PRESIDENTIAL ADDRESS: IGNORANCE IS A VOLUNTARY MISFORTUNE

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Animal production is under fire. When considering the future of animal production, questions are being asked from all sides. Can we afford animal production? Does man really need animal protein in his diet; would plant protein supplemented with vitamin B12 fulfil his nutritional needs; does he really need animal fibres and hides? Is it cruel to use animals in the service of man? Perhaps we as animal productionists should put the questions from a different point of view; who or what will make the best use of waste or byproducts of plant production? Is it safe to assume that the world's long term requirement for heat energy will be met from the utilization of crop residues? How can we use profitably the millions of hectares, particularly in this country, which are unsuitable for arable cropping?

Man has utilized animals for his wellbeing for a long time, and there appears to be no reason why he should not continue to do so. This being so, there is every justification for a conference such as this to ensure that animals do fulfil efficiently the needs that man demands of them and will demand in' the future. Our ever-increasing standards of living are correlated with the rate at which capital replaces labour and this should have a sobering effect on animal producers. A major difference between plant and animal production is the extent to which they lend themselves to automation. We have only to consider the vast increases in output per unit of labour by our cereal growers to appreciate this. What then can we do as animal producers to compete with this continuous increase in productive efficiency? No doubt each of the disciplines of animal production will have their own contribution to make. But if we look at our various disciplines and the effects they may be having on the population of animals in Australia as a whole, and if we find that the total population of animals is not responding to this "tender loving care" then we cannot justify our involvement with them.

Statistics for animal numbers, particularly for cattle and sheep, have fluctuated widely over relatively short periods of time during the last decade. Production of beef, mutton, and wool naturally follows this trend. By contrast changes in production per head have been small (Ferguson 1976). It is difficult to quantify the benefits that have accrued as a result of better pasture and health control measures. However, it cannot be denied that the per head increase in production of our beef and sheep over the last few decades is mainly due to improved health of animals and pastures. Responses in pasture production due to the introduction of better species and the elimination of trace element deficiencies are well documented.

So what have animal geneticists and reproductive physiologists been doing? Can they claim to have had any marked effect on the productivity of the national flocks or herds? Ferguson (1976) suggests that they have had little success, and we must question why. I want to look closely at this question using the specific example with which I am familiar, and expand into the whole industry.

SCOPE FOR INCREASING PRODUCTIVITY IN THE SHEEP INDUSTRY

Increasing Wool Production

There has been considerable and rewarding research into the selection parameters that contribute to increased wool production in Merino sheep (Turner and

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Young; Dolling 1970; Saville and Robards 1972). However the way in which these parameters may best be used is not well documented. There have been no large scale comparative trials although theoretical calculations have been made. In the area of fibre quality there have been few experiments designed to produce a textile fibre for a particular end use.

Increasing Meat Production

Flocks in Australia and New Zealand selected for a single character have demonstrated the high heritability of traits such as live weight and weaning weight (Turner and Young 1969; Dolling 1970).

Increasing the Number of Lambs Weaned

Here again research has shown the types of response to be expected in selection for increased lambing percentage. These responses have been quite outstanding.

There would appear, therefore, to be no valid reason why the Sheep Industry of Australia should not be making reasonable gains in all facets of sheep production; at least one per cent per annum in wool weight, live weight and lambing percentage. Despite this statistics suggest that increases in lambing percentages and wool production in recent years have been mostly in response to improved pastures, the use of fertilizers and improved animal health. Genetic gains in the national flock have been minimal (Ferguson 1976).

This may not be a national tragedy, but it may reflect our inability to convince producers of the advantages of genetic gain.

Although many excuses will be given for this, it appears to be a failure on the part of the sheep farmer to seek out and obtain all the help and information available. Ignorance really is a voluntary misfortune. Perhaps then, the blame for the lack of gain in productivity in animal production in Australia should not be laid at the feed of geneticists and reproductive physiologists.

Agricultural extension services in Australia have had little success in pushing the use of objective breeding criteria for sheep and cattle breeding. The Animal Production Committee. (ARC) has made several attempts to formulate ways and means of achieving Industry acceptance of meaningful breeding recommendations. A Workshop on the Improvement of Genetic Progress in Sheep Production held at Manly in 1974 is a typical example. This was a worthwhile and constructive attempt to formulate programmes and recommendations, but someone has to convince the Industry of the need for their implementation.

By way of comparison let us take a look at what plant breeders have done for their Industry. Because most commercial grains and legumes used in Australia are self-pollinating, plant breeders can have a new strain or variety propagated rapidly. This means, of course, that there is not the need for a structured breeding system as there is with domestic animals. Plant breeding is usually confined to institutions where trained, skilled personnel using modern equipment and techniques are able to produce new and better strains rapidly. New seed lines are thereafter given to a few commercial multipliers who bulk up the seed and sell it to the Industry. Once a farmer has sown the seed he either harvests his own future seed supplies or relies on its ability to regenerate. The result of all this is that plant breeders have a good record as far as increased productivity and disease resistance are concerned.

There are probably several reasons why animal breeders have not matched this
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performance, the most important being that animals are not self-pollinating. Secondly most productive traits in domestic animals are multi-genic in character, and therefore cannot be readily fixed. Thirdly the advent of animal breed societies following Robert Bakewell's work led to a "closed-shop" approach to animal breeding, with its attendant lack of application of new breeding techniques.

Let us now briefly consider some of the future trends in animal production.

FUTURE TRENDS IN ANIMAL PRODUCTION

The Sheep Industry

(i) Breed of Sheep Statistics show that approximately seventy per cent of all sheep in Australia are Merino. A further twenty per cent are Merino used for mating to either intermediate sires of breeds like Border Leicester to produce a dam to mate with terminal sires of breeds like the Dorset or Southdown, or directly to terminal sires themselves. A question of major importance is whether the present-day Merino is the best sheep for Australia?

(ii) Wool Ferguson (1978) has stated that wool growth is proportional to feed intake, so that feed intake is an important restraint on the biological potential for wool production. He further states that the selection of sheep for increased mature size provides a means of increasing intake and wool growth. In my experience some breeds other than the Merino, for example the Cheviot-Merino Cross appear to have large appetites which, among other things, allow them to graze materials often rejected by the more selective Merino. The ability to graze a wide range of pastures could be important when adding genes to the Merino for increasing its potential for wool growth.

(iii) Prime Lamb Production The prime lamb industry, even though it represents less than twenty per cent of total sheep producers, does utilize a large proportion of the total sheep population. Genetic improvement by selection is difficult to achieve where the breeding of the Merino ewe, the Border Leicester rams, the Merino x Border Leicester ewes, the Dorset Horn rams and the resultant prime lambs may be carried out on five different properties (Ferguson 1978). This, however, should not be an excuse for not trying. How can we build into a large scale breeding plan practical methods of selecting for fecundity and rapid weight gain?

(iv) Fecundity The main objection to increasing fecundity of the Australian Merino by many breeders is that the ewe is unable to rear twins or triplets successfully. Surely this is an indictment of the Australian Merino rather than a criticism of selection for fertility. Throughout generations, of selection the Merino was visually assessed for fibre production. The ability to select fecund ewes at eighteen months of age by opening up the wool was really asking a lot from the classer. What is required is not only an ability to produce multiple births, but also (1) mothering ability, (2) milking ability and (3) rapid growth rates. Thus the Australian Merino developed some 130 to 150 years ago was really bred for the situation that then existed in Australia. The population was small so the need for meat production was not important; even if it were lack of refrigeration and fast transport mitigated against any relevance being placed upon it in a selection programme. An animal that could survive without supervision, and could produce wool, a product which could be readily stored, easily transported and did not deteriorate, was of necessity the one that gained in popularity.

Are these requirements valid today? We have a large meat-eating population, refrigeration and alternative textile fibres.
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Further, if the Australian Merino evolved some 150 years ago has been intensively selected for wool production, how near is this flock to reaching some sort of limit or plateau for clean wool weight? Ferguson (1976) has cited three research flocks selected on clean fleece weight (two CSIRO and one Trangie Agricultural Research Station) and in each case some sort of plateau was reached after an initial response that lasted approximately nine years. Would this not indicate that the Australian Merino is reaching its upper limit for wool production?

If this is so should we not be looking at ways and means of breaking the plateau? This could be the time to achieve several goals simultaneously. If we introduce new genotypes into the Australian-Merino population to help break the possible plateau for wool production, why not use strains of sheep already possessing qualities for which the Merino has not been so intensively selected? This could allow the introduction of breeds intensively selected for high lambing, milk production, mothering ability and rapid growth rate like the Coopworth, Perendale and Romney from New Zealand. These could give a new genotype much better equipped to meet the needs of the future when crossed with the Merino.

The Beef Cattle Industry

There are twenty-two recognized breeds of cattle in Australia. Each lays claim to certain criteria that make it a worthwhile breed to maintain, and each is supposed to have advantages over other breeds. Potential customers are often confused and end up choosing a particular breed for reasons that may not always be to their economic advantage. This is a pity. The excellent work of CSIRO in creating the Belmont Red is an indication that Institutions should be encouraged to expand this type of creative breeding in the cattle industry and also in the sheep industry, in order to give graziers access to breeds created by mixing a range of potential donors, and the formulation of new and highly productive strains. They can probably rely on tightly closed breed societies to maintain the purity of their respective breeds, and thus always have on hand herds of the original type as a genetic resource.

Members of the Australian Society of Animal Production who are primary-producers have a vital role to play in this field by advocating increased activity by scientists and lending their valuable support.

REFERENCES