flattening of one side or by the presence of one plain or less decorated disc or side, is explained.

7. The finely smoothed gutters are accounted for by the play of a string.

8. Their appearance of being often handled, as indicated by an oiliness, smoothness, and darkening of the surface on unweathered specimens, is accounted for.

9. Their period coincides with the first developments of accurately managed systems of trade and barter.

10. The coincidence as to certain units of weight undoubtedly represented by them points to their having been trade weights.

11. They could be more appropriately used suspended, not only without loss of decorative effect, but with an enhancement of it, than affixed to heavy thongs or rods.

12. If the poise in Scotland anciently acquired greater beauty than in any other area, this furnishes one more indication of the exceptionally high degree of æsthetic attainment of the ancient people of North Britain as compared with that of the people of ancient Saxondom.

13. The reasons for sculpturing the balls might have been threefold—not only to please the eye and to assist the gripping of the suspension cords or network, but to prevent an easy reduction in the weight of the ball by fraudulent traders. If the ball were worn down or intentionally scraped so as to reduce its original weight, then the alteration in bulk might be obvious in the case of a ball with a finely chiselled and definite pattern upon it. Thus a finely decorated surface, like the milling on a coin, tended to preserve the weight or measure from fraudulent mutilation.

The Roman *statera* may have been the prototype of the weighing-beam of Northern Europe and Britain. It seems to have spread into Northern Europe and to have been introduced shortly before the Roman invasion, as were also mechanical appliances such as the loom, the

wheeled vehicle, the rotatory quern, the lathe, the potter's wheel, and such things as coins and currency bars.

I think it can be shown that several of these balls performed a double function, and that they contain in their carved work certain units of length. The diameter of a ball may have varied with the specific gravity of the stone out of which it was made, and its diameter was in any case not easily ascertained ; but the diameter of its discs and the lengths of certain of the lines and channels cut upon it seem to bear a relationship in each specimen.

A feeling of disappointment may arise in many minds that these curious stone balls, the product of much skill and artistic work, were of no magical, ceremonial, or warlike origin, but were merely an adjunct of an apparatus used in prosaic and everyday commercial operations. But on the other hand, if the hypothesis is well founded, as I venture to say it is for thirteen specific good reasons, we get a glimpse into a system of weights and measures which underlay commercial activity in Scotland at a time not far short of 2000 years ago, of which little accurate knowledge has come down to our time.