THE CONTRIBUTION OF SOCIOLOGY TO EFFECTIVE AGRICULTURAL EXTENSION (II)

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Agricultural extension is a problem of social action. For it is concerned with having a staff of officers successfully persuade a population of farmers to follow the best and latest methods of farming. This makes it almost a classical sociological problem and it is not surprising, therefore, that American sociologists have devoted much time to studying it. Before an Australian audience, however, it will probably not be redundant to explain why the problem is a sociological one.

A widespread but somewhat naive view of sociology is that it is concerned with the traits distributed amongst whole populations or groups in contradistinction to those of individuals, and that it separates from psychology on this basis. This is misleading, for sociology is concerned really with the expected performances which yoke individuals because they are group members. These expected performances are their roles, and the dove-tailing of roles makes a social structure (or organisation). Sociology therefore asks whether social action takes a definite shape in response to the problem of regulation posed by the fact that it is aim-directed while involving a number of people. It separates from psychology by observing aspects of individuals' behaviour which throw light on these *normative demands arising from affiliation,* whereas psychology makes observations to throw light on the *natural properties of mind and personality.*

To reduce the matter to its most extreme simplicity, it seems to me that sociological theory and research proceed on the assumption that there are four main functions which a society aims to achieve through its structure; that is to say, through placing its members under pervasive constraints.[1] It seeks to ensure that

(1) they will communicate with one another sufficiently well to

(2) maintain a sufficient like-mindedness to hold them together, while they

(3) play out between them a set of parts which will be distributed

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[1] In an unpublished thesis I have illustrated the general prevalence of the view of social function adopted here by examining the writings of fourteen sociological theorists as well as the analytical concepts used in the empirical study of four social-problem areas, viz. neurosis, delinquency, the organization of industry and marital relations. See H. Fallding, *The Health of Societies: An Inquiry into the Necessity for Normative Concepts in Social Analysis,* unpublished Master of Arts thesis, University of Sydney, 1955.

rationally enough to secure their common ends, and while they

(4) make such changes in this distribution of parts as become necessary to accommodate new knowledge.

Communication, cohesion, rationality and change are thus the four main needs which social prescriptions seek to secure. It is in order to fix guide-lines that will keep them within these regions of safety that individuals bring their own conduct under review and accept from one another hints and direction, discouragement and correction in a thousand ways. It is the task of sociology to first of all identify what these prescriptions are which govern behaviour (the social structure) and then determine to what extent that structure furthers the four ends. It may be found to be so warped as to make their achievement difficult or impossible.

It will be clear that agricultural extension is vitally concerned with the communication of knowledge and the implementation of change, with rationalising the deployment of a body of officers in relation to the farming population and with maintaining a certain level of like-mindedness between them, between them and farmers, and between the farmers themselves. The practical question for the administrator here and the academic question for the sociologist happen to coincide. It is simply this: what social structure will effect these ends? That is, what vast system is needed of pervasive understandings prescribing the conduct of many individuals in relation to one another? It is a mammoth problem. Needless to say it has been necessary to attack it piecemeal by scattered border clashes. But I have defined it as a whole problem at the outset in the hope that doing this might help to demonstrate the truth of the claim that it belongs to the sociological order.

At the point of time at which we stand, light on this problem is available to us from several sources. First of all, there is a great fund of common sense which is relevant to it and which one feels could be drawn upon much more than it is. For instance, isn't it axiomatic that extension officers will be more effective in their jobs if they are reliable, capable, approachable and friendly? Doesn't it also seem axiomatic that an extension service with greatly restricted staff ought to utilise all available opportunities for meeting farmers collectively? —or that extension should not be attempted in matters where no reliable knowledge yet exists? No sociologist can feel his services have been particularly necessary if it simply falls to him to demonstrate common-sense deficiencies like these.

A second source of light is general sociology. Sociological knowledge need not be specifically rural to have a rural application. Merely to recognise the existence of a sociological order of things having the nature I have tried to describe, and to include the problem of agricultural extension under it, should bring much new understanding. This would be particularly true in Australia where popular opinion, lacking right academic guidance, usually concludes with finality that questions involving people are questions of "the psychology of it." But there is a whole dimension of *governed* behaviour involved in social action with which psychology is not equipped to deal; governed, that is, by accountability to others and the rules, arrangements and understandings arising therefrom.

General sociology can turn a searchlight on many of the dark waters of agricultural extension. It can help us to appreciate, for instance, that an individual's morale depends partly on the confidence which can be inspired in him by the groups in which he has membership and partly on his feeling that the effectiveness of these groups depends on a contribution from himself, preferably a specialised one. It can help us to appreciate that all successful joint action is dependent upon the emergence of leadership; that any community of people is not simply an aggregate but an organised set of role-players whose differentiated roles need to be appreciated by any outsider wanting to make an approach to the community; that effective large-scale organisation requires a fairly strict observance of status differences; that roles need to be clearly defined and limited if they are not to impose a strain on the individuals they yoke or cause confusion and even antagonism in those opposite whom they are played; that two-way communication is a necessity for any developing relationship; that the group is the crucible of change in human life in that men want change but feel a need for group support to cushion the shock of it; that although human institutions seem fixed because it is made obligatory to conform to them they are actually fluid because they change with new knowledge; that individuals accept as standards for action the standards of those groups in which they are enthusiastically involved and to which they feel accountable; that small groups can become obsessively self-examining when their structure blocks the realisation of their members' common ends, while in larger communities, when the cause of a blockage cannot be located, sections of the community can load blame obsessively and unreasonably on other sections. These are only a sample of the principles of general sociology which have an application to extension and which would be more generally known were sociology commonly taught in Australia.

The third and most precisely relevant source of knowledge in this field, of course, is rural sociology itself. Students in Australia will have the opportunity to acquaint themselves with this knowledge as courses in rural sociology become established. But it seems a pity that few systematic statements exist of findings from this field which might be considered to have a fairly general application in agricultural extension. Americans have produced bibliographies and reviews of the vast spate of articles and bulletins which have been produced on this subject in their country, but there have been few really scholarly attempts to boil it all down.[2] In this, of course, rural sociology simply partakes of the fragmentation which has affected sociology as a whole since the onset of the empirical movement.[3] In the present paper I

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[2] One extremely readable attempt to cover much of the field, which would be of use to everyone engaged in agricultural extension, is the twelve-page publication, *How Farm People Accept New Ideas,* Iowa Agricultural Extension Service, Special Report No. 15 (November 1955). For annual bibliographies of publications in this field see U.S. Department of Agriculture, *Review of Extension Research.*

[3] Larrabee, Merton, Homans and Nadel are four representatives of the school of thought which is acutely dissatisfied with this state of the subject and hopes to see it remedied by sensible attempts at generalisation. See H. A. Larrabee, *Reliable Knowledge* (Boston: Houghton Mifflin Co., 1945), R. K. Merton, *Social Theory and Social Structure, Toward the Codification of Theory and Research* (Illinois: Free Press of Glencoe, 1949), G. C. Homans, *The Human Group* (London: Routledge and Kegan Paul, 1951), and S. F. S. Nadel, "Understanding Primitive People," *The Australian Journal of Science,* Vol. 18, No. 4A (March 1956), pp. 78-85.

could not possibly attempt this much-needed task of condensation. But, *for the practical advantage to be gained from it,* I will attempt to sketch a few of the main findings known to me which seem reasonably well established and which everyone involved in extension in any way should by now be taking into account. These findings can furnish the mind with working assumptions for an enlightened approach to extension work; although they should be subjected to constant testing, of course.

But before launching on this I wish to point out that certain matters ought to be clearly excluded from our consideration. There are two problems brought into visibility by the practice of agricultural extension which are not themselves problems *of* extension, and these should not be allowed to drag their red-herring trails across the present discussion. I refer first of all to the lack of actual information, and of information about local conditions in particular, which not infrequently hampers the extension officer's efforts in Australia. One can only leave this question aside as being extraneous to extension itself, since in discussing extension we must assume that something exists to be extended. And I refer secondly to the need to determine the precise applicability of the findings of science to the circumstances existing on individual farms. In the case of certain practices, such as farm sub-division, fodder conservation or irrigation, say, or of any extended programme of practices, this is notoriously difficult to determine, and it usually requires the possession of both economic information and ability. But it seems to me that in the discussion of extension itself we need to be able to assume that these things *are* determinable, at least to some extent, and not allow the question of extension to turn into the question of whether or how that can be done. By acknowledging the existence of these problems I am acknowledging a need for a vastly expanded programme of research on both the agricultural and economic sides of farming, in order to lay an adequate foundation for extension work. But I believe that we need to remove such problems from view if we are to focus clearly on the subject before us.

One of the most useful contributions of sociology to our understanding of what is needed for effective agricultural extension is in disposing of certain stereotypes about the farmer. Farmers, as a class, have been commonly reproached for their conservatism, for instance. But there is a mixture of elements in the farmer's conservatism which we are being forced to dissect out. Conservatism, in one of its senses, is implicit in husbandry itself. What would we think of a farmer who *wasn't* conservative? We expect that he will conserve his land, water, fodder and profits. Why should he not also wish to conserve the knowledge distilled from years of experience in circumstances peculiarly his own—or even from generations of experience? If the expert feels that the farmer shows insufficient respect for his special qualifications and knowledge, the farmer feels no less that the expert lacks a sufficient understanding of his peculiar circumstances and his long and intimate experience of them. The distrust is mutual, I assure you.

A second element in what may be called the farmer's necessary, or even laudatory, conservatism springs from the simple fact that farming is a matter of practical management. That is to say, it is a matter of holding the reins over a team of forces. Once he has built a certain item into his programme it becomes a stepping stone to later things

and these have to fit in with it. If, for example, he has taken the plunge and installed his own power-generating plant, he will be reluctant to outlay the money needed to connect with a council supply if this unexpectedly becomes available shortly after. Or if he has equipped himself with elaborate cultivation implements and developed a routine for using them, he will be reluctant to go over to sod-seeding if this is then recommended to him. There seems to be something contradictory about asking a farmer to be a good manager if you ask him not to be conservative (in matters like these) at the same time. For in good management no unbalancing factor can be allowed to intrude until such time as it can be brought into rein with other things.

But there is another thing which people have in mind when they castigate farmers for conservatism. They refer to a downright unwillingness to change—a kind of closed mentality. This mentality is indeed evident amongst a section of the farming community, but it must not be put down to pure cussedness. It goes with the relative isolation of farm life, which is superimposed in many cases on a foundation of very restricted education. It is part of the narrower outlook which comes from having limited opportunities for contact. Even so, this closed mentality is only found in any extreme degree amongst a small section of the rural population. Studies show that in this regard farming populations seem to fall into something like a normal distribution. The great bulk occupy a middle position: careful farmers who show a moderate mixture of enterprise and caution. At the lower end there is a small section of very conservative men who are distrustful of every kind of innovation, but this is balanced at the upper end by a small section of progressive men who are eager to try out innovations as soon as they come to notice.[4]

The farmers who show an open mentality in regard to their farming tend to show this mentality in a fairly generalised way: for instance, by having wider and more frequent contacts in the local organisations (where they are often found to be leaders), and by reading more journals and newspapers. In particular, they tend to have more frequent contact with agricultural extension workers. By their advantage over others in these respects certain farmers qualify to play special parts in relation to their own community and outsiders. The main body of

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[4] This roughly normal distribution of open and closed mentalities has been illustrated by one method in certain American studies. In an early study made there farmers were classified by the time interval which elapsed before they adopted hybrid corn, and a similar classification has been used subsequently in dealing with the adoption of whole batteries of farm practices. The types of farmer distinguished on this time basis have been described as innovators, early adopters, early majority, late majority and laggards. About two-thirds of all the cases tend to be included within the early and late majority when these are taken together. See B. Ryan and N. Gross, *Acceptance and Diffusion of Hybrid Corn Seed in Two Iowa Communities,* Iowa Agricultural Experiment Station, Research Bulletin 372 (January 1950), and G. M. Beal and J. M. Bohlen, *The Diffusion Process,* Iowa Agricultural Extension Service, Special Report No. 18 (March 1957).

In my own studies I have not been concerned with lapse of time but with the general readiness to adopt new practices which farmers show at a particular time. Working on this basis, I have made a commonsense classification of farmers as progressive, careful, lax and neglectful. In both of two studies, of graziers and dairy farmers, the careful attitude to farming practice was the one which occurred most commonly. See H. Fallding, *Social Factors in Serrated Tussock Control,* University of Sydney, Department of Agricultural Economics, Research Bulletin No. 1 (1957), and *Precept and Practice on North Coast Dairy Farms,* University of Sydney, Department of Agricultural Economics, Research Bulletin No. 2 (1958).

careful farmers, for instance, look to such progressive neighbours to keep informed on new farming practices and to help demonstrate whether the experts' recommendations are workable under local conditions.

Broadening experiences in the personal history of a farmer sometimes play a part in unlocking his mind to broadening influences in general. The effect has been produced, for example, by things like a good secondary education, growing up in a town or city, spending some time on war-service or in some non-rural civilian occupation, or moving into a farming district with which one was previously unfamiliar. But there are also very progressive farmers who show a generalised open mentality without any of these experiences. A home in which they learn the rudiments of genuine culture or challenging economic circumstances may be some of the other influences which can bestir farmers with the prerequisite intelligence to adopt the more strenuous mental outlook which strives to overcome isolation. We may expect, furthermore, that the increasing ease of communication and travel and the general rise in the level of formal schooling will bring the number of farmers who achieve this outlook closer to the number for whom natural ability makes it possible.

Distinct from progressiveness or conservatism of outlook is another trait which sets certain farmers apart. These are *experimentalists,* men who try new methods in advance of the experts' recommendations, according to the knowledge and resources at their disposal. The work that these men can do in actually solving farming problems tends to be limited, but they play a special role in farming communities in that they attract other eyes to their strivings. They help the research and extension organisations to identify what problems of research are pressing, and even what lines of inquiry might prove fruitful, and they help their neighbours to appreciate that a change in practice is due.

One of the most fundamental requirements for effective extension work is to appreciate that the farming population is *differentiated* in ways like the above. First because, as indicated, farmers play particular roles in relation to one another on account of this differentiation. But also because it forces the realisation that different farmers will welcome different kinds of assistance from an extension service.[5] It seems, for instance, that it may be only the small number of progressive men who are really prepared (and even perhaps able) to consider the farm in any complex way as a business, and only the small number of experimentalists who are prepared (and perhaps able) to consider farming very much as a science. While these men should be given all possible assistance to do these things, the vast majority of farmers will want cut-and-dried rule-of-thumb directions. There is independent evidence for this in the fact that more farmers adopt straight-forward improvements, such as improved stock drenches or new equipment, than adopt

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[5] This point has been emphasised by Heady. See E. O. Heady, "Possible Implications of the North Central Interstate Managerial Study for Farm and Home Development Programs," *Journal of Farm Economics,* Vol. 37, No. 5 (December 1955), p. 1122, and "Extension Education in Improving Decisions of Individual Farmers," *Proceedings of Research Conference on Risk and Uncertainty in Agriculture,* North Dakota Agricultural Experiment Station, Bulletin 400 (August 1955), pp. 54-56.

improvements requiring thought and planning, such as programmes of pasture improvement or management.

Agricultural scientists and economists can therefore be seriously misled if they think that a farmer's problem is what *their* problem would be if they were given charge of his farm. For this reason, and indeed for other reasons to be given later, it is supremely important for any extension service to appreciate that it has a *mediating* role to play between scientist and farmer. The direct dissemination to farmers of scientific knowledge, whether it be agricultural or economic, will be of value to a few of them but only confusing to most. There is a much more general need for something analogous to the drastic simplification that is effected when complex knowledge is prepared for a very elementary school text-book.

Communication directed to this differentiated farming population has to be conducted on two levels simultaneously if farmers are to come to the point of decision and commitment in relation to improved farming practices. Studies have shown that different stages can be distinguished through which farmers pass before we find them ultimately engaged in some new thing. Without recounting them all, we might notice that there is an initial stage in which they are made *aware* of the existence of the new practice, and that it is at this stage that mass media like press and radio have their greatest usefulness. But at the crucial stage of *deciding whether to adopt* a practice the important influences affecting farmers are personal.[6] We should not imagine, therefore, that an increase in radio talks and news-sheet paragraphs will compensate for sparseness in personal influences. Those things can be thought of as a shell bombardment covering an invasion. The bombardment is no substitute for the actual landing and it can be a complete waste of resources if the landing does not eventuate. Mass communication of farming information there must be, but it can be largely written off as lost unless a vast network of personal contacts is simultaneously engineered.

A large extension staff will be needed for this, of course; but, even so, it should never be larger than necessary—in the interests of economy. To urge the need of more workers is not nearly as important as urging the need of a strategy to deploy them to advantage. And the needed strategy would appear to be one which will discharge, so to speak, impulses of personal influence along the existing chains of personal contact. Use should be made of farmers' groups with which the extension worker can maintain constant association. Here he can kill a whole flock of birds with the one stone. But added to the personal influence of the extension worker in such groups is the personal influence of the farmers' equals. Furthermore, it will be mainly some of the more progressive men who will be attracted to these groups;

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[6] See E. A. Wilkening, *Adoption of Improved Farm Practices as Related to Family Factors,* University of Wisconsin Agricultural Experiment Station, Research Bulletin 183 (December 1953), C. P. Marsh and A. L. Coleman, *Communication and the Adoption of Recommended Farm Practices,* University of Kentucky Agricultural Experiment Station, Progress Report 22 (November 1954), M. A. Anderson, *Informational Sources Important in the Acceptance and Use of Fertilizer in Iowa,* Iowa Agricultural Extension Service, Report No. P55-1 (April 1955), and E. M. Rogers and G. M. Beal, *Reference Group Influence in the Adoption of Agricultural Technology,* Department of Economics and Sociology, Iowa State College, 1958.

and these will start a sequence of personal influences, because, as we have seen, they tend to be influential in other groups as well. In addition, radiating out from their homesteads are their neighbours and their neighbours' neighbours. Few of those farmers who escape the influences originating from outside their communities finally resist the influence of their immediate neighbours.

Extension workers could maintain quite regular contact with progressive farmers in small locality groups. This would be possible in New South Wales, for instance, by a better use of the Agricultural Bureau. *Ad hoc* conferences could also be called with experimentalists (were they well enough identified by the extension staff) in relation to programmes dealing with particular problems, such as serrated tussock control, soil-testing, regional systems of irrigation, and the like. Representatives of both groups could be co-opted to advisory councils on research and extension.

Finally in this sketch of working assumptions for an enlightened approach to agricultural extension, one must try to say something about the extension staff itself. What precisely should be expected of extension workers? Should they be specialists or generalists? How should their efforts be co-ordinated? Unfortunately this aspect of extension has not had the same exhaustive coverage as other aspects, although it seems to me to be one of the most important of all the questions connected with the subject; and certainly it is one with which sociologists are conceptually well equipped to deal. Wilkening's recent study of the county extension agent in Wisconsin makes a penetrating advance into the systematic investigation of the question.[7] Because the question is still so imperfectly explored it is difficult to be very definite about it, however. Furthermore, for the sake of having some anchorage, I must tie my remarks here very closely to the situation familiar to me in New South Wales, where extension officers are already specialised, playing such roles as agronomist, veterinary officer, livestock officer in sheep and wool, pigs, poultry or other speciality, fruit officer and dairy officer.

I myself think there is little wisdom in posing the question of generalism or specialism in agricultural extension as an either/or alternative. There is clearly a need for a balance between the two, due to the simple fact that farming, like all matters of practice, requires the application of general knowledge to particular circumstances. The real question is: how much of each kind of influence is desirable and at what points should each be applied? It seems to me that a specialised staff of extension workers will always have the advantage over a staff of non-specialists in their standards of training and competence, but that it will be imperative to have someone draw the threads together at both ends of the operation. By this I mean there should be someone whose job it will be to consider *the district as a whole* and someone else who will consider *the individual farm as a whole.*

To the existing staff of specialists it seems desirable therefore to add another, viz. an economist who can consider the farm as a unit, give advice on a whole-farm basis and encourage farmers to plan on this

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[7] See E. A. Wilkening, *The County Extension Agent in Wisconsin: Perceptions of Role Definitions as Viewed by Agents,* University of Wisconsin Agricultural Experiment Station, Research Bulletin 203 (September 1957).

basis as far as they have the ability to do so. Such a person would be able to take into account the different needs of farms having different scales of operation and farmers having different resources. Although a specialist it would not be inappropriate to think of this person as a *generalist* specialist.

In addition to this generalist influence coming into play at the point of ultimate output of knowledge, there is a need for something of the kind at the point of first input. The whole staff of specialists should be under instruction from a generalist at regional headquarters. (I do not necessarily mean under his administrative control but under his tutelage.) The person I envisage stationed in each of these centres would be a highly trained agricultural scientist with what, I fear, might be the rather rare gift of digesting considerable quantities of knowledge. He would hold under his surveillance the whole agricultural situation of his district. He would keep abreast of all modern findings in agriculture which bear on the industries being pursued there and, at the same time, be steeped in a knowledge of local conditions. He would act as a kind of *filter,* straining out whatever general findings are denied a local application by factors like soil and climate. He would also act as an *arbiter,* deciding what single rule-of-thumb recommendation will be standard for that large number of farmers who require directions in this form. And he would be a *buffer* between the farmer and the pure research worker, restraining the recommendation of new practices until it has been demonstrated that they can be integrated with existing practices to the farmers' economic advantage. He would convey the knowledge he collects to the appropriate specialists, preferably, I think, in regular (say half-yearly) conferences where they would all assemble, and subsequently in writing to each of them individually.

As I have said, these working assumptions have been extracted because it is hoped they might be of practical use to people occupied in this field. They are presented in the belief that Australia is lagging in agricultural extension as much from the lack of an enlightened application of what is already known as from any other cause.

DISCUSSION

R. A. Pearse (University of New England): Dr. Williams's paper could perhaps be best viewed from the point of integration. He places extension as being responsible for interpreting the results of research in the light of local conditions and for ensuring that the individual farmer is able to receive the maximum benefit of research. This, of course, to a certain extent contrasts with Dr. Fallding's paper; Williams is thinking of the individual, Fallding as the individual as one of a functioning group.

Williams sweeps wide in providing background for us, and it is useful to note how other countries have tackled the problem. Especially in the United States where attention is centred on the individual extension helps him to analyse and improve his decision-making ability. Williams emphasises the integration between extension people and

other authorities giving farm assistance. Coming to the United Kingdom again we find concentration on the individual farmer and integrated advice being offered.

Williams lays special emphasis on the specialisation within agricultural departments and considers this to be the reason for the neglect of problems involving the whole farm.

Williams also comments on the lack of teaching of extension. Dr. Schapper has, I feel, pioneered postgraduate teaching in this field. There are courses in Farm Management in two years of the four-year course at the University of New England. In 1961 we will be providing a nine-month course of training for extension people leading to a Diploma in farm management. Farm management appointments are in being or process of formation at all the mainland universities, so I feel that Dr. Williams' criticism will not be valid in the future.

In answering "extension for what?" I feel Dr. Williams proposes something far wider than Fallding's cut-and-dried rule-of-thumb advice; something which would be a far more useful and workable solution to the countryman's need for assistance.

One point I would disagree with is that it is more important to be on the right production surface than to worry much about our location on this surface. I feel it may be better to be on Annapurna than on the foothills of Everest. Agreed that too much time might go to producing detailed surfaces, but milking-cows and wool-producing sheep are going to be with us for a long time—we hope! and surely material on feed and production relations for a lot of these conditions is worth while.

Dr. Fallding's paper will have gone far to show us the function of rural sociology, particularly in its application to agricultural extension. This paper will have stimulated considerable thought, but several questions arise. Should all farmers use the "best and latest" methods? Surely not, if we accept these words in a general, technical way rather than as they apply to the individual. It has been shown that *the individual farmer's limitation of knowledge, capital, interest, etc., all* affect the result of a particular farmer applying a given recommendation. Dr. Fallding's thesis seems to be that to make the best use of limited resources in extension workers we must use groups—and hence sociological principles to get best results from these groups. But, Iowa workers consider that while mass media field days, etc., may all make a farmer aware, there is usually a personal factor in force when the farmer makes a decision, so maybe more than a group is needed.

Further, Fallding considers it axiomatic that extension should not be attempted where no reliable knowledge exists—but for most of the problems confronting farmers in Australia no reliable information is available. However, surely a person with considerable groundings in agricultural principles can make a better decision on these "fringe of knowledge" areas, not just a blunder into the dark or a stab with a pin, which must be the type of decision which is based neither on knowledge nor principle. And a decision has to be made—it cannot be avoided.

Dr. Fallding's division of farmers into various groups is most important to any consideration of extension. If his conclusion that only a few farmers are capable of looking at their farm as a complete

business then techniques of extension such as budgeting must be of limited use. In my experience, however, farmers over quite a large range of ability are able to discuss the budget approach, especially the validity of the assumptions used in considering their case. I believe that most farmers are capable of being educated to seeing their farm as a complex whole, in relation to management and planning decisions.

In view of his formulation of the ability of various groups of farmers, Fallding suggests we need cut-and-dried rule-of-thumb suggestions. Earlier he says that consideration of the precise applicability of the finding of science to the individual farm is rather a "red herring," but to my mind the dangers of applying cut-and-dried rules of thumb in complex management decisions may be disastrous for some farmers. I don't see that this problem can be avoided in a discussion of this nature, especially when the conclusion is that we should have a highly qualified person just handing out ready-made rules of thumb for a region. Dr. Fallding seems impressed with the confusion which reigns when experts push two different opinions. These differ because in complex cases decisions must be highly personal and the experts may well come to different conclusions on the available evidence, and also each may be correct for his speciality whilst wrong for the whole. Dr. Fallding has assumed away the fact that little is known, which is fair enough in developing his theory, but the fact is that at present—for a long time into the future, and to a certain extent always—advisers will have to deal with problems where reliable knowledge is not available.

I feel the need in extension is not just to push more material out but rather to help farmers to adjust farm operations and adapt to the new techniques. After all, may not one explanation of the readier adoption of simple practices be that they are easily incorporated into farm operation, but because they are not given assistance in how to make the change they "shy away" from adopting complex changes which will involve major changes in farm routine or techniques.