FIG. 1. BONE HEDDLE FROM SOUTH SHIELDS $(\frac{1}{1})$.

FIG. 2. WOODEN HEDDLE FROM NORWAY $(\frac{3}{4})$.

V.—A BONE WEAVING-FRAME FROM SOUTH SHIELDS IN THE BLACK GATE MUSEUM.

By the late Robert Carr Bosanquet.

edited by J. D. Cowen.

On 24 April, 1918, the late R. C. Bosanquet read to the Society a paper with the above title. A brief notice of the contents was inserted by Robert Blair in *Proceedings*,[1] and a half-tone illustration of the object discussed was used as a tailpiece to *Archæologia Aeliana* 3, xvi (1919) at p. 227. The paper itself was not published; on the contrary, the author continued to accumulate notes and to correspond with specialists at intervals over the following years. At the time of his death he had completed, and virtually prepared for the press, the greater part of his material. This study and the papers relating were entrusted by Mrs. E. S. Bosanquet to myself as one of those who had corresponded with her husband on the subject. Many causes have operated to delay publication, but this duty is now performed as a belated act of homage to the memory of one of the most learned and charming of men. No alteration has been made to the text. A few lines only have been added at the end by way of conclusion.

In the collection of antiquities from South Shields formed by the late Robert Blair and deposited by him in the Black Gate Museum, there is a perforated bone plate with silver mountings, the significance of which has not, so far as I can learn, been noticed hitherto (plate ivb, fig. 1).

[1] *PSAN* 3, viii, 146-7.

It measures ·08 × ·045 m. (say $3\frac{1}{8} \times 1\frac{3}{4}$ inches) and has the form of a five-barred gate, the bars divided one from another by long slots cut with a fine saw. At either end the strip corresponding to the upright frame of the gate is strengthened with a sheathing of silver ·005 m. wide. To one side these strips extend above the bone plate and on examination one sees traces of a fifth slot and a sixth bar, now broken away, which presumably completed the article. Each strip of sheathing is secured through the bone by three double-headed silver rivets. On one side, probably owing to some split in the bone, a fourth rivet has been added, but this did not succeed in preventing the break which eventually took place. The surface of the sheathing is roughly ornamented with incised lines, and on the face of each bar is an incised compass decoration consisting of six pairs of concentric circles. In many cases the pivot-leg of the compass has perforated the bone, but these perforations are irregular and with one exception do not seem to have any practical object. But half-way along each bar is a much larger regularly formed hole, with an average diameter of ·003 m. And the bottom bar has three such large holes, in the centre and at either end; one end-hole coincides with the centre of a compass circle, the other ignores and cuts through the ornament; plainly these end-holes in the end-bar are secondary and made after the ornament. On the other hand the central holes seem to have been made before the compass patterns were applied. We may infer that the central perforations and the longitudinal slots are the essential features. And there can be no doubt that this is a member, perhaps a somewhat early and primitive member, of a large class of domestic implements the use of which was formerly widespread both in Europe and in America. It is a heddle or heddle-frame, used for weaving narrow bands such as tapes or garters.[2]

[2] The author's description of the heddle treats the longer axis as being horizontal. In use, however, the "five-barred gate" would need, of course, to be turned through a right angle so that it stood *on its end*. J.D.C.

The explanation came to me, as it happened, from Norway. I often spend an odd half-hour between trains in our museum, and one day as I was looking at the South Shields collection it flashed across me that years ago I had bought two weaving-frames of similar design in a curiosity shop on the Hardanger Fiord. I exhibit them in the hope that someone may be able to furnish further information than I can offer at present.

Both are of carved wood, made in a single piece. The smaller one is obviously the older (plate IVB, fig. 2). The wood I think is lime, toned by age and use to a rich brown. On the principal face a rough pattern of sunk triangles divided by incised lines covers the frame above and below the perforated bars; the top is gable-shaped and bears the date 1733, evidently coeval with the carving. The back is plainer, the only ornament in the gable being an incised circle enclosing a six-lobed figure formed by six segments of circles intersecting at its centre. Across this and mutilating it is a second date 1794, evidently cut by a later owner, followed by the letters АИИ (the N's being reversed), followed by a small circle open at the top, which may be meant for an O or merely be a final flourish. The wood has split in two places and been repaired with string and sealing-wax, perhaps when the second date was added—clumsy work in both cases. There are twenty-two bars, and a little above the centre of each is a hole, worn by use into elliptical or rhomboid outline, except those to the extreme right and left which have been little used and keep their circular form. They may have been bored with a red-hot knitting-needle. It is a typical piece of peasant work.

The second is larger, more finely carved, and obviously not very old. It has the additional interest of exhibiting a piece of weaving in progress, with a shuttle of curious design attached.

The wood appears to be beech. The whole frame is convex, which gives it an air of elegance in harmony with the gay silk threads—crimson, blue, and white—with which it

is rigged. The carving consists of foliated scrolls, strictly symmetrical, deeply and accurately cut. A square sunk panel in the border below has probably held a piece of inlay bearing the name of the owner. There are twenty-four bars, and a hole in each bored with a red-hot point somewhat above the centre.

The outside dimensions of the smaller frame are ·128 m. high by ·135 m. wide (say $5\frac{1}{16} \times 5\frac{5}{16}$ inches), the height of the bars being ·068 ($2\frac{11}{16}$ inches): of the larger, ·175 high and again ·175 wide ($6\frac{7}{8} \times 6\frac{7}{8}$ inches), the bars being ·073 m. ($2\frac{7}{8}$ inches) high. The height of the bars in the South Shields frame is ·07 ($2\frac{3}{4}$ inches); in this respect it is intermediate between the two Norwegian specimens.

There can be no doubt that we are dealing with implements of the same type and use. What that use was is shown by the unfinished band from Norway, probably intended for a garter. For a band of this width, something under an inch on the average, only half the frame was required, the twenty-four warp-threads being passed alternately through the long slots and the round holes. The South Shields frame could accommodate a maximum of eleven threads and was intended therefore for a still narrower fabric, about $\frac{3}{8}$ of an inch in width.

The Norwegian shopman did not know much about his goods, which came to him from a local collector, but he was able to explain the *modus operandi*, and his account is confirmed by higher authorities whom I shall quote presently.

The worker began by cutting warp threads of the required number to the length of the garter or belt to be made and passing them alternately through the slots and holes. The farther ends are knotted together and fixed at such a distance from the worker as to maintain a convenient tension; the nearer ends are also knotted and are held in the worker's hand or perhaps pinned to her dress. By alternately raising and lowering the frame she brings the threads which pass through the holes above or below the

threads which pass through the slots and therefore are free to retain their original position. Thus she produces what weavers call the "shed," and is able to pass the shuttle carrying the weft-thread alternately over and under the two sets of warp-threads.

So much I had made out, when I came upon a paper by Otis Mason, the well-known curator of the Division of Ethnology in the United States National Museum, entitled *A Primitive Frame for Weaving Narrow Fabrics*.[3] His starting-point is a heddle-frame, to give the implement its technical designation, obtained by Schoolcraft, the pioneer investigator of American Indian ethnology, from the Chippewa Indians, whose home adjoined Lakes Michigan, Huron, and Superior, figured but not described in his principal book.[4] It is by no means so primitive as the South Shields specimen, for it has thirty-seven upright bars or "healds." There is a presumption of European influence, for the Indians learned the art of weaving from the white man, and the ornamentation is not distinctively American but resembles the openwork carving of certain German examples. Mason goes on to figure two heddles from Helsingfors in Finland, one with eighteen, the other with thirteen vertical bars, and others from East Prussia and Pomerania, the simplest of which has only ten bars. The arched openwork tops of two specimens from Stettin (p. 497) are not unlike those of the Chippewa Indian specimen, but the precise source and channel of the European influence which Mason suspected could not be traced when he wrote. He mentions no Norwegian or British examples, but hints that the teachers of the Indians are likely to have been French explorers or priests, or at a later period English settlers.

A similar problem arises in the Southern States of the Union, southern Utah, Colorado and California, the Terri-

[3] *Annual Report of the Smithsonian Institution*, 1899, pp. 487-510.
[4] H. R. Schoolcraft, *Indian Tribes of the United States*, 1851-7, p. 488.

tories of New Mexico and Arizona, and northern Mexico. In this, the so-called *pueblo* region, the native tribes execute elaborate garters, belts and other fabrics with heddle-frames made of reeds lashed to wooden cross-bars. One example has as many as ninety-four healds. The height of the slots is $4\frac{1}{4}$ inches, a little more than in the European specimens. There is no reason to think that weaving by this process was known before the Spanish Conquest, but research in Spain would be necessary before we could prove its derivation from our side of the Atlantic.

So far we have dealt only with free-swinging heddles. There is a more advanced type in which the little frame is fixed at one end of a box-shaped stand, and placed on a table which has a revolving yarn-beam at the other end (p. 499). Mason records and figures examples from Siena in Italy and from various parts of Pennsylvania and New England; an intermediate stage, found especially in Connecticut, is a frame with an elongated foot meant to be gripped between the worker's knees. In the *free-swinging* heddles, like those now before us, the heddle itself is raised or lowered, carrying with it the threads in the stirrups; in the *stationary* heddles, whether fixed to a box-stand or gripped between the worker's knees, the whole of the warp is raised or lowered; but in this case the stirrup-threads remain where they were, the slot-threads rise or fall to the limit of their free play. Mason illustrates the varying uses of these developed implements by a quotation from Mrs. Alice Morse Earle's *Home Life in Colonial Days*:[5]

"Smaller looms, called tape looms, braid looms, belt looms, garter looms or 'gallus frames,' were seen in many American homes, and useful they were in days when linen, cotton, woollen or silk tapes, bobbings and webbings and ribbons, were not common and cheap as to-day. Narrow bands, such as tapes, none-so-pretty's, ribbons, caddises, ferretings, inkles, were woven on these looms for use for garters, points, glove-ties, hair-laces, breeches-suspenders."

The wooden heddle has been used in recent times over

[5] New York, 1898, p. 225.

a wide area of north-western Europe, including Finland, Scandinavia, and Germany. Evidence for Britain is scanty, but I have seen an example of a fixed heddle in box-frame from Yorkshire, and the popularity of these miniature looms in colonial America makes it probable that they were once well known here. The Pitt-Rivers Museum has three wooden heddles from Auvergne, in Southern France, but I know of none from the coasts of the Mediterranean.

Heddles of bone or horn seem to be characteristic of Scandinavia, and particularly of Lapland. One in the Pitt-Rivers Museum, from the province of Finmarken in the extreme north, consists of bone bars with a broader upright at either end, mortised into curved rods and fixed with brass or copper pins. There are three other examples from Lapland in that collection, of reindeer-horn or bone, one dated 1684, and another in the School of Weaving at Bowness-on-Windermere. The latter has twenty-nine bars, and it seems that most of the recent Scandinavian examples have twenty at least. But frames like the one from South Shields for weaving very narrow bands are not unknown. Dr. Henry Balfour tells me that he "obtained one in Dalecarlia (Sweden) which has only four bars and therefore only used seven warp-threads; it is dated 1774."

My reason for dwelling on the tendency to fix the heddle is that this may explain a peculiarity of ours from South Shields. The two secondary perforations in its right-hand bar, together with similar ones in the missing left-hand bar, may have served to fix it—clumsily enough—in some kind of frame, perhaps with a stem to be held between the worker's knees, as in the Connecticut type (p. 94 above).

From its use we turn to the question of its origin and date. The late Mr. Robert Blair was confident that it was found on the site of the Roman fort at the Lawe, South Shields. He kept no register of the many objects which he bought from workmen during the building operations which gradually destroyed the Roman settlement from 1874 onwards. An inscription in ink on the object itself

seems to read L and to mean L(awe) 28 May of a year
28 5. 00,
which may be (18)80, the upper part of the 8 being obliterated, or (19)00.

The "bird's eye" ornament on the bars, "made with a two-legged tool similar to a centre-bit," was used in Roman and barbarian handicrafts, especially on bone, over a long period.[6] The chased lines on the silver sheathing are more distinctive. Professor Henry Balfour, after seeing a photograph, suggested that they might be reminiscent of an older form of the instrument "in which the bars were held by clamping-rods braced together with *lashings*."

At this point the MS. ends. The ground has nearly all been covered, but there were one or two points still outstanding on which, as his notes indicate, Bosanquet had not come to a final conclusion. On these it may, perhaps, be permitted to make a few observations.

There need be no hesitation in accepting the marking L followed by a date as conclusive evidence for the place of discovery. This was the standard marking adopted by Blair for all objects in his collection found on the Lawe, the site of the Roman fort at South Shields. The question remains whether the object is really of Roman date. Both the site, and the condition of the material, so like so much else of undeniably Roman date in that collection, are in favour of this conclusion. In addition there is no detail of ornament or construction which could not be Roman. Against that Bosanquet was faced by the authoritative opinion of H. Ling Roth, who, basing his views on the general history of weaving, was positive that the implement could not be so early. Much water has flowed under the bridge since then, and it may be that later discoveries have by now proved Ling Roth to have been wrong. Into this

[6] J. D. Leader (of Sheffield) in *A.A.*[2] x, 117. He notes that the "bird's eye" ornament survived into the nineteenth century on "spotted heft" clasp-knives, and still more recently on rivet-heads of Sheffield cutlery.

wide and difficult subject it is not proposed to enter here. Bosanquet successfully solved the problem of the use of this rare thing; at the time he wrote the material for settling its date probably did not exist. In the editor's view the object is almost certainly Roman, but owing to the manner of its finding it cannot be proved so. It is to be hoped that further discoveries may confirm the hint of braid-weaving in Roman times conveyed to us by the heddle from South Shields.

Bosanquet had also concerned himself with the question whether it might not be an import, and have been brought to this country in some trading-ship. The suggestion was due, one feels sure, to the distribution pattern of similar things in comparatively modern times. But if it is Roman, the modern distribution will not be relevant; and if it is recent, then we must take account of a number of small heddles originating in this country of which Bosanquet was latterly beginning to learn, and which may be noted among the collections of bygones in more than one of the museums, for example, in Yorkshire. For these reasons it hardly seems necessary to postulate a foreign origin.

Finally it should be observed that the South Shields example was never made for hard commercial use. Its construction is far too delicate. It must have been intended from the first as a furnishing for the work-table of some lady of quality whose delicate fingers would not be likely to injure so frail a thing.