

# ON THE USE OF SCAPULÆ AS SHOVELS.

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## I. DISTRIBUTION.

ABOUT fifty years ago, Mr. E. H. Willett found five shoulder-blades of the so-called Celtic ox and of pig in the shaft of the flint-mine which he excavated at Cissbury.<sup>1</sup> It was observed that in three of the specimens the bony ridge known anatomically as the spine had been trimmed away, and that both surfaces of the bone were well scratched in a longitudinal direction as if they had been subjected to considerable friction. This led to the theory being put forward that these shoulder-blades had been used as shovels in very much the same way that the antlers of deer had been utilised as picks. When, about twenty years later, the Early Iron Age lake-village at Glastonbury was being excavated by the Somerset Archæological Society, two similar specimens were found, while at the parallel site at Meare large numbers were discovered, one mound alone having produced thirty specimens, two of which were ornamented with the dot and ring patterns characteristic of the early Iron age.<sup>2</sup> Meanwhile, at, or near, the bottom of the great fosse at Avebury, which is ascribed by Mr. St. George Gray to the late Neolithic period, part or whole of four shoulder-blades of ox and pig were found, two of which had had the spine removed and were much

<sup>1</sup> *Archæologia*, XLV., p. 345.

<sup>2</sup> Bulleid, *The Lake Villages of Somerset* (Folk Press, Ltd., 1924), p. 51; Bulleid and H. St. George Gray, *Glastonbury Lake-Village*, II., p. 415; *Reports of the Brit. Assoc.*, 1910 onwards.

worn.<sup>3</sup> One specimen from this site, now in the Taunton Museum, shows similar signs of wear though the spine had not been cut off. Then, fifteen years ago, Major Wade came across a specimen 14 ft. down in the shaft of a flint-mine at Stoke Down, near Chichester.<sup>4</sup> At All Cannings Cross, Mr. and Mrs. B. H. Cunnington found portions of three shoulder-blades which had had the spines resected and had been polished smooth; Mrs. Cunnington suggests that this highly polished condition may indicate that they were used for shovelling something dry and smooth, possibly grain or meal.<sup>5</sup> Next in chronological order are the five specimens found in the Harrow Hill flint-mine, which are described in the accompanying article. Finally, the present writer has found parts of two similar bones in clearing out some of the Late Celtic pits on Mount Caburn, near Lewes; in each case the vertebral end of the bone is missing, but enough is left to show that the spine has been cleanly cut off, seemingly with a metal saw, but there are no signs of wear at all on the portion that has survived.

Enquiries addressed to prominent archæologists abroad reveal that no scapula-shovels have been noticed in Egypt, Palestine, France, Belgium, Austria, Italy, Greece, Norway, Sweden or Ireland. Only two positive replies have been received: (1) Dr. Hans Reinert of Tübingen, refers to the discovery of scapulæ with resected spines in the neolithic villages at Riedschachen and Aichbühl, and in the Early Iron Age settlement at Wasserburg Buchau, all in Federseemoor in Upper Swabia, Württemberg.<sup>6</sup> (2) Dr. Viollier, of Zurich, has drawn my attention to what looks like an example found in the Swiss Lake dwellings, probably at Roben-

<sup>3</sup> *Report of the Brit. Assoc.*, 1908, p. 408; pp. 276-7.

<sup>4</sup> *Proc. Preh. Soc. E. Anglia*, IV., p. 89. This specimen is now in the Brighton Museum.

<sup>5</sup> Cunnington, *Early Iron Age Inhabited Site at All Cannings Cross* (1923), p. 105, and Plates X. (1), XIV. (3), and XVI. (5).

<sup>6</sup> H. Reinert, *Das Federseemoor als Siedlungsland des Vorzeitmenschen*.

hausen.<sup>7</sup> The occurrence of these examples makes it probable that others have been found elsewhere on the continent without their use having been recognised.

The above examples are the only ones I have been able to trace in Europe. If any reader of this paper is aware of others I shall be most grateful for information on the subject.

In Switzerland the neolithic peoples used as shovels large pieces of deer's antler, bevelled at one end and hollowed out, something like a spoon. Their capacity can scarcely have been sufficient to allow of their use as tools for excavation; probably they were intended for shovelling grain and similar substances.

## II. THE EFFICIENCY OF THE SCAPULA AS A SHOVEL.

To test the efficiency of this primitive type of shovel I procured a shoulder-blade of a modern ox, which is somewhat larger than that used by the ancients, and found that, working with the scapula, it took just four times as long to fill a given basket with loose chalk rubble as it took with a pointed army spade; while grubbing with the hands alone took just three times as long as with the spade, the soil being the same in each case. This suggests that the scapula is less efficient than the unaided hands, but two factors have yet to be taken into consideration, viz. (1) the influence of practice in either method of digging, and (2) the relative usefulness of the two methods in different kinds of soil. Of these two factors I have nothing to say, but the fact that scapula-shovels are not as common as antler-picks in the flint-mines makes it likely that the usefulness of the former was not undisputed.

One of the chief drawbacks to the use of the scapula is that, since the neck of the bone forms the only

<sup>7</sup> *Mittheilungen der Antiquarischen Gesellschaft Zurich*, Vol. XIII., §ii., Part 3, Plate VI., Fig. 15. The illustration is far from being clear, and I can find no reference to it in the text.

natural handle, the strain falls on the digger's right hand and is felt very unpleasantly in the muscles of the forearm, the left hand having little or no room to share the weight. It was evidently to avoid this that one of the shovels found at Harrow Hill was provided with a socket to enable it to be mounted on a handle, so that the resulting tool closely resembles in general shape a modern short-handled coal-shovel, and with such an implement both hands can be used to advantage. This scapula, when fitted with the T-handle (Fig. 4) is not unlike the spades we used in the confined space of the galleries at Harrow Hill where the roof was barely 3 ft. high—we used pointed army spades in which the T-shaped handles had been shortened right down close to the iron socket.

### III. THE ETYMOLOGICAL EVIDENCE.

Etymology supplies evidence of the wide-spread use of shoulder-blades for digging. The Latin word *scapula* is the ordinary anatomical term for a shoulder-blade. The suffix *-(u)la* (when not a diminutive) added to the root of a verb gives the sense of an implement, utensil, or the like, of which the use is represented by the action of the verb. Thus, Lat. *teg-u-la*, from *teg-o*, "I cover," means something with which to make a covering, viz., "tile; *reg-u-la*, from *reg-o*, "I rule," means something with which to rule, viz., "a rule, ruler." Words of similar formation are: *cingula*, *copula*, *fabula*, *fibula*, *grallæ* for *\*grad-læ*, *jugula*, *radula*, *scindula*, *secula* (sickle), *sella* for *\*sed-la*, *spatula*, *specula*, *tabula*, *tragula*.

The word *scapula* comes under this head, and the root, though not represented in Latin, appears in the Greek *σκάπτω*, "I dig," and Ital. *scavare*, "to dig." *Scapula*, therefore, means "an instrument for digging," and is exactly parallel with the Greek *σκαπάνη*, "shovel."

The corresponding suffix in the Teutonic group of languages is *-(e)l*, often represented in modern English

spelling by *-le*. The following are examples: "girdle," that wherewith to gird oneself; "handle," that which is held in the hand; "ladle," that with which to lade (i.e. bale); "prickle," that with which to prick; "runnel," that in which water will run; "settle," "saddle," that on which to sit; "shuttle," that with which to shoot, in the sense of "missile"; "spindle," that wherewith to spin; "stall," that in which to stand; "tackle," is connected with "to take"; "teasel," that with which to tease (cloth); "treadle," that which is worked by treading; "trundle," a circle, that which is turned. Such words are numerous in English, and among them appears the word "shovel" (A.S. *scofl*), which, by analogy, means "that wherewith to shove" (A.S. *scūfan*). But as this word *scofl* seems always to have been exclusively used of an implement for digging, it surely follows that the root represented by *scof-* means "to dig"—the same root that is seen in English "skiff," "ship" (lit. "dug-out boat"), "scoop," and Greek *σκάπτω*, "I dig." Prof. Weekley<sup>8</sup> says that "scoop" in the sense of "shovel" is cognate with "shove," which seems to me to suggest that the root idea underlying the word "shove" is that action which distinguishes digging with an implement from grubbing with the unaided hands. The latter is essentially an action of gathering, grasping, and lifting; the former is one of *shoving* and lifting.

Latin is not the only language in which evidence is preserved of the use of the shoulder-blade as a shovel. In German hunting parlance a shoulder-blade is *Schaufel*, i.e. "shovel," and the shoulder of venison is *Schaufelstücke*, or "shovel-piece." In Russian, Polish and Bohemian *lopatka* means both "shoulder-blade" and "shovel." In Hungarian *lapat* is "shovel" and *lapoczka* "shoulder-blade." The Prussian *pettis* appears in the Elbinger vocabulary as the translation of "fire-shovel" and "shoulder-blade." The Lithuanian and Lettish *mente* has both

<sup>8</sup> *Etymol. Dict. of Eng. Language* (1921), s.v.

senses, and in English the scapula is, or was, sometimes called the "*spade-bone*."<sup>9</sup> In Welsh—perhaps the most interesting of all—*pal* means "shovel" (Lat. *pala*), while *palfais*, "shoulder" or "shoulder-blade," means literally "shovel-contrivance," i.e., "that which will *serve* as a shovel"—a name which seems to have been applied in view of the *use* rather than of the shape or appearance of the bone.

Solmsen<sup>10</sup> goes further and makes the interesting suggestion that the word "shoulder" itself may have had as its original significance the sense of "shovel." The word appears in various forms in most of the Teutonic languages, e.g. A.S. *sculdor*; O.H.G. *scultarra*; Swed. *skuldra*, and Solmsen suggests that the suffix *-der*, *-dra*, may correspond to the Greek implemental suffix *-τρ-ον*, *-θρ-ον*, while the syllable *skul-* may be derived from the root which appears in the Greek *σκάλλω*, "I hoe, dig." If he is right, then the Eng. "shoulder" is cognate with the Greek *σκάλεθρον*, "a hoe, or shovel."

In this connection I would make the following suggestion. The English "skull" literally means "bowl," as does the corresponding word in most of the European languages, in view, perhaps, of the use<sup>11</sup> to which the ancients seem at times to have put this bone. Now, just as the Greek *σκάφη*, "bowl," comes from the root *skap*, "to dig," in virtue of its being an object that is dug, or hollowed out, may not the English "skull" (Swed. *skalle*) be connected with the root seen in the Greek *σκάλλω* in a precisely parallel way? Gr. *σκαλίσ*, from *σκάλλω*, actually has this sense of a "bowl," or "cup."

#### SUMMARY.

(1) Archæological evidence of the use of scapulæ as shovels is at present confined to the south of England,

<sup>9</sup> For much of this see Solmsen, *Beiträge zur griechischen Wertforschung*, I., p. 197.

<sup>10</sup> Solmsen, *op. cit.*, p. 198 n.

<sup>11</sup> See *Wilts. Arch. Mag.*, XLII., p. 490 (Dr. R. C. C. Clay).

a district in South Germany, and perhaps one of the Swiss lake-dwellings; chronologically it is distributed between the flint-mining periods (neolithic) and the Early Iron Age.

(2) The linguistic evidence suggests that at some period such use must have been common in Europe.

(3) The chronological distribution of this usage affords an additional argument in favour of a relatively late date for the flint-mines.