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Presidential Address

A NEW LOOK FOR ANIMAL PRODUCTION

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This thirty-third Presidential Address to the Society may be isolated from previous addresses for two reasons, first, because of its inadequacies compared with those contributions offered by my learned predecessors; and secondly, because in place of a profound message of faith, hope or charity for animal production, this address is a plea for all members to examine very closely their position and activity in the great industry of agriculture which all of us serve. It is, in fact, an appeal for a new look for animal production in New Zealand; an earnest cry for improved integration of the many specialist components within the calling, and for improved association of animal production itself with the production, processing and marketing of other agricultural commodities. It is the concept of improving the contribution of animal production to a complex total food and fibre system that needs promotion.

Some may feel immediately a sharp concern for this deliberate avoidance of dealing with specific problems faced by those involved in animal production. Others may rank this philosophical discourse as singularly inappropriate at a time of record export prices for all our major animal products.

Today's problems must not hide the issues of tomorrow, nor should the present prosperity of agriculture, especially in the animal sector, obscure the need for acknowledgement and understanding of changes occurring in and around New Zealand. The technological advances recorded in food and fibre production, even during the short history of this Society, are no less than spectacular. But scientists the world over are concentrating on developing cheaper substitutes for the conventional animal products which have served the human race so well in centuries past. In the long term, animal production cannot anticipate survival, let alone prosperity, with the adoption of a complacent, spectator role.

There is need, first, to pause and identify those changes and developments taking place outside the immediate realm of animal production, and to relate these extraneous influences to our current practices. The escalation of agricultural technology; the rapid decline in the number of farmers; the increase in size of individual holdings; the impact of these

changes on requirements for capital — these are but a few examples. But, secondly and constructively, there is need also to gaze inwards at our institutions which, paradoxically, though seeking change resent it for themselves. We must overcome inertia, and inspect our prevailing methods; question their adequacy for satisfying present and future demands; accept and consolidate the best of these; revise and reject others in favour of fresh procedures.

The approach advocated can be sketched by referring to some examples taken from three levels of organization, first, in reference to the operations of our animal industries; secondly, some observations on education, research and advisory activities in animal production; and thirdly, a commentary drawn from the affairs of this Society.

INTEGRATION AT THE INDUSTRY LEVEL

A common factor in the more successful of our agricultural enterprises is the key role played by processing and marketing agencies offering producers supply contracts. These arrangements, characterized by clear definitions of requirements, carry economic incentives for their satisfaction. The theorist would wax eloquent about the advantages of integration in these producer-processor-consumer relationships, drawing heavily upon the horticultural industry for examples.

Broiler production and marketing provide a model for our animal industries. This Conference last year referred, all too briefly, to the efficiency achieved in these enterprises, combining the resources of several scientific disciplines with the skills of practical production and marketing expertise.

The New Zealand dairy industry, perhaps because of its co-operative structure but also reflecting centralized marketing, clearly instructs producers what and when to produce, forecasts price levels, maintains some price stability and ensures equitable payment for the product marketed.

Our woollen industry, now in the agonies of rationalizing its operations, is in effect striving to achieve vertical integration involving production, processing and marketing with stated intentions of employing objective measurements of the product as a common language and basis of payment in a centralized marketing arena.

It is the New Zealand meat industry that stands out as an island of discontent and inefficiency. Vast sums of money are expended each year on research into improved production and processing of meat animals and their products; but we tolerate, with little enquiry, continuation of primitive and wasteful methods in the buying and selling of livestock in a stratified production system. The meat producer bows to

violent price fluctuations within and between seasons and cannot define with any precision the requirements of the meat trade. Efforts of animal scientists and producers to improve the yield of the product needed — boneless, fat-trimmed meat — through application of advanced breeding, nutrition and management techniques, have been of little avail. Present attempts to improve communication between the meat trade and the producer, with meaningful measurements as one major component of the language and financial reward as another, are worthy of great support. Contractual systems of supply, based on specifications and just recompense for all, linking producers and processors in common endeavour, become ever more pressing if the meat industry is to withstand further inroads made by rapidly-developing, alternative food technologies.

May this plea for integrated effort also be extended in this context of the meat industry to provide a new look for the derived consumer products. There is room for development of integrated food factories, producing meat in a variety of forms, but also with meat as one component of nutritious and attractive products, derived, in part, from non-animal sources. We have the livestock in New Zealand; we have a highly-capitalized meat processing sector; we are developing a comprehensive repertoire of crop production and processing technology. The successful marriage between them at all levels of production and processing, represents a challenge for us all.

INTEGRATION OF ANIMAL PRODUCTION EDUCATION, RESEARCH AND EXTENSION ACTIVITIES

Much time and effort have been devoted in this country to improving the structure and functions of agriculturally-oriented educational courses, to national research policies (N.R.A.C., 1972), and to the role and operation of agricultural advisory services (Clifford, 1972). We have been rightly advised by an earlier President of this Society (Johns, 1966) to ensure the most appropriate selection of problems to tackle in research, and Hutton (1967), in his Presidential Address six years ago, rationalized the allocation of research priorities on the basis of national needs. My question now is: Has interdisciplinary integration been promoted sufficiently, for this is where a great part of the strength of modern science lies?

Our agricultural educational establishments appear too rigidly divided into autonomous schools of soil, plant and animal science. Farm management is offered as an attempt at integration; so it is — at the farm level, but few have attempted to tie together the disciplines at higher levels. We may be

overstressing the training of analysts, people able to pull apart, at the expense of those able to put together, to synthesize and to see the horizons; those who, in later years, will have the necessary perspective to do the planning. Is it misplaced or premature to seek establishment of a Department of Agricultural Scientific Integration? Perhaps the University of Reading in Britain, with a chair in Agricultural Systems, has something to offer as a lead. Certainly, within our existing Departments of Animal Science it seems desirable to promote schools of graduate, but especially postgraduate, studies oriented by species or commodities rather than by disciplines. The first responsibility of the animal scientist is to serve the cause of animal production and the livestock industries. This responsibility may be neglected through overemphasis on training by disciplines. Isolation through specialization is an unrewarding fate to offer those who follow us.

Similarly, some of our research establishments appear partitioned by scientific disciplines into subject-tight compartments. This type of organization may be easiest for administrators, but its competence for coping effectively with present-day animal production problems is questionable. Eight years ago Stichbury (1965), in his Presidential Address to this Society, identified the need for a whole farm approach in advisory work but also stated ". . . there is a clear obligation on research workers also to consider the whole farm approach when planning their research and making recommendations based on this research". His message, on the whole, has reached neither administrators nor the administered.

Consider, as an example, the introduction of new breeds of livestock into New Zealand. These developments are at present thrust at the geneticist whose terms of reference may be little more than, "Which breed is best?" This dangerous naivety disregards the complexity of the production and marketing systems into which the breeds must fit, and the magnitude of the resources needed for provision of a rational answer. It seems more logical, although administratively more difficult, to organize research stations around projects rather than disciplines. In the breed evaluation example, a project leader or co-ordinator who may or may not be of the genetic faith can be appointed on the basis of his industry perspective and leadership qualities, one who is capable of welding together a mini-task force of specialists. What sort of specialists may be invited to contribute, part-time, to such a programme? The involvement of an animal nutritionist, a reproductive physiologist, an agronomist and a biometrician are obvious needs. Less obvious, but of appreciable importance in this new look, may be the assistance of a behavioural expert, a veterinarian

and product specialists — a wool metrologist or meat scientist for example. An agricultural economist may even be tolerated, for a mass of data will be generated suitable for calculating the likely impact of experimental findings on farm practice. The interest and advice of product marketing specialists may not go amiss in this assembly of talent. It may also be desirable to involve a farm adviser as a team member from the initiation of the project. The potential contribution of experienced advisers in the selection of research projects, in the conduct of the experiments and in reporting has been under-estimated. The procedure suggested provides the adviser with an opportunity to appreciate the intricacies and problems of any research programme, but reciprocally may assist, too, in the speedy transfer of information to and from producers, keeping all parties informed of responses. Moreover, the involvement of selected producers in this sort of research and development programme, as contributors as well as recipients, has much to commend it.

Finally, in this example, should we not look beyond the boundaries of our research stations for personnel and other resources; is there no room for co-ordinated involvement of the Farm Production Division of the Dairy Board with acknowledged expertise in such matters as artificial breeding and performance recording?

This is a ground level example of how research policies may be evolved to provide more realistic results and speedier transfer of information than present methods of organization permit. Many other examples could be cited. It should not be taken as implied that such programmes eliminate the need for basic research programmes concurrently conducted in seeming isolation, but it is essential to place these endeavours in the perspective of industry needs.

Comparable examples may be drawn from all organizational levels of research and extension. Is there opportunity, for example, for improved co-ordination of effort between research stations, divisions, departments and universities, between government, quasi-government and industry agencies without encountering the dangers prescribed so clearly by Flux (1962) in his Presidential Address 11 years ago? Many members will be aware of the heated controversies surrounding direction and control of national research policies in other countries. In Britain, the advent of the customer-contractor principle, enunciated in the recent Rothschild Report (Anon., 1971), has led the Science Research Council (S.R.C., 1972) to insist that most of the research and development financed by Government is for the benefit of the community. To ensure that industry and the professions derive full benefit from the re-

sults, the Council calls on Government to ensure that the professions, universities, polytechnics, research councils, executive departments and other agencies, ". . . work as an integrated whole to choose national research and development programmes and to ensure the application of the results to the nation's wealth and well-being". Australian agricultural research and advisory activities are also undergoing transformations, especially in the animal production sector, leading a science administrator, McDonald (1971), to conclude, "Research, development, extension and farm practice need better integration than has been the case in most countries to date". Stutterheim (1971) provides examples from South Africa of the deep questioning of national animal research and advisory policies proceeding in that country. In Canada (Anon., 1972), a national agricultural organization is being advocated where, ". . . all aspects of research from production through to marketing are planned, co-ordinated and executed on a commodity basis", with establishment of multi-disciplinary, mission-oriented research organizations to cover all phases, from basic through applied research, to development.

Historical precedent records a lag phase before events such as these mentioned overseas have an impact in New Zealand. Is it not better in our own animal production sector that we do take a new look, especially at our priorities, and respond to changing circumstances before being pinioned by public pressure clamouring from a base of cost-benefit analyses?

INTEGRATION AND THE SOCIETY

This Society, at the time of its inauguration, virtually had the agricultural science stage to itself. Today it shares the arena, and resources, with an ever-growing number of other subject-matter groups, some with very specialized interests.

If the inherent plea in this Address has some validity, then it places our Society of Animal Production in a very strong position as an integrating body. The first object of the Society, as defined in the Constitution, is ". . . to provide the organisation to bring about active collaboration of all workers in the field of animal production". Andrews (1963), in his Presidential Address of a decade past, reminded us very forcibly of this responsibility.

To what extent has the Society satisfied this objective? The annals of early years, times of less-developed specialization, record an intimate blending of animal scientists, advisers, veterinarians and producers in the Society's membership, and attention in the Society's affairs to practical as well as scientific issues.

TABLE 1: ANALYSIS OF MEMBERSHIP

Classification	1973*		1963†	
	No.	%	No.	%
Research				
MAF	84	23.6		
DSIR	11	3.1		
Other	15	4.2		
Total	110	30.9	70	30
Extension				
MAF	25	7.0		
Consultants	15	4.2		
NZDB	16	4.5		
Other	3	0.8		
Total	59	16.5	58	25
University	32	9.0		
Farmer	42	11.9	63	27
Practising veterinarian	19	5.4	33	14
Commercial	23	6.6		
Overseas	27	7.6		
Other	30	8.5	9	4
Honorary Life	10	2.8		
Unknown	3	0.8		
Total	355	100.0	233	100

*Based on financial members as at February 1.

†Proportions cited by Andrews (1963), based on New Zealand financial members.

Note: MAF — Ministry of Agriculture and Fisheries; DSIR — Department of Scientific and Industrial Research; NZDB — New Zealand Dairy Board.

Records of recent years reveal qualitative shifts in terms of membership and Society activities. Table 1 shows an occupational class analysis of the membership based on the latest information available.

Relevant data for 1963 (Andrews, 1963) are also provided but caution is needed in any comparisons made because of possibly different criteria used for determining occupations. Nevertheless, it seems that over the past decade the Society's policies have reduced the proportions of members classed as farmers, extension workers and veterinarians. Dr Andrews, vehement on this point in 1963, must be apoplectic today. Research scientists dominate the membership in 1973 as they did ten years ago.

Table 2 records an analysis of the papers published in the Society's *Proceedings* classified, in three periods, by a subjective and perhaps questionable appraisal of the major disci-

TABLE 2: ANALYSIS OF PAPERS IN PROCEEDINGS OF THE SOCIETY CLASSIFIED BY PREDOMINANT DISCIPLINE

<i>Discipline</i>	1941-52		1953-62		1963-72	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Breeding	35	21.5	19	12.6	22	10.2
Nutrition	24	14.7	40	26.5	73	34.0
Reproduction	17	10.4	15	9.9	32	14.9
Disease including parasites	22	13.5	20	13.2	17	7.9
Growth including meat	3	1.8	3	1.9	25	11.6
Pastures	12	7.4	19	12.6	8	3.7
Behaviour	3	1.8	3	1.9	5	2.3
Economics	4	2.5	4	2.6	3	1.4
Physiology	10	6.1	3	1.9	2	0.9
General	33	20.3	25	16.9	28	13.1
Total	163	100.0	151	100.0	215	100.0
Presidential address	12	—	10	—	10	—
Memorial address	7	—	4	—	2	—

pline represented in each paper. This analysis is based on the *number* of papers, disregarding their variable length.

Some interesting trends can be identified, such as a noticeable increase in the proportion of papers concerned with animal nutrition, a recent decrease of papers devoted to disease matters, and lack of attention to industry economic affairs.

Table 3 records a comparable analysis of the papers classified on an assessment of the predominant animal species re-

TABLE 3: ANALYSIS OF PAPERS IN PROCEEDINGS OF THE SOCIETY CLASSIFIED BY PREDOMINANT SPECIES

<i>Species</i>	1941-52		1953-62		1963-72	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Dairy cattle	49	30.0	31	20.5	19	8.8
Beef cattle	1	0.6	1	0.6	27	12.6
Sheep	40	24.5	46	30.5	100	46.5
Pig	8	4.9	3	1.9	7	3.3
Poultry	1	0.6	—	—	3	1.4
Rabbit	2	1.2	—	—	—	—
Fish	1	0.6	—	—	—	—
General	61	37.6	70	46.5	59	27.4
Total	163	100.0	151	100.0	215	100.0

Note: Excludes presidential addresses, memorial addresses and obituaries.

ported upon. In addition to definition difficulties and the variable length of papers, this type of analysis also includes a bias owing to the relative ease and cost of experimentation with one species, for example, sheep, as against another, such as cattle. But some interesting trends can again be observed; for example, the decline proportionately of papers reporting upon dairy cattle trials and the recent upsurge of those dealing with beef production.

These analyses indicate that the Society, through its diverse membership and activities, is not static; that it responds to guidance provided by its leaders, to economic changes in the industry and to the direction of research policies.

At the same time, the evidence shows a trend to specialization in the Society, with conservative restriction to one, albeit effective, scientific Conference a year, with lack of opportunity for involvement of producers and advisers, for discussion of disease, processing, marketing and economic matters, or interchange with other agricultural sectors, or discussion of common problems with other scientific disciplines. In short, our myopic approach is isolating us; we have nearly attained "the stage of petrification" prophesied for us ten years ago by Andrews (1963).

It is to these affairs that we, as members, should direct ourselves. We should seek by all means possible to consolidate our scientific specialization — *but not by contraction from other interests and activities*. We must expand, sponsored by greater efforts, and seek opportunities for interchange with other groups and disciplines. We can encourage into our midst more animal scientists, but also a wide spectrum of others, so that we can better satisfy the objectives of the Society laid down by our predecessors. And, if we achieve this broadening of outlook and membership, we shall need also to provide opportunities for involvement, with expression and reception of these varied interests in animal production.

CONCLUSION

The principle of this Address has been a plea for examination of our resources in animal production, with particular reference to the way in which these might be better utilized through integration for the benefit of agriculture as a whole. The examples cited represent no more than glimpses of opportunities in a manifestly complicated position.

This Society can do much to help satisfy the plea through adoption of a new look. If the opportunities now presented for integration are not grasped and developed, then disintegration may prove to be our long-term fate.

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