

# THE MECHANISATION OF THE FARM

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*In this article, which we reproduce by arrangement with "London Calling", the Overseas Journal of the H.B.C., Mr. Wright, Consultant on engineering to the Royal Agricultural Society of England, outlines the remarkable progress that has taken place in farm mechanisation in Britain during the past few years, thanks to a new agricultural engineering trade and the motor industry.*

*Mr. Wright, it will be remembered, visited Ceylon under the Colombo Plan earlier this year to report on the possibilities of mechanising tea cultivation in the island.*

One outcome of the war has been a quite staggering increase in the use and manufacture of farm machinery in Britain. We now use seven times as many tractors as we did in 1938, and manufacture fifteen times as many. Again, of the items of farm equipment that are now numerous enough to be worth listing separately in our biennial farm-machinery census, more than a third were not in existence at all, or had scarcely been heard of, when the first census was taken only fifteen years ago—I mean things like mounted ploughs, disc-harrows, potato-harvesters, self-tying balers, dung-loaders, sugar-beet toppers, and a host of others in a list that grows longer and more varied every year.

But figures are meaningless unless you have some mental picture of the position from which we started just before the war. We had, of course, already experienced the main consequences of the Industrial Revolution. Our ploughs and everyday tools were made from iron in factories, instead of being made from wood by village craftsmen. We no longer cut or threshed or winnowed any of our corn crops by hand. We had sixty or seventy years' experience of the use of steam power for heavy, large-scale cultivation, and had seen it superseded by the internal-combustion engine.

But corn was still stooked and stacked, and root crops harvested entirely by hand; while all but a small fraction of our motive power was still provided by horses. And although tractors and modern equipment were common enough on large farms, the great mass of smaller ones—of less than, say, 250 acres—had virtually no experience at all either of tractors or of any machine more modern than the reaper-binder. But today, I suppose, something like eighty per cent. of all our farm power is provided by tractors or by stationary engines; while, if there is any longer a lower limit to the size of farm than can be mechanised, I doubt if one could put it higher than twenty-five acres or so.

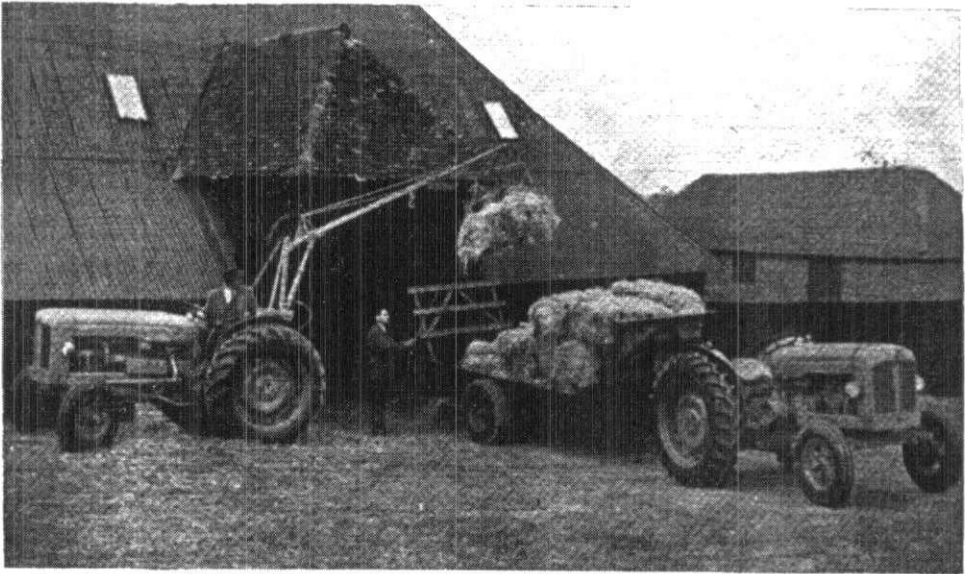
The changes that have taken place over the same period in our farm-machinery industry are, in some ways, more remarkable still. Before the war we met most of our needs for everyday equipment—ordinary tractors, ploughs, mowers, and so on—and we sent a fair number of these things to other countries as well. But any special tractors that were needed—like track-layers, or models adapted to inter-row cultivation—and all the more modern appliances like harvester-threshers, pick-up balers, and combined seed and fertiliser drills with which our larger farms were being mechanised, had to be brought from overseas. Moreover, although our agricultural-engineering industry was well-established—and, perhaps, because it was so long-established—it lived quite apart from our main engineering industries. It was located in a different part of the country had quite different standards, and used quite different manufacturing methods.



*The mechanical plough—a development of the mounted implement which has made small-scale farm mechanisation practicable.*



*A pick-up baler. Before the war Britain had to import appliances of this sort. Today she is able to export them.*



*In Great Britain tractors or stationary engines now provide eighty per cent. of all farm power.*

Indeed, at that time, even if one had known nothing of either agriculture or engineering it would have been easy enough to pick the one agricultural machine out of 100 non-agricultural ones, just because it looked different—in much the same way as a farm looks different from a factory. But one would have quite a job today to pick out an agricultural machine simply by its appearance, or even by a close examination of how it had been made. And that is because our old industry works no longer in isolation but in very close partnership with the younger motor industry.

### Development of the Mounted Implement

This new partnership—indeed one might almost call it a marriage—between two industries has been brought about mainly by the development of the mounted implement: the implement that is mounted on, or closely coupled to, the tractor, instead of just being pulled along by it. And if one new development more than any other has made small-scale farm mechanisation practicable, I suppose it is this same mounted implement.

But to go back to the manufacturing side: it was natural enough for farm tractors to be made by the same firms who made motor-cars and trucks, because so many components—from engine to transmission—were common to both. Until quite recently, however, most of our tractor makers were content to leave it at that, and to let someone else make the implements in his own way and according to his own ideas. But when, as the result of the new development, tractor and implement became virtually one unit, neither party could afford any longer to work in isolation from the other.

Either of them might, of course, have tried to take over the other's job. What has actually happened is a very happy and effective combination, in which all the inherited experience and tradition of the one industry has been joined to the manufacturing skill and productive capacity of the other. And perhaps, it is by production figures that the outcome can most simply be illustrated.

In 1938 the two industries, working as they then did almost independently of one another, produced tractors and farm machines worth just over £3,000,000. In 1950, working in combination, production was worth nearly £85,000,000; and not only satisfied all the needs of our own farming but produced twice as much more to meet farming needs in other countries. Nor are they just producing greater numbers of the same things as before. Between them they have improved most of our older implements out of all recognition; they have adopted and adapted all those that we used to import; and they developed a good many that are entirely new in purpose and conception.

This wave of mechanisation and new development all arose, in the first instance, from our own urgent wartime need to grow at home more of the food, that we had imported until then. We had to plough up vast, new areas—either grassland that would be more immediately productive in arable cultivation, or marginal land that was nearly derelict.

The only way to get the job done quickly enough to save ourselves from starvation was to step up the production of tractors and tractor implements; and, through Government agencies, to find means of making their services available even to small-scale farmers who could not afford to buy them for themselves. By this means we added more than five million acres to our tillage area in less than four years, and brought about generally higher crop yields at the same time. Moreover, by the end of the war many more farmers could afford to buy equipment as the result of higher and more profitable production in the meantime.

Our need to grow more food at home is just as great as it was then. But we have an additional purpose that is worth mentioning; to raise output per man at the same time. For this is the only way in which we can afford to give our rural population the higher wages and better living conditions that will keep them in the countryside.

## Applying the Same Solutions in Asia

I should like now to refer specifically to Asia, where even a twenty-five-acre farm is likely to be an outstandingly large one. I think everyone would agree that, when it comes to the details, the difficulties there are much greater than in Britain. Yet I feel that, in principle, the problems are much the same and that, in principle, they call for much the same kind of solution. For all Eastern countries alike need to grow more agricultural produce, either to feed their own ever-growing populations or to exchange for all the other commodities that they want to import.

In all of them, too, there is an evident need to raise the standard of living of the peasant-cultivator. And, in any mainly rural community, the one factor above all others that will control living standards is the amount of human effort in man-hours or man-days that it takes to grow one ton of crop. To increase both total production and production per man is, indeed, the only ultimate solution.

My views on all this are probably coloured by the fact that, having been actively engaged for over twenty years in the study and development of farm mechanisation under Western conditions, I had my first look at Eastern farming only in 1949. I have paid three visits since—to Pakistan, India, and Ceylon—and I think just one example will illustrate my point. In India I saw powerful, track-laying tractors being used to reclaim land that had gone derelict through becoming infested with *hariati* or *khans* or some other deep-rooting weed. They were Government tractors, of course, and the work was being done as just one item in a nation-wide campaign to grow more food.

I was told that there were some millions of acres of similarly derelict land still to be tackled: that all that was required was deep and thorough ploughing at the right time of year; and that if this had been done periodically while the land was still in cultivation it would never have gone derelict in the first place. Nearby I saw at work the iron ploughs, drawn by up to eight bullocks, with which the ordinary cultivator strives to keep his own land from weed-infestation; while here, there and everywhere I saw the wooden scratch plough, drawn by a single pair of bullocks, with which, I suppose, more than ninety per cent. of all Eastern cultivations are done.

Incidentally, it is worth mentioning that both the iron bullock plough and the massive ploughs behind the track-layers bore, as trade mark, the name of the Englishman who contrived the very first all-iron plough more than 150 years ago. The iron plough was doing a perfectly satisfactory job, and if the same had been done regularly over the whole area there would have been no need for the track-layers. Indeed, the only trouble with it—and the only reason why ploughs like it had not kept the derelict land in cultivation—was that it took twelve man-days and twenty-four bullock-days to plough an acre.

I believe that the main clue to the West's greater progress in the development of both better implements and better cultivation is to be found in the simple fact that, in a more temperate climate, it was easier to develop better draught animals: first better oxen and, later, still better horses. And if I am right this, at least, is one disadvantage of climate that Asia need labour under no longer. Mechanical power takes no account of heat or drought or disease; and to find means of applying it to Asia's difficulties is one of the most worth-while objectives that agricultural engineers have yet been given.