

# The British Plough: Some Stages in its Development

By F. G. PAYNE

THE plough has a long history in Britain. That is evident when we contemplate the surviving traces of our ancient field systems, some of them going back as far as the Bronze Age. Of the ploughs that tilled those early fields we know very little. Until fairly recently the early ploughs of northern Europe in general were very imperfectly known. A good deal of new evidence was discovered during and shortly after the last war and most of this was included in Professor Glob's *Ard and Plough in Prehistoric Scandinavia*, published in 1951.

This work of Professor Glob's is of the greatest value in interpreting the remains of our early British implements which, although scanty, show clearly enough that some of the same types of ploughs were found on both sides of the North Sea. The Danish evidence, which is particularly rich, shows that there were two, and possibly three, types of plough in use in Denmark in Late Bronze Age and Early Iron Age times. The best example of one of these types is the implement found at Donneruplund in 1944 (Fig. 1a), consisting of four main parts: beam, stilt, ploughshare, and 'fore-share'.

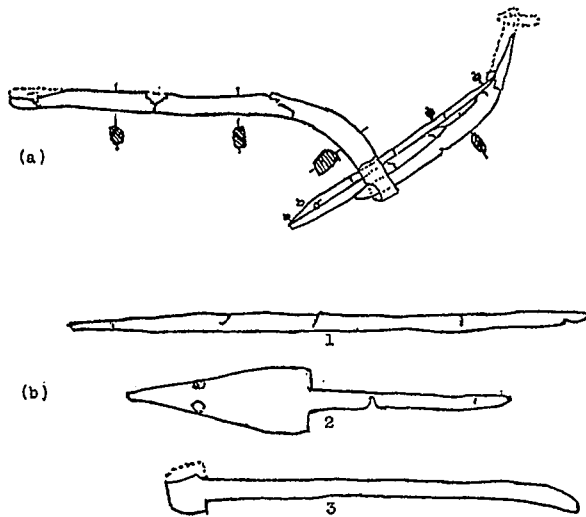


FIG. I

(a) Plough from Donneruplund. (b) 1. Fore-share; 2. Ploughshare; 3. Stilt.

After Glob: *Acta Archaeologica* XVI.

This is the only reasonably complete example so far discovered. It proves that the well-known specimen found at Døstrup in 1884 was incomplete, that it had lost a very important part, the ploughshare. It is important to realize this because the Døstrup specimen has given students a false idea of the capabilities of this type. The size of the mortise in the beam foot itself should have raised doubts about its completeness. Common sense, too, should have suggested that no one could have been so silly as to fashion such a plough merely to drag a thin pointed stick through the earth.

This pointed stick, or 'fore-share' (Fig. Ib, 1) as it is convenient to call it, had its own important function to perform. Clamped between two pegs let into the upper surface of the ploughshare as in the Donnerupland example (Fig. Ib, 2), or between ridges as on the upper surface of the Trollerup share (Fig. II), it protected these valuable parts. Projecting and cutting before the share point, it would take a good deal of the wear.

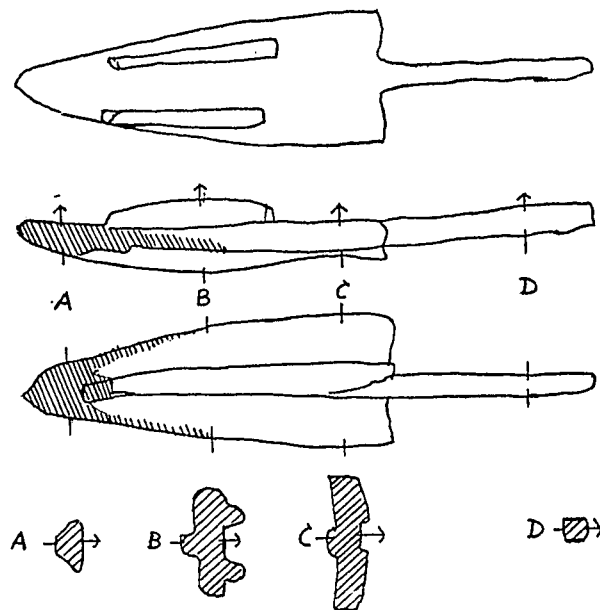


FIG. II

Ploughshare from Trollerup.

*After Glob: Ard and Plough.*

There are two further points about the Donnerupland plough that should be emphasized. First, the sides of the ploughshare, being unprotected by the fore-share, exhibit signs of considerable wear. This wear is much greater on the right-hand side, indicating that when at work the plough was tilted to the right. In consequence, the large ploughshare would turn some of the soil to

the one side, acting in fact something like a mould-board. The second point is that the position of this implement in the bog where it was found indicated a date in the beginning of the Early Iron Age or the end of the Late Bronze Age.

I have dealt with this Danish plough in some detail because there is evidence that ploughs of the same type were once used in Britain also. The first piece of evidence is a plough-beam found about the year 1870 in a peat bog near Lochmaben in Dumfriesshire (Fig. III). The importance of the discovery

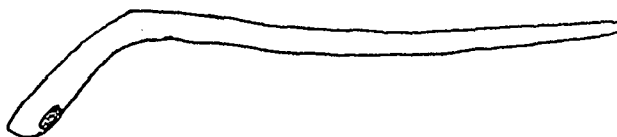


FIG. III

Plough-beam from Lochmaben.

*By permission of the Burg Museum, Dumfries.*

was not appreciated at the time; indeed it was not identified for what it is until after its arrival at Dumfries Museum a few years ago. Although badly warped, the plough-beam is complete. It has its draught-hole for attachment to the ox-yoke and also the large mortise in the beam foot through which ploughshare, fore-share, and stilt would be wedged. Owing to the circumstances of its discovery it is not possible to date this specimen, but its deposition in a peat bog suggests that, like the Danish examples, it was a ritual offering and therefore early. The second British find, also from southern Scotland, is a one-piece plough-head and stilt. This was found by Mrs C. M. Piggott in 1953 beneath a crannog in Milton Loch, Kirkcudbrightshire. The crannog itself is said to date from the second century A.D. The plough-head is similar to that of the incomplete Døstrup plough referred to above; similar in that it is in one piece with the stilt, and in that it has a long groove cut down the middle of its upper surface. Into that groove there would have fitted a ridge or tongue projecting from the underside of the large ploughshare which in both the Milton Loch and the Døstrup implement is missing. Fig. II illustrates the kind of share. The lowest view shows the central ridge along the underside which helped to secure the share to the plough-head. The top view shows the upper surface with parallel ridges to receive a fore-share.

These plough parts from Lochmaben and Milton Loch show that at least one type of continental plough of the prehistoric period was in use in Britain. There is as yet no definite evidence that a second type dealt with by Glob, namely the so-called crook ard, occurred here also. It is, however, worth while considering for a moment the fact that these earliest ploughs of north-

ern Europe are of types that nowadays belong to southern Europe and the Mediterranean region. They have neither coulter nor mould-boards and appear to be suited to the methods of tillage usual in warm dry climates. Indeed, it would seem that these early northern implements provide evidence in support of the botanists and others who tell us that the climate in the Bronze Age in north-western Europe was dry and warm. They are of the type used where climatic conditions render it necessary for the ploughman to pulverize and stir the soil in order to minimize evaporation of water. Cross-ploughing was traditionally associated with this kind of tillage. It is therefore of interest to note that traces of cross-ploughing, datable to the Early Bronze Age and perhaps before, have been found in northern Europe.<sup>1</sup>

It is, I believe, generally accepted that the climate of northern Europe deteriorated during the close of the Bronze Age and the Early Iron Age. Our climate changed to what it is today, rather cold and wet and comparatively sunless. Doubtless the change was a very gradual one. But however gradual the change, ultimately it must have had an effect on the technique of ploughing and working the soil. There is evidence that some time during the latter part of the Early Iron Age British farmers realized that a new ploughing technique was necessary. The evidence is, of course, the coulter which made its appearance in Britain then. The coulter may, perhaps, be taken as a sign that a dry-farming technique had come to an end. Its use quite definitely suggests the working of soil with too much moisture in it and too little sunshine playing upon it, so that the ploughman was obliged to cut his soil into slices that could be turned up to the sun and air and drained and worked. The coulter has no function other than to facilitate the cutting of such furrow-slices. How to turn the cut slices over properly was the next problem. We know that this was ultimately solved by fixing a plank, a mould-board, to the side of the plough. One cannot say exactly when this happened, but stages in the development of both mould-board and coulter can, I think, be perceived in the surviving Iron Age and Romano-British material.

To take the coulter first, the pointed stick or fore-share that we noticed on those Early Iron Age Danish ploughs, cutting a little in advance of the main share, contains the germ of the idea of the coulter. What appears to be the earliest example of an iron coulter recorded in northern Europe was found at the Iron Age fort of Bigbury in Kent. Before very long, in the coulters of the Romano-British period, this part had achieved almost its final form.<sup>2</sup>

As I have said, it is not known when the mould-board for turning the cut furrow-slices was devised. It would appear that such a simple and self-evident improvement could not have taken long to suggest itself, particularly

<sup>1</sup> Glob, *Ard and Plough*, p. 123.

<sup>2</sup> *Archaeological Journal*, civ, 1948, Fig. 3.

when we remember the uneven wear on the wide wooden ploughshares of the Danish Iron Age plough caused by holding the implements aslant. Indeed, it has been claimed by some Danish archaeologists that the developed mould-board was known in Denmark in the Iron Age. The evidence for this consists of parts of three ploughs, these too recovered from bogs in Jutland. One of them has been dated by pollen analysis to an early point in the Sub-Atlantic period; but this dating has been contested.

There are two points to which I wish to refer. First, the soles of these three plough fragments are protected on the land-side by a series of wearing stones of granite, quartzite, and flint driven into holes bored in the wood. These stones exhibit characteristic marks of wear. Now, wearing stones of this kind have been found in some numbers in Yorkshire, Lincolnshire, and southern Scotland. They suggest that yet another early type of plough, and one fitted with a mould-board, was in use here. Unfortunately none of these stones has been found in a datable context.

There is, however, other evidence that the fixed mould-board was in use in Britain in Romano-British times. Some years ago I referred to the fact that some British coulter shares show that they were designed for ploughs which turned their furrows consistently to the same side.<sup>1</sup> That this furrow-turning was effected by means of a fixed mould-board need no longer be doubted. I am indebted to Mr A. Aberg for drawing my attention to an asymmetrical winged ploughshare of the Roman period, now in the Folkestone Museum. Such a share can only have been used with a fixed mould-board. Then again, in October 1956, in carrying out an emergency excavation on behalf of the Ministry of Works at the Dinorben hill fort, Abergele, Denbighshire, my colleague, Dr H. N. Savory, found another asymmetrical winged share in a layer containing numerous objects of late Roman and sub-Roman character. This Dinorben share is unusual in that its wing is on the left-hand side (Fig. IV). These two winged shares, which seem to be the earliest so far discovered, confirm in the most satisfying way the evidence deducible from some of the coulters that the fixed mould-board had arrived in the Romano-British period.

I do not suggest that, having been devised, the mould-board plough displaced older types completely. The evidence appears to show that that did not happen. What it does suggest is that during the Iron Age and Romano-British period whatever type of plough, old or new, a farmer used, he followed a new ploughing technique.

I have dwelt at some length on these early ploughs for two reasons. First, they testify to the nature of Bronze Age agricultural technique in northern

<sup>1</sup> *Ibid.*, p. 96.

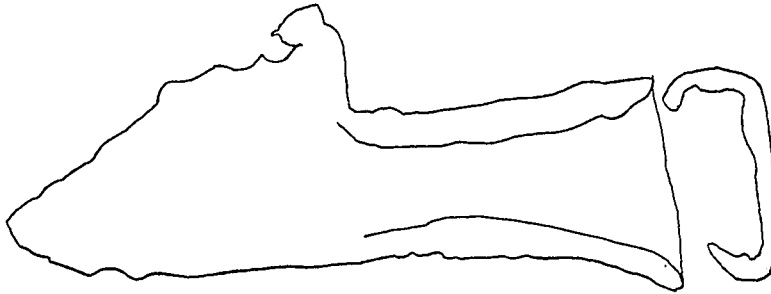


FIG. IV

Ploughshare from Dinorben hill fort.

*By permission of the National Museum of Wales.*

Europe, and, secondly, they exhibit clear evidence of a change in that technique during the Iron Age. They also confirm the botanical evidence for the deterioration of the climate during the Iron Age. Agricultural methods and implements must take account of the climate. It was no accident that the period during which the coulter, the mould-board, and the asymmetrical ploughshare developed is also the one in which the scythe was devised. The scythe was designed to cut grass expeditiously. For a worsening climate increased, or perhaps introduced, the problem of wintering essential livestock and the attendant tasks of haymaking and storing fodder.

Evidence for the development of British ploughs during the Dark Ages and the Middle Ages is scanty. This is less serious, however, now that we have the testimony of the early asymmetrical shares to confirm the other evidence for the use of the fixed mould-board during the Romano-British period. Indeed, little of importance remained to be done to the plough until long after the close of the Middle Ages. There is, in stray finds, in documents, in pictures, evidence of elaboration and improvement in detail. We also find the persistence after many centuries of a symmetrical type of Roman period ploughshare. Such is the share found at Thetford a few years ago and at present in the Castle Museum, Norwich. The share, dated by its excavator at about 900, was at the time thought to be Saxon. I understand that it is now considered to have been the property of Danish immigrants. Whatever its provenance, there are some questions that may safely be asked. Is it indicative of the use, or continued use, in eastern England of a one-way plough with movable mould-board? In other words, has it a place in the story that ends with the turn-wrest ploughs of Kent and Sussex? Or is it a precursor of the wingless 'pike' share, used if and when needed on the normal mould-board plough down to the early nineteenth century?

It was not until the eighteenth century that the next big change in plough

design occurred. The change was not so important as that which began in the Iron Age, for it was not occasioned by a change of climate. It was the less radical change from teams of four, six, or eight slow oxen and clumsy heavy ploughs to the lively two-horse team and lighter plough. But once again, and in spite of the immeasurably greater technical efficiency that eighteen or nineteen hundred years had brought, it took a long time—roughly from 1730 to 1830—for the change to become general. Even then, there were some fertile districts in Kent, Sussex, Gloucestershire, Monmouth, and Glamorgan that clung to ox teams or ancient types of ploughs until late in the nineteenth or early in the present century.

The success of the old traditional ploughs appears to have been bound up with the use of these large teams, particularly those of oxen. Although very powerful, these latter normally moved very slowly, so slowly that the ploughman could keep his plough steady at its right depth and his furrow-slice turning properly. However awkwardly the plough was constructed, whatever tendency it had to run light or dig deeply or let the furrow-slice flop back into the furrow, the ploughman had complete freedom and time to correct it. This, of course, meant severe labour for him. The direction of the team was left to the ox-driver. The ploughman saw to it that a furrow was turned: the ox-driver helped to ensure that it was a straightish one. In the Celtic countries, in order to ensure a slow, steady pace and co-operation with the ploughman, the driver walked backwards in front of the team. He kept his eye on what the plough was doing, he kept his team moving steadily by singing to them. To stop the team he merely stopped singing. During the long period when such teams were communal, the working ploughmen might be supplemented by the owners of the various oxen. In Wales this was ordained by law. After Wales lost its legal system the custom continued as a neighbourly practice. The point I wish to make is, that with several helpers in the field, the ploughman could be helped if either plough or soil were awkward. The help might be given by some one walking alongside and depressing or lifting the plough-beam with a stick. Indeed one might even ride upon the implement to keep it at its depth. There are references to such practices in all parts of these islands.

Worked in the old way, it seems that the traditional local ploughs turned their furrows satisfactorily, until people began to tamper with the plough-teams that for so long had been associated with them. Then the local ploughs came in for a great deal of criticism. Arthur Young was bitter about the Hertfordshire wheel plough, so ill-constructed, he said, that it would not move a yard in its course without the help of the ploughman.<sup>1</sup> Of course it would

<sup>1</sup> *General View of the Agriculture of Hertfordshire*, pp. 36-7.

not: it never had. Like its sister ploughs all over Britain, it demanded that the ploughman should be, unremittingly, the ploughman, and not the team-driver as well. But the eighteenth century wanted to cut down costs, to get rid of the large slow teams and the extra labour. The idea was that the ploughman and two horses should do the job and do it more quickly. It was not, perhaps, a new idea, but it was now invested with a new urgency.

It is not possible to state concisely, and truthfully, what happened to the traditional ox teams between the sixteenth century and the eighteenth. The course of events might differ in neighbouring districts. In some places nothing at all happened. In a few others oxen were almost out of favour already, although the team driver was kept. If a general statement is possible, one may say that the tendency was towards a small team, and that a team of horses. But so far as one can discover, over almost the whole of Britain little was done to adapt the ploughs to being drawn by those smaller but livelier and faster horse teams.

Part of the reason for this may have been that the traditional ploughs were not so uniformly bad as late eighteenth-century enthusiasts for light horse ploughs have suggested. Indeed, there could be so much variety among ploughs of the *same* type that wholesale condemnation of them must have appeared unreal to many who used them. As an example of this one might instance a type once widely used in western Britain, which the present writer has illustrated elsewhere.<sup>1</sup> In general design this type remained unaltered down to the beginning of the nineteenth century, although it could vary in size and detail from one parish to another. This implement as used in a north Cardiganshire parish was illustrated and described about 1750 by Lewis Morris, the antiquary and poet. Morris says that the team consisted of two horses before two oxen, and that in this particular parish the plough was the lightest he had ever seen. Later in the century, the writer of the 1794 county *Report* condemns the ploughs of this particular district as being too heavy!

Although the team had been speeded up by the admission of horses, the plough as depicted by Morris in 1750 is obviously unimproved. The mould-board is merely the lower part of the right-hand stilt widened a little and extended to the foot of the sheath. Such a mould-board could be made to turn the furrow-slice properly if the ploughman exerted himself and had a competent driver controlling a slow team, but not, I think, otherwise. The writer of the county *Report* of 1794 condemns the work done by this implement. In Pembrokeshire the plough was of similar construction. The same alteration had been made to the plough team, and the ploughing incurred the same criticism from the same reporter.

<sup>1</sup> *Antiquity*, XXI, pp. 151-5; *Yr Aradr Gymreig*, pp. 101-15, Figs. 10, 13, and Pl. VII-XII.



In Breconshire this same plough was much used until the end of the eighteenth century. Here, however, there were two things in its favour. First, it was usually drawn by the traditional team. Secondly, it was usually fitted with a better mould-board, so that even with a team of horses it worked satisfactorily. In Glamorgan the same plough similarly improved could be found in the early nineteenth century. There it was usually but not always drawn by the traditional ox team, which survived longer in Glamorgan than anywhere else in Wales. There was no suggestion anywhere that Glamorgan ploughing was defective. The same type of implement, with mould-board improved as in Brecon and Glamorgan, remained in use in Cornwall and Devon for about the same length of time. In these counties it seems to have worked satisfactorily with large teams of either oxen or horses.

In all places where this type of plough persisted the ploughman had to work hard if he was to plough well. The implement had to be held so that it moved through the soil obliquely. The ploughman had neither the time nor the energy to manage the team as well. Indeed, from such evidence as I have seen, it would appear that the factor that made for success with the ancient types was always the large team, which, demanding its own driver, left the ploughman free to wrestle with his plough. Where the team had been altered, or where a child had taken the place of an experienced driver (and this often occurred), the old ploughs were no longer satisfactory without improvement. But improvement, as we have seen, did occur sometimes.

It is probable that detailed study of most ancient types would lead to similar conclusions and would explain why the opinions of one period concerning them are so greatly at variance with those of another. Consider, for example, the Hertfordshire wheel plough. Here is an implement that was commended by Blith in the seventeenth century and by Tull and Hale in the early eighteenth. But Arthur Young in 1804, in a period when it was usually drawn by horses, does not commend it. Under certain conditions, says he, it "wanted a stone of 50 or 60 pounds weight in its body, to keep it steady." It is a heavy, ill-formed, ill-going implement, he says. "It will not move in its work one yard without the ploughman; a proof of its miserable construction." As for the ploughing done with it, "worse work can scarcely be imagined." Similar criticisms are expressed in other county *Reports*: Nottingham, Berkshire, Cambridgeshire, Surrey, Somerset, and so on. Indeed, the similarity of the criticisms is striking: one feels that the surveyors had officially been told what to say and how to say it. There are, however, amusing divergencies of opinion. Some of the surveyors, many of them in fact, advised the adoption of the Rotherham plough, a light implement invented in Yorkshire and patented in 1730. It was capable of being drawn by a pair of horses, and could

be managed without a driver. Yet the *Report* on the West Riding, the home of this particular plough, has nothing very good to say about it. Neither has the *Report* for Durham where this implement was favoured. It is, of course, a fact of agricultural history by now that the champions of the Rotherham were right.

Now all the old types of plough, swing, foot, or wheel, had one constructional feature in common—the chief members of the frame, beam, sole, tail, sheath, formed a rectangle. It was largely the friction set up by the long sole of the old types that made a powerful team necessary. The revolutionary thing that the two inventors of the Rotherham did was to get rid of this long sole entirely. This was done by bringing the left-hand plough-tail forward to the base of the sheath, thereby making a triangular framed plough that occasioned much less friction when being drawn through the soil. Not only was the new type of frame much lighter, it was also much stronger. Also, the old sole or share-beam that had held the ploughshare having disappeared, the ploughshare had now to be fixed on the base of the sheath. In this new position the share could be made to merge into the line of the mould-board, thus further decreasing the friction. But all this did not happen at once. Nevertheless one has only to handle one of the old rectangular-framed ploughs and then take hold of the tails of a Rotherham type swing plough to realize how important was the modification of the frame introduced by Stanyforth and Foljambe at Rotherham in 1730. The immediate benefit conferred upon its user was the ability to handle it with ease. Potentially it was much greater than that; for the first time it made the ideal of a plough that could be drawn by two horses, managed by one man, and work all types of soil, certain of realization. It would seem right, therefore, to consider the Rotherham as the greatest improvement in plough design since late Iron Age or Romano-British times. Nevertheless, it was to take a long time and the improving genius of men like the Scotsman James Small before its full potentialities were realized.

Although the Rotherham was patented in 1730, I think it is true to say that it was getting on for 1820 before most districts could have ploughs of this type that would work under local conditions better than the local types. Even then some heavy clay districts would have nothing to do with them. Furthermore, by the time that most local plough-wrights had adapted the Rotherham to local conditions, the new iron ploughs of the nineteenth century had arrived.

It was a tribute to the soundness of the Rotherham design that the early iron ploughs were closely modelled on it, or on Small's adaptation of it. Fairly soon, however, and inevitably the products of the large implement

firms began to accord more with the nature of the new material. There were, of course, still vast areas of Britain where ploughs continued to be made locally. In many of these in the 1830's and 40's the blacksmith took over the decaying trade of the plough-wright. He often took over in a very real sense, copying in iron and frequently in some detail the local wooden Rotherham. One example that comes to my mind is a Pontsely No. 7 which is now in the Welsh Folk Museum collection. It was made by Josiah Evans, a well-known smith of north Pembrokeshire. On this plough the right-hand stilt still occupies the situation and follows the method of attachment of the comparable stilt on the old wooden ploughs. It is joined to the back of the mould-board as if one of its functions were still to hold the mould-board out against the furrow-slice. The ploughshare, which is of Rotherham type with long side-cap, is of wrought iron in the old tradition. Ransome's brilliant work on cast-iron shares did not mean much to districts like Pontsely; a cast-iron share might last half a day on some of the stony slopes then in cultivation, or it might not. The wooden ancestry of this implement is plainly to be seen although it is made throughout of the more durable material. Durable is the right word, I think, for I found this plough still working in 1937.

This is not an isolated instance of a local, blacksmith-made plough of mid-nineteenth-century type holding its own down to the beginning of the second world war. It was a common occurrence in the hill country. Just as the Rotherham failed to oust the old long ploughs from the clays of Gloucestershire and parts of South Wales, so did the shining and shapely products of the great firms of eastern England fail to dislodge the work of local smiths from some of the hills of the west and north. Alas, by today they are used no more. Not because they were in any way deficient; but because the fields that they subdued and civilized have either gone out of cultivation or have reverted to the waste to become artillery ranges or to be part of the endless, lifeless domain of the Forestry Commission.

## NOTES ON CONTRIBUTORS

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