

The Fifth
Lord Hastings
Memorial Lecture

1967



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DELIVERED BY

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Practice with Science

I suppose I am the first person to be honoured with an invitation to give this lecture, who never knew Lord Hastings. Having the privilege of sitting on the Norfolk Agricultural Station Committee, however, I have been aware of, and am impressed by, the stamp he set upon it. It is out of my respect for that committee, and for the work at Sprowston and now at Morley which it has undertaken, that I have chosen to address you on a topic of direct interest to the farming community in East Anglia, and one related to the work for which the Norfolk Agricultural Station has made such a reputation. My title is the motto of the Royal Agricultural Society. It has always appealed to me as singularly appropriate, not only for progressive farmers, but also for all those agricultural scientists who keep their feet on the ground.

The motto was chosen by Earl Spencer in 1838, and there is in my room in the School of Agriculture in Cambridge a complete set of the Journal of the Society, going back to Vol. 1, when the Society was known as the English Agricultural Society. I therefore looked up the first paper read before the Society. It was by Ph. Pusey, Esq., M.P., and was entitled "On the Present State of the Science of Agriculture in England". It seemed an admirable starting point for a discussion of the relations between practice and science a century and a quarter later.

The first and most surprising impression I gained from reading Mr. Pusey's account was that our forebears were thinking about and working on a considerable number of the problems to which we are still devoting both the enquiries of the practical man and the experiments of the scientist. I will take two topics, minimum cultivations and zero grazing.

On the beginnings of the practice of minimum cultivations, Mr. Pusey says: "Mr. Finlayson's . . . harrow, as well as the further improvement, inadequately named the scarifier, is not only efficient for cleansing the land, but may sometimes be made also to supply the place of the plough". Considering the work and thought that is still devoted to attempts "to supply the place of the plough", either we have been very slow, or the plough is exceedingly well adapted to its function. On zero grazing, he says "The advocates of the soiling system, as it is called, have acted upon that system for centuries, and they assert that a very large saving is effected by the uniform consumption of the grass, which is another result of this mode of management. A system backed by such high and ancient authority must surely deserve enquiry into its merits". Again, have we been slow, or is there more to grazing than meets the eye?

Even the Norfolk four-course rotation came under Pusey's questioning eye. He says "But though the Norfolk or alternate, or four-course system of husbandry . . . has conferred such great though silent benefits on the country, it may be doubted whether that system have not accomplished all that it is capable of, and must not pass into another". Yet Rayns, in his Lord Hastings Memorial Lecture, could say of Norfolk farming opinion in 1921: "Any alternative or modification (of the four-course system), no matter how simple, was regarded as downright wicked." Evidently in some things we were slow. Over the century, farming did not move at the pace that technical knowledge made possible. It was eighty years after Pusey expressed his doubts that sugar beet Rayns arose to persuade Norfolk to improve upon turnip Townshend. These are not his only topical comments. Pusey speaks also of forage rye for early spring bite, and of farm management discussions by the Harleston Farmers' Club, and other matters that have a modern ring about them.

This is one side of Pusey's story. The other is his obvious uncertainty in a range of subjects where we have the confidence that comes of extensive and well documented knowledge. Livestock breeding had already made great strides, but the limits of knowledge were narrow, and they were uncertain—even then—of the value of the Agricultural Show as an instrument of improvement. Pusey says of the exhibits in fatstock shows, "although these cattle may be more fat than the ordinary market requires, the power of reaching that excessive size is the

only test by which the capacity for acquiring useful marketable condition, at the cheapest expense of food and at the earliest age, can be tried under the encouragement of public emulation and competition". I had not expected to meet so lame a defence of stock shows, so early in their history. The improvement of crops was only beginning, and knowledge of the nature of pest and disease attack was rudimentary. In the evaluation and use of manures, Pusey was groping in the dark. In these fields we have indeed made progress over the intervening years. And again, Pusey set out the conditions on which our progress was to be made. How was certain knowledge to be obtained? "Surely, as in other sciences, by careful observation and well-considered experiment. But in many sciences, this process, however difficult, is at least within the reach of every enquirer. The chemist requires but a room in which to set up his furnace, and evolve his gases; not so the agricultural enquirer; he requires a large farm . . ., and a large capital, too, practically engaged in its cultivation. Neither would one farm be sufficient, since the results of its treatment would apply to one soil only, and subsoil, one climate and elevation." The members of the Norfolk Agricultural Station Committee will endorse every word of this.

The great merit of the Royal Agricultural Society was that it fostered the exchange of information and opinion. Experimental work in agricultural science and education in agriculture grew up in a situation in which the means of communication between practice and science were already available. In the volumes of the Journal the names of Lawes and Gilbert, Voelcker, Biffen, Wood, and Russell occur regularly among those of farmers and landowners as authors of papers. Agricultural science and agricultural education developed in close contact with the practice of farming. There was thus the means of expressing the natural community of interest between the practical farmer and the agricultural scientist, and it was fostered and developed by men who, for the first century of the existence of the Royal Agricultural Society, were the ruling class of the country. Whatever the circumstances of English farming, those who had the responsibility of government were men who knew from practical experience what farming was about.

In recent years, the natural shift of productive activity from the cultivation of the land to the creation of industrial wealth has led to the loss of that intimate contact between farming and public policy that

was characteristic of all ages hitherto. It is not only that agriculture is regarded as an industry like other industries, and among those that require support from the rest of the community. Far more important is the disturbing but inescapable fact that the greater part of the inhabitants of this country have no conception of the basic biological circumstances on which their supplies of food depend. The impact of climatic uncertainty, the long growth cycle of both crops and livestock, and the biological impossibility of running agricultural production on a stop-go policy, are no longer appreciated in our predominantly urban community. This is a serious matter because the security of the urban food supply is just as dependent on an understanding between town and country as is agricultural prosperity. Such an understanding is no longer easy to achieve, and we have to make a deliberate effort to establish a situation which our forbears took for granted.

In other matters we have advantages they never dreamed of. We have a massive scientific programme for agriculture, in the Agricultural Research Council Institutes and in the Universities, an extensive educational system in Farm Institutes, Agricultural Colleges, and University Faculties, and we have probably the best advisory service cover in the world. The system has paid us handsomely. We have revolutionised our farming in the last quarter century, by the application in practice of products and ideas many of which have come from the industrial community.

The great advance was based on the application of science and technology; fertilisers, chemicals for the control of pests and weeds, and mechanical power and the machines that go with it. About 1957, when I became directly involved in British agriculture, it became apparent that science and technology were not enough. The management good enough for the old pace of production was inadequate for the new, and the techniques and ideas of an industrial community were examined to provide the basis for a new management expertise for agriculture.

It was an accident of history that our latest agricultural revolution took the form it did. A country that had neglected its home agriculture because of the ready availability of food from overseas was faced with a sudden and urgent need to produce as much food as possible at home in order to survive. There is no need for me to recount the recovery of a desperately depressed agriculture, and the productive achievement that

ensured a sufficient—but dull—food supply in the war and post-war years. We know what was put into drainage, into the reclaiming of old grass for cereal cropping, and into the increase of potatoes and vegetables. And we recognise the success of War Agricultural Executive Committees and the hastily expanded advisory services.

This historical accident has had an unfortunate legacy. When Lord Spencer and his fellow members adopted the motto “Practice with Science”, there was no doubt in their minds of the relations between the two. Practice came first, and practical men believed that their practice could be improved if they could command the aid of science. It can never have occurred to them that science might become the member of the partnership with the higher prestige. Yet, thanks to the depression, and the urgent wartime needs that followed it, this has happened, and it is the commonly accepted attitude of mind that knowledge is handed down from the scientist by the adviser to the practical man, who, if he knows his own interests, will then apply it. Indeed, one of our ablest advisory officers has expressed to me his disquiet that science is not always as far ahead of practice as might have been expected.

I do not believe that this could have happened had not this country had to make the demands of a siege economy on a depressed and impoverished agriculture. And the position which has now developed, in which the leading practical men are as well up to the frontiers of useful knowledge as are the scientists, is the right one, and the one in which the rate of advance is greatest. We see in the demands of the most advanced farmers for information, in the way in which the findings of the Norfolk Agricultural Station and of the Experimental Husbandry Farms go into the practice of the leading farmers, and in the success of the advisory activities of commercial firms, practical men demanding scientific and technical information on equal terms with their advisers. Advisory officers are sometimes criticised for giving so much of their time to the better farmers. I believe this is as it should be. The concept of handing down advice from the wise to the ignorant—what I call the fourth form schoolmaster approach—is out of date. Advisory officers ought to spend the greater part of their time where the exchange of information is between equals.

This interplay between practice and science is rewarding, and indeed exciting, where there are men of education on both sides. When the