

Report No. 53 on

The Whitlock Dinkum Digger

Origin The cleaning of old drains and, where necessary, the cutting of new drains in established plantations presents an increasing problem due to high labour costs and a shortage of suitable labour. The conventional drainage ploughs have not provided a solution, partly, because there is not sufficient space to use large tractors and plough carriages and, partly, because these ploughs are far less effective in cleaning a drain than in making the original cut.

Since recent modifications to the Whitlock Dinkum Digger have enabled it to dig open drains with sloping sides, it was decided that a trial of the machine should be carried out.

Description The Dinkum Digger is seen in the photographs attached to this report. It consists of a bucket, available in several shapes, which is operated by a number of hydraulic rams controlled from the tractor driver's seat. The digging and traversing to either side to empty the spoil are entirely power operated. The tractor, straddling the drain, is moved forward six feet after each section of drain behind it has been opened up.

The digger can be fitted to a Ferguson, Fordson or County tractor. Whilst trenches with vertical sides up to nine feet deep can be dug with narrow buckets (for building foundations) the buckets most suitable for open forest drains are those digging thirty inches deep, ten inches wide at the bottom and either thirty or thirty-nine inches wide at the top. The price varies from £697 for the Fordson model to £745 for the County model plus a fitting charge of about £17. The makers are:- Whitlock Bros. Ltd. - Great Yeldham - Essex.

Trial conditions Following a successful demonstration of drain cleaning at Alice Holt a Dinkum Digger fitted to a Fordson wheeled tractor was obtained on hire for an extended trial at Bore, Hants. The ground was flat and covered by rough grass on a wet clay soil which had proved to be unsuitable for agriculture so had been taken over for afforestation. The tractor was fitted with twin rear wheels. Owing to the very poor slope for drainage it was necessary to put in a closely spaced system of open drains to a depth of 20-26 inches.

Observations 1. It was soon obvious that any bucket without an automatic ejector could not be emptied owing to the clinging nature of the clay soil. It was

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therefore necessary to use the bucket with ejector seen in photograph Nos.

1 and 2. This was the narrower of the two buckets (30 inches wide at the top).

2. The tractor with twin rear wheels was frequently bogged in the wettest parts of the ground and it was obvious that under these conditions much delay would have been saved if the digger had been mounted on a County tracked tractor.

3. Very satisfactory drains were dug to a depth varying between 20 and 26 inches. The sloping sides were well formed but the angle of slope was too steep resulting in a certain amount of subsequent "fall in". Had it been possible to use the wider bucket this difficulty would not have occurred but the wide bucket had no automatic ejector so it was abandoned for the reasons given in Observation 1.

4. Roots up to  $1\frac{1}{2}$  inches were easily cut by the bucket.

5. Rates of output varied between 1 and 3 chains per hour. At the lowest rate of output costs per chain can be calculated as follows:-

|                                |                         |
|--------------------------------|-------------------------|
| Tractor                        | 4/-d.                   |
| Driver, including 40/- on-cost | 5/-d.                   |
| Digger equipment (estimated)   | 5/-d.                   |
| TOTAL                          | <u>14/-d.</u> per chain |

The cost of digging similar drains by hand is assessed at 35/-d. to 40/-d. per chain.

6. There seemed to be very little difference in the rate of output between clearing old drains and cutting new drains. The amount of vegetation in old drains and the care required to position the tractor wheels on each side of the drain offset the extra digging involved in the cutting of new drains.

7. It is not possible to use this machine for hedgerow drains owing to the absence of a wheel track between the hedge and the side of the drain.

Conclusions The Whitlock Dinkum Digger provides a mechanical means of digging or clearing open drains excluding hedgerow drains, at a very much lower cost than by hand labour. To obtain a well shaped drain it is necessary to use the 39 ins. wide bucket which should be fitted with an automatic ejector even if it means some reduction in capacity.

For use in the forest it is considered that the implement should be mounted on a tracked tractor.





1. The Dinkum Digger with the bucket raised and traversed for emptying. Note the automatic ejector plate which has moved forward in the bucket as it was tipped to empty the load. Traversing is accomplished by swinging the whole ram and lever assembly by means of the ram seen close to, and parallel with, the ground.



2. Showing the drain cut by the bucket 30 inches wide at the top. This particular trench exceeds the 30 inches depth intended for this bucket and it will be seen that a certain amount of "fall in" has resulted.





3. Showing the 39 inch bucket cutting a drain 30 inches deep. Note the clean sloping sides left by this bucket which proved to be the best shape for open forest drains. (Note remarks on the need for an automatic ejector on this bucket at Observation 3 in the report.)

Note. Photographs 1-3 were taken at Alice Holt where the ground conditions were very different to those at Bere described in the report.