ROTHAMSTED RESEARCH

The Growth of Cheaper Winter Food for Livestock

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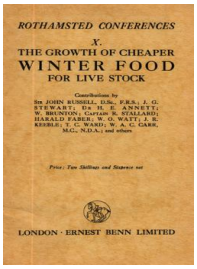

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THE GROWTH OF WINTER FOOD FOR LIVE STOCK

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Some of you may have difficulty in believing that farmers in the part of the country I used to know best—beyond Aberdeen—could ever be lavish with anything. Nevertheless, for years they have used prodigious quantities of roots and straw in the feeding of their stock. When in the natural course of events I took the road southwards I found that in the Lothians the same extravagant habits obtained. By the time I reached Yorkshire—more than twenty years ago—the agricultural scientist was grappling with the problem, and was wavering between large quantities, moderate quantities and no roots at all. It did not seem to matter much, as the conclusion then reached was that all such rations were alike unprofitable; so that farmers down to the present day have presumably been living on their losses—in other words, on manurial residues. Nowadays, as regards bullock-feeding, the scientist seems to have caught up with the Aberdonian. We find, for instance, that a typical Norfolk ration based on scientific requirements for a 9-cwt. bullock is 17 lb. barley straw, 80 lb. mangolds, 2½ lb. cotton-cake.

As for milk, dairy herds may roughly be divided into two classes:

(1) Those with a 600–800 gallon average, typical of the majority of herds in the country, milked twice a day, and

(2) Those that reach up to 1000 gallons or more.

Those of the first class can make good use of the commoner products of the soil. And, after all, it is not so much a question of increasing the output of milk as of cheapening it. I do not deny that large quantities of milk can be produced on a handful of hay and a sackful of concentrates, but it hardly seems a policy for rural regeneration. On that principle one could farm the Crystal Palace or the dockyards! I maintain that yields of from 2–4 gallons a day can be produced at a lower cost for food per gallon on a ration composed mainly of home-grown corn, roots and "roughages" than similar yields on hay and purchased concentrates.

On top of 18 lb. of good hay, 56 lb. of kale or 70 lb. of mangolds constitute a 2-gallon ration. The normal recommendation for 2 gallons would be 7 lb. of concentrates. The kale or the mangolds may cost 4d., the 7 lb. of concentrates 8d. or 9d.

As Wyllie has pointed out, it is only when the basal ration is expensive that heavy yielders have the advantage. I know a college herd where two years ago an average of over 800 gallons resulted in

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a loss. Last year the same herd produced just over 500 gallons and paid its way. Concentrates were practically cut out.

Another point—recent work on protein requirements carried out on the Continent and in America seems to indicate that the English feeding standard is too high. If this should be confirmed, and the Cambridge findings in regard to young grass and young hay can be applied, the farmer will be more nearly independent of expensive purchased protein concentrates. In this connection it is interesting to examine the Scandinavian method of arriving at equivalent productive quantities of feeding-stuffs. The method was first brought to my notice by an article in the *Journal of the Irish Department of Agriculture*, written by Professor Wilson in 1916. If one takes typical Scandinavian rations as given in that paper for 2, 3, 4 and 6 gallons and compares them with rations based on the standard in use in this country—maintenance 6·6 S.E. and ·68 P.E., production, 2·5 S.E. and ·6 P.E.—one finds that for the same nutrients the Scandinavians rely on getting an extra gallon of milk—that is to say, a Scandinavian 3-gallon ration is reckoned as being worth only 2 gallons for English cows, a 4 for a 3 and a 5 for a 4. The work of Woodman and others on the nutritive value of young grass points the way to a cheap source of home-grown protein. If young leafy grass is a rich source of protein, well-made young leafy hay cannot be very far behind. Some interesting work bearing on this point has been done by Mercer, Carr, and Colonel Lyon in Cheshire. Leafy hay can normally be obtained in two ways—by cutting early or by grazing late and then shutting up for hay. It is easily made if got together quickly and cocked.

For winter feeding we must try for full crops of leafy hay, kale, mangolds, and pea-and-oat or bean-and-oat mixtures for grinding. In beet-growing districts the by-products are proving an economical source of winter food, and in many cases have largely displaced fodder roots.

If only we would "steam up" our grass, our kale, mangolds, sugar-beet, and other responsive crops, as we are recommended to steam up our cows, agriculture might yet pull through.

High farming may be no remedy for low prices, but it is impossible indefinitely to farm arable land low. I have more respect for the old text: "There is that withholdeth more than is meet and it tendeth to poverty." We are too apt to think of farming in terms of artificial fertilizers and varieties, and overlook the fundamental importance of cultivation and continuous good farming. Much of our arable land is undoubtedly underfarmed—a fact which accounts for the low yields of beet and other crops. What is the good of worrying about such fine points as spacing, and neglecting the larger issues? A survey of 100 farms shows that in the case of 24-in. rows the average yield was 7·5 tons and in the case of 21-in. rows

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7·8 tons. What is wanted is at least 10 tons per acre, and for that we need higher farming—that is to say, thorough cultivation and accumulated fertility. It is no use trying to grow beet on extensive lines like turnips or swedes. This may mean limiting the annual ploughland by the introduction of temporary leys or lucerne—the latter as a regular rotational crop. Farmers are diffident about trying temporary leys in the Eastern Counties, although they were in common use there in the time of Coke of Norfolk and up to the middle of last century—giving way to one-year seeds when artificial fertilizers came in and the prices for corn were good. To-day, throughout East Anglia, it is possible to find numerous instances of successful laying away to grass with mixtures of the standard Cockle Park type suitable for three or four years. There may be difficulties in regard to water, in which case hay, annually, followed by sheep-grazing may be tried.

In a drought, arable-land hay is more reliable than permanent meadow. Because it contains young and vigorous plants it is more responsive to manurial treatment. The only really useful grasses on the Chiltern pastures that kept green throughout the drought were cocksfoot and timothy, and I am now engaged in ploughing out, with a view to re-seeding, a field which contained neither and was quite useless throughout the summer although normally containing an abundance of wild white clover.

I know of two instances where lucerne has been successfully introduced as a regular rotational crop.

The chief drawback to this kind of rotation would, in many cases, be wireworm, but wireworm is comparatively innocuous where mixed corn crops such as peas or beans and oats are taken. The great advantage of a mixed crop such as beans and oats is that it will stand up, and can therefore be liberally fertilized. This kind of intensification, which requires no more labour to speak of and admits of the use of fertilizers which are relatively cheap, may generally be reckoned as economically sound. I know a case where a farmer regularly grows after temporary ley no less than 30 cwt. —and often 2 tons—of grain per acre of a mixed crop of beans and oats ($3\frac{1}{2}$ bushels of beans and $2\frac{1}{2}$ bushels of oats). As a winter catch-crop there is probably nothing more economical than trifolium and Italian rye-grass. For about 15s. per acre you get a full seeding without ploughing, whereas a bushel of vetches alone costs about that sum.

I believe that one means of relieving the present stress is to concentrate on such an area of ploughland as we can do well, grow full crops and try to be more self-supporting in feeding-stuffs. The man who buys nothing he can produce for himself never goes "broke." We hear a lot about over-production of human food. Has anybody heard of over-production of cattle food?

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