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INNOVATION IN THE YASS VALLEY: A PILOT SURVEY

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SUMMARY

This article reports the results of a pilot study concerned with the social and psychological factors which influence the adoption of new farming practices.

The study revealed that both in becoming aware of new farming practices and in deciding to adopt them, a farmer's interpersonal contacts were generally a more important source of information than were the mass media and technical journals. These conclusions were in part at variance with published findings.

It was also found that farmers differed in "innovativeness". Farmers who were "highly innovative" were those who had adopted all of a specific number of new practices, while farmers who were "non-progressive" were those who had adopted one or none of the practices. In hearing about new practices and in making the decision to adopt them the highly innovative farmers were more likely to be influenced by formal interpersonal sources (extension officers, commercial agents) while the non-progressive and moderately innovative were more likely to be influenced by other farmers.

The highly innovative farmers appeared more actively engaged in farming than the others: they read more farming journals, attended field days and sheep shows more frequently and were more likely to be members of a local extension organization. Finally, it was seen that the farmers to whom others turned for advice on farming matters were invariably the highly innovative farmers, although not all highly innovative farmers were sought out in this way.

1. Introduction

This article presents the results of an investigation concerned with some social and psychological factors which are related to the adoption of new farming practices. The investigation has been a pilot study in the sense that it has preceded a much more detailed study which is presently getting under way.

In 1957 the New South Wales Department of Agriculture and the CSIRO set up a Joint Planning Committee to study the Southern Tablelands of New South Wales "as a basis for future research and extension planning".¹ The aim of the committee was "to assess both the present agricultural situation and the agricultural potential of the region. This

* Department of Government, University of Queensland. Paper read at the Third Annual Conference of the Sociological Association of Australia and New Zealand, Sydney, January, 1967.

¹ Joint Planning Committee, *Outline of the Project* (Regional Research and Extension Study, Southern Tablelands, New South Wales, July, 1957), p. 1.

will enable a critical analysis of the differences between these two levels of production to be made and, in addition, should highlight the real barriers to agricultural development in the region and indicate ways these may be overcome".²

The Yass River Valley was taken as a pilot area partly because both topographically and agriculturally it was typical of the Southern Tablelands region, partly because it covered a conveniently sized area (approximately 580 square miles) with an adequate number of farms typical of the region as a whole, and partly because it was relatively well served with roads. Between 1957 and 1962 a number of reports were issued on the physical and agricultural resources of the region.³ Initially, as D. V. Walters, the Yass Project Officer states, "the emphasis was on study. . . . those making the study did not expect to be involved in action as a result of the study; the results would be passed to existing research and extension authorities for action".⁴

However, by 1962 it became apparent that if the results of these investigations were to be translated into revised farm management practices then attention had to be given not only to the relationship between research and extension workers (the initial focus) but also to the relationship between extension workers and farmers. With this in mind the Yass Valley Organization was established in 1962. Its goals were twofold: firstly, to test in real life situations findings emanating from research under controlled experimental conditions, and secondly, to transmit to the farmers in the area information on new and improved farm management practices. " 'Operation Tintacks' a form of whole farm applied research"⁵ was the means by which Y.V.O. sought to achieve its goals. Essentially this was the selection of four farms to be used for test and demonstration purposes. However, 'Operation Tintacks' differed significantly from other whole farm applied research projects⁶

² *ibid*, p. 2.

³ The following reports, additional to that cited in footnote 1, have been issued by the Joint Planning Committee:

Progress during 1957 (July, 1958).

Water Resources of the Yass Valley (November, 1958).

Climate of the Yass River Valley (December, 1958).

Plant Nutrition of the Southern Tableland, N.S.W. (December, 1958).

The Soils of the Yass River Valley (April, 1961).

Tree Planting in the Canberra Region (December, 1961).

An Experiment in Agricultural Liaison (March, 1962).

The Agricultural Situation in the Yass Valley in 1957 (March, 1962).

⁴ D. V. Walters, "An Hypothesis Regarding Regional Research and Extension", (Paper delivered at a seminar on Regional Research in Agriculture held at the University of New England, Armidale, N.S.W., May, 1966), p. 3.

⁵ *ibid.*, p. 8.

⁶ See for example:

J. Blackmore, "Rural Economic Development—some Lessons from the Past", *Journal of Farm Economics*, Volume 46, No. 4, (November, 1964), pp. 780-90.

R. S. Adams, J. S. Taylor, and L. W. Specht, "Demonstration Farms: an Overall Approach to the Farm Business", *Extension Service Review*, Volume 36, No. 1, (January, 1965), pp. 3-5.

P. R. Barrer and A. G. Barwell, "Banks Peninsula Demonstration Farm Shows Farm Improvement is Payable", *New Zealand Journal of Agriculture*, Volume 108, No. 3, (March, 1964), pp. 255-61.

in that "by use of a rather large 'Operation Tintacks' sub-committee of Y.V.O. many people were implicated in decisions about the whole farm programmes with their injections of research results as yet largely untried in the environment. This provided a learning situation for many people, developed in them an anticipatory attitude towards the results of the project, and induced a proprietary responsibility towards its outcome".⁷

In a further attempt to increase the rate at which new farm management practices were adopted, the Yass Project Officer approached some members of the Australian National University towards the end of 1964 with the suggestion that a socio-psychological study might be made of the factors involved in the adoption of new farm management practices among the farmers in the Yass Valley. After some discussion with a group of interested people it was agreed that a small pilot investigation should be carried out in 1965. The project was under the direction of the author, then a Senior Lecturer in Psychology at the University. Much of the actual work on the project, including questionnaire construction, data collection and processing was carried out by a number of graduate students in the University's M.A. programme in Sociology and by one fourth year honours student in Psychology.⁸

From the outset it was realized that the study would be only a preliminary investigation which would, hopefully, suggest hypotheses that a larger and more liberally financed investigation could pursue. It was clearly not possible, given the resources at our disposal, to select a random sample from the Yass Valley as a whole, nor indeed would it have been desirable. The conclusions from the evidence appear to be that innovating practices diffuse more commonly within communities than across them, and that a knowledge of the attributes of the community is important for understanding how this takes place.⁹

Clearly, then, a study within a relatively intact community was desirable, and also one close to Canberra—the study's base of operations. Murrumbateman, a small village about 20 miles from Canberra on the Barton Highway to Yass, was finally chosen as meeting both requirements. Letters explaining the purpose of the study were sent to all farmers in the area. Several of them preferred not to be interviewed, two had sold their farms and two ran their properties jointly. Out of a total of 56 this left a final sample of 45 to be interviewed.

Interviews took from 1½ to 4 hours, with the majority lasting about 2 hours. They were based on a set of relatively standardized although open questions and administered in the main by the students referred to earlier. Information was obtained on a wide variety of issues. Of central importance to the study was a series of questions concerned with seven different farming practices. The practices were: using super-phosphate, sowing perennial grasses for pasture improvement, sowing triple-inoculated clover seed, sheep weighing, mulesing sheep, intensive

⁷ Walters, *op. cit.*, p. 9.

⁸ The students involved were: Miss C. Ingles, Mr P. Sandford, Miss A. Wildash, Mr O. Dent, Dr B. Ford, Mrs S. Harvey, Miss P. Nicholson, Mr P. Tukania. I would like to record my thanks to them for work which frequently went beyond the call of duty.

⁹ E. M. Rogers, *Diffusion of Innovation*, (N.Y.: Free Press, 1962), Chapter 3, for example.

stocking, and sowing lucerne on non-river flats. For each practice the members of the sample were asked to state where they had first heard about it, and what influenced them finally to adopt it. As well, a series of questions was asked about their views on the Y.V.O., the sort of information sources they found useful in connection with farming, the size of their property, their age, the part played by their wife in running the farm, the size of their family, and a few other general issues.

It should be stated at this point, perhaps, that the emphasis in this study was intentionally on social and psychological factors. This meant that very few questions were asked about other issues—economic ones for example. There were several reasons for this orientation. In the first place the problem had initially been presented as a social psychological one and on investigation this seemed an accurate assessment. It was felt by the Y.V.O. executive that information about the different farming practices referred to above was freely available in the community; moreover, it was argued, these were practices which it would be advantageous for farmers to adopt, and as well they would be within the financial reach of all. The author's preliminary discussions with farmers in the region tended to support this view, and hence tardiness in practice adoption was held to be predominantly due to social and psychological factors.

This is not to suggest of course that other variables are generally insignificant in their effects; rather, it points to the fact that the total situation of the farmer should be examined, and that different factors are likely to be important in different situations.

2. Some Characteristics of the Sample

The great majority of farmers in the sample had relatively small properties; for 61 per cent of them property size ranged from 500 to 1,500 acres. The details are given in Table 1.

TABLE 1

Property Size of Farmers Comprising the Sample

	FREQUENCY	PER CENT
Over 3,000 acres	5	11
1,501-3,000 acres	5	11
1,001-1,500 acres	13	29
500-1,000 acres	15	33
Under 500 acres	7	16
	45	100

Twelve farmers (27 per cent) reported having a property or properties other than the one on which they were interviewed. These varied in size from 53 to 1,844 acres, and all but one were run in conjunction with the home property as a single unit.

The productive emphasis on the properties differed. Nineteen of the respondents (42 per cent) said that the main emphasis on their property was on the growing of superfine wool. Eighteen (40 per cent) said it was on growing medium fine wool, while six (13 per cent) said that fat lambs was their main pre-occupation. Most had a sideline of some sort; cattle rearing, stock dealing, and stud breeding were the most popular while raising fat lambs and growing cereals were also quite common.

As a group they were not young. Twenty-seven per cent were over 60 and only 14 per cent were under 40. Table 2 provides the details.

TABLE 2
Age of Farmers Comprising the Sample

	FREQUENCY	PER CENT
Over 70	4	9
60-69	9	20
50-59	14	31
40-49	12	27
30-39	6	13
Under 30 .. .. .	..	..
	45	100

The great majority were second generation farmers. In answer to the question "How did you come to get into farming?", 34 (76 per cent) said that their fathers or other relatives before them had been farmers and "this seemed the natural thing to do". Only 11 had been interested in farming, purchased land, and commenced working it.

To sum up: most of the farmers in the sample were working relatively small properties, a little less than half of them were growing superfine wool, and approximately the same number were growing medium fine wool. The majority were middle-aged and had grown up in farming.

3. The Extent of and Conditions for Practice Adoption

For each of the seven farm practices with which we were concerned the members of the sample were asked to indicate whether they:

- (i) had adopted the practice
- (ii) intended to adopt it
- (iii) were uncertain about adopting it
- (iv) rejected the idea of adopting it.

A summary of their responses is given in Table 3.

Where did the members of the sample first hear about these practices? For the two practices which had been introduced into the district many years ago—using super, and planting perennial grasses of some kind—the answer was overwhelmingly personal sources, and for the great majority this meant another farmer. For the newer practices, such as

TABLE 3

Extent of Adoption of Seven Farm Practices among Farmers in the Murrumbateman Area

	Practice						
	Super-phosphate (n = 45)	Perennial grasses (n = 45)	Mulesing (n = 45)	Triple Inoculated Clover (n = 45)	Lucerne (n = 45)	Intensive Stocking (n = 45)	Sheep Weighing (n = 45)
	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Adopted	98	93	51	40	36	15	4
Intending to adopt ..	..	5	18	29	22	27	9
Uncertain .. ..	..	..	7	7	2	7	16
Rejected	2	2	24	24	31	47	71
No answer .. ..	..	..	..	..	9	4	..
	100	100	100	100	100	100	100

intensive stocking and sheep weighing, reading about it, hearing broadcasts concerned with it or seeing the practice demonstrated at field days were more important, although even here the absolute importance of having had personal contact with someone else with knowledge of the practice was still quite marked. The details are shown in Table 4.

TABLE 4

Where Farmers First Learnt of Farming Practices

	Practice						
	Super-phosphate (n = 45)	Perennial grasses (n = 45)	Mulesing (n = 45)	Triple Inoculated Clover (n = 45)	Lucerne (n = 45)	Intensive Stocking (n = 45)	Sheep Weighing (n = 45)
	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Personal source ..	80	66	46	56	53	33	51
Mass media	9	2	29	18	9	20	16
Other impersonal source .. ..	..	9	7	2	7	18	9
No specific source ..	9	16	15	11	29	22	..
Other	2	7	2	11	2	7	25
	100	100	100	100	100	100	100

This overall pattern is a rather surprising one. In his conceptualization of the adoption process Everett Rodgers¹⁰ has suggested that five stages can be identified: awareness, interest, evaluation, or decision, trial and final adoption. At the awareness stage, or where the practice was first heard about (to use our question wording), impersonal sources have generally been found to be more important than personal sources. Our data of course failed to support this conclusion.

¹⁰ *ibid.*

It seems that there were at least two possible reasons why this was so. In the first place it may be that Murrumbateman was simply a closely-knit community in which farmers obtained most of their information through interpersonal communication. The literature offered some support for this hypothesis. Lionberger¹¹ for example has shown that interpersonal communication is more important in clearly defined neighbourhoods than in those lacking clear definition. Secondly, it may also be that the nature of the practices themselves in part influenced the results. Two of the practices, superphosphate and perennial grasses, were introduced into the district many years ago. It would therefore have been possible for a number of the younger farmers to have first come into contact with these practices on neighbouring properties or from their fathers. And, indeed, this appeared to be the case, for, of the farmers naming personal sources, nearly half named parents. In addition, triple-inoculated clover and lucerne on hillsides, although not widely adopted, had been experimented with in the district for some time, so here again it was perhaps not surprising to have interpersonal sources nominated as important.

At the decision stage the findings were more consistent with those reported in the literature. The data are presented in Table 5. With the curious exception of the lucerne issue, interpersonal factors can be seen to have been the most important source of influence in an absolute sense at the decision stage. In addition, they were relatively more important at this stage than at the awareness stage (compare Table 4). However, it is interesting to note that while extension officers, commercial agents, and other more formal figures were seldom mentioned as interpersonal sources at the awareness stage, they were mentioned almost as frequently as other farmers at the decision stage.

TABLE 5

The Factors Farmers Suggested Influenced their Decision to Adopt Particular Farm Practices

	Practice						
	Super-phosphate (n = 44)	Perennial grasses (n = 44)	Mulesing (n = 31)	Triple Inoculated Clover (n = 31)	Lucerne (n = 26)	Intensive Stocking (n = 19)	Sheep Weighing (n = 16)
	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Interpersonal factors	64	67	61	78	31	58	83
Mass media influence	2	7	7	9	4	5	..
Other non-personal influence	2	2	3	4	..	..	..
Observation of successful results of others	18	10	13	6	8	..	13
Purely personal decision	5	2	16	0	57	21	..
Other	9	12	..	3	..	16	..
	100	100	100	100	100	100	100

¹¹ H. F. Lionberger, "Neighbourhoods as a Factor in the Diffusion of Farm Information in a North East Farming Community", *Rural Sociology*, Volume 19, No. 4, (December, 1954), pp. 377-84.

One further comment on Table 5 is in order. A small group consistently reported that they came to the decision to adopt a specific practice after having observed its effects on a neighbour's property. No interpersonal source was mentioned by this group. It seems possible that what is at work here is a variable that was referred to in the early 1950's as "behavioural contagion"¹². One finds little reference to it in the current literature on innovation although, intuitively at least, it seems not irrelevant in the adoption of new practices or ideas in agriculture.

Several facts about practice adoption emerge from the discussion so far. Firstly, it appears that in becoming aware that a particular practice exists the farmer depended very much on his contemporaries and to a lesser extent on the mass media. Being aware that a practice exists, however, did not mean that it would be adopted, and in the process of making up his mind to adopt a specific practice the average farmer was likely to seek out the advice of his contemporaries and of extension officers, to see what success others had had with the practice, and generally to try to evaluate its effects on his own property. What these findings seem to be suggesting, then, is the importance of contacts with other farmers and, to a lesser extent, the mass media at the awareness stage, and the importance of contact with other farmers, extension officers and with properties on which the practice has been adopted at the decision stage. A campaign aimed at securing the adoption of new practices, to be successful, clearly must take account of the stage of the adoption process at which the farmers being exposed to the campaign are located.

4. Innovativeness and Adoption

Up until now the analysis has proceeded as if the farmers in the sample were a more or less homogeneous group. That is to say it has been assumed that they all behaved more or less consistently at both the awareness and decision stages. It is necessary to look at this assumption in a little more detail.

It will be remembered that Table 3 showed considerable differences in adoption figures. Nearly all farmers were using superphosphate and had planted perennial grasses, but only some were mulesing their sheep and had sown triple-inoculated clover seed, while even fewer were sowing lucerne or adopting intensive stocking practices and practically no one was weighing sheep. Now what do these figures mean? Do they mean that some farmers were generally more innovative than others across the board, or do they mean that some farmers were adopting one practice while others were adopting another and that all maintained much the same level of practice adoption?

The procedure we adopted in attempting to answer this question was first to reject from consideration the two practices which virtually the entire sample had adopted (superphosphate and perennial grasses) as well as the one which only two farmers had adopted (sheep weighing). On the remaining four practices, responses indicating adoption or intention were given weights of one, while responses indicating uncertainty or

¹² R. Polansky, R. Lippit, and F. Redl, "An Investigation of Behavioural Contagion in Groups", *Human Relations*, Volume 3, No. 4, (November, 1950), pp. 319-48.

rejection were scored 0. This gave a range of scores from 0 to 4. Then for each of the 4 practices, corrected item-total correlations were calculated using the method suggested by Guildford.¹³ Essentially this correlation gives a measure of the extent to which individuals who give a “positive” (that is innovative in this context) response to one “item” (practice adoption question) get a relatively high score on the measure. Or, to put it another way, when an item has a high correlation with total score this means that individuals with positive scores on the item are likely to have high scores on the measure; when an item has a low correlation with total score it means that individuals responding positively to the item are likely to be distributed randomly over the measure. The corrected item-total correlations for the 4 practices are shown in Table 6.

TABLE 6
Corrected Item-Total Correlations for Farm Practice Items

PRACTICE	CORRELATION
Intensive stocking	0·61
Triple-inoculated clover	0·56
Mulesing	0·56
Lucerne	0·47

They are all relatively high, suggesting that these four items can, appropriately, be regarded as a “measure” of innovativeness. Of the total sample of 45, 11 obtained a high score of 4, these we called the “Highly Innovative” farmers. Another 23 got a score of 2 or 3, and these we described as “Moderately Innovative”. The remaining 11 obtained a score of zero or 1, and these were called “Non-progressive”.

Do the information sources used by these 3 groups of farmers at the awareness and adoption stages differ? Our initial expectation was that they would. The finding that the mass media were not as important as interpersonal influence at the awareness stage but also that they were not unimportant, led us to try to identify those for whom they were important. Our initial hypothesis, if it can be called such, was that the more innovative farmers would be more likely to be influenced by the mass media. It is interesting to note at this point that while there is a relatively large body of data about the information sources used at the various stages of the adoption process by farmers as a group, there is surprisingly little discussion of the sources used by farmers of differing levels of innovativeness. Our hypothesis was suggested, therefore, more by the “two-step flow” notion of communication¹⁴ than it was by the literature focusing on the adoption process. We postulated that those who were Highly Innovative were likely to resemble influentials, while the Non-progressives, and to a lesser extent the Moderately Innovative, were more likely to resemble the influenced.

¹³ J. P. Guildford, *Fundamental Statistics in Psychology and Education*, 4th Edn., (N.Y.: McGraw-Hill, 1965), p. 503.

¹⁴ E. Katz and P. F. Lazarsfeld, *Personal Influence*, (Illinois: Free Press, 1955).

We focused on the practices with a relatively high mass media "score": Mulesing, Intensive Stocking, Triple-Inoculated Clover and Sheep Weighing, but found that on only one of these, Mulesing, did the Highly Innovative farmers make appreciably more use of the mass media. What did emerge, however, was a consistent, although not large, difference between the 3 groups of farmers in the importance of formal as contrasted with informal interpersonal sources. The Highly Innovative farmers were more likely than their Moderately Innovative contemporaries to nominate an extension officer or a commercial agent as important in bringing to their attention a particular practice. And the Moderately Innovative in turn were more likely than the Non-progressives to suggest such a person. For the Non-progressives an interpersonal source meant almost invariably another farmer. This trend is summarized over all practices in Table 7.

TABLE 7

Sources from which Highly Innovative, Moderately Innovative and Non-progressive Farmers First Heard about the Seven Farm Practices

	Highly Innovative	Moderately Innovative	Non-progressive
	per cent	per cent	per cent
Interpersonal—formal	17	13	6
Interpersonal—informal	40	46	47
Mass media	14	16	18
Other	29	25	29
	100 (80)	100 (154)	100 (66)

The hypothesis was not supported, but at least the data did suggest that the more innovative farmers were less likely to use informal channels of communication.

What happened at the decision stage? The picture was complicated here of course by the fact that not all farmers had reached this stage for all practices. However, for those who had our hypothesis was virtually the same as before: the Highly Innovative were likely to have made greater use of the mass media. Again the hypothesis was not supported, but again it appeared that the more innovative were likely to make greater use of formal interpersonal contacts. The data are presented in Table 8 summed over all practices.

It seems therefore that at both the awareness and decision stages of the adoption process institutionalized sources of information were used more commonly by the Highly Innovative farmers while informal sources were utilized more often by the Non-progressives. This trend, however, should not cause us to lose sight of the fact of the absolute importance of informal sources for all groups of farmers.

5. Some Characteristics of Innovative Farmers

Although the innovative farmers did not report greater use of impersonal sources at the different stages of the adoption process, they

TABLE 8

Sources Highly Innovative, Moderately Innovative, and Non-progressive Farmers Suggested were Important in their Decision to Adopt the Seven Farm Practices

	Highly Innovative	Moderately Innovative	Non-progressive
	per cent	per cent	per cent
Interpersonal—formal	23	20	11
Interpersonal—informal	42	46	58
Mass media	6	4	4
Self	9	9	8
Other	20	22	19
	100 (66)	100 (101)	100 (26)

did appear in general to make more use of these sources. Early in the interview the respondents were asked to indicate which of a number of journals relating to farming they received regularly. Among those included were: *The Land, Muster, Country Life, N.S.W. Agricultural Gazette*, and *Rural Research in CSIRO*. The Highly Innovative received regularly more of these than did the Moderately Innovative, who in turn received more than the Non-progressives. The details are shown in Table 9.

TABLE 9

The Number of Papers and Journals on Agricultural Topics Received by Highly Innovative, Moderately Innovative, and Non-progressive Farmers

Number of papers and journals received	Highly Innovative (n = 11)	Moderately Innovative (n = 23)	Non-progressive (n = 11)
	per cent	per cent	per cent
6-10	45	13	18
4-5	45	52	9
0-3	9	35	73
	100	100	100

Further evidence of what we can perhaps call the “professionalism” of the Highly Innovative farmers comes from a number of sources. In the first place, nearly three-quarters of them had 4 or more instances of contact with Department of Agriculture officers “in the last few years” compared with about a quarter of the Moderately Innovative, and a little less than 10 per cent of the Non-progressives. The nature of the contact varied too; it could have been a visit by an officer, reported more commonly by the Moderately Progressive; a visit to the Department of Agriculture Office, reported more commonly by the Highly Progressive; or contacts by letter or phone, again more common among the Highly Progressive; or contacts at field days, reported not surprisingly by the

majority of those attending irrespective of level of innovativeness. A second indicator of the higher level of "professionalism" of the Highly Innovative farmers concerns attendance at field days: all the Highly Innovative reported having attended 3 or more field days "in the last few years" while just over three-quarters of the Moderately Innovative and a little more than a half of the Non-progressives did. Attendance at the Murrumbateman Sheep Show was also higher among the Highly Innovative than among the others. Finally the Highly Innovative were also likely to be members of the Yass Valley Organization. The trends are summarized in Table 10.

TABLE 10

Contact with Agricultural Officers, Attendance at Field Days and the Murrumbateman Sheep Show, and Membership of the Yass Valley Organization of Highly Innovative, Moderately Innovative and Non-progressive Farmers

	Highly Innovative (<i>n</i> = 11)	Moderately Innovative (<i>n</i> = 23)	Non- progressive (<i>n</i> = 11)
	per cent	per cent	per cent
Four or more contacts with Agriculture Department Officers "in last few years"	82	26	9
Attended three or more field days "in last few years"	100	78	55
Attended Murrumbateman Sheep Show	73	57	36
Current membership of Y.V.O.	73	39	36

On the attitudinal side, too, differences between the groups were apparent. Towards the end of the interview the respondents were asked to indicate whether they agreed or disagreed with the following statement: "The difference between the successful and the non-successful farmer is more in how hard they work than in planning their farming operations". Our assumption was that the farmer who regarded farming as a technical matter, and who felt that there was a set of skills and a substantial and to some extent codified body of knowledge which were important for farmers to possess, would be more inclined to vote for planning as against hard work and so would answer the above question in the negative. If the Highly Innovative are such farmers, the professionally orientated perhaps, then the data support the assumption, for 72 per cent of them disagreed with the statement, compared with 64 per cent of the Moderately Innovative and 45 per cent of the Non-progressives.

To what extent are these differences tied into reality? That is to say, do they simply reflect different attitudes of mind, or are there visible signs of their effects? It would seem that the latter is the case. In the first place the Highly Innovative were more likely to be working larger properties; slightly more than half of them had properties larger than 1,000 acres compared with about a third of the Moderately Innovative and less than 10 per cent of the Non-progressives. Secondly, the Highly Innovative were more likely to have increased the number of sheep per acre over the last 5 years: nearly three-quarters of them stated that they were running more sheep per acre now, compared with 5 years ago, while only 59 per cent of the Moderates and 18 per cent of the Non-progressives

made such a claim. Finally, the main productive emphasis on the properties of those who were Highly Innovative was likely to be the growing of superfine wool, while on the properties of the Non-progressives it was more likely to be on growing medium fine wool. Table 11 presents the data.¹⁵

TABLE 11

Some Features of the Properties of Highly Innovative, Moderately Innovative, and Non-progressive Farmers

	Highly Innovative (n = 11)	Moderately Innovative (n = 23)	Non-progressive (n = 11)
	per cent	per cent	per cent
Percentage with properties greater than 1,000 acres	55	35	9
Percentage who have increased sheep numbers per acre over the last five years	73	59	18
Percentage for whom main productive emphasis is growing superfine wool	55	44	36
Percentage for whom main productive emphasis is growing medium fine wool	44	35	55

Two further points are perhaps of interest. Age made a difference but education did not. The Highly Innovative were likely to be younger, but not better educated. A professional orientation apparently is not something that is learned in school although it is quite clearly characteristic of the younger farmers in the sample.

6. Innovativeness and Influence—the Agricultural Discussion Leader

We have seen already that in the adoption of new practices the farmers in our sample relied heavily on interpersonal contacts. They became aware of practices as a result of their contact with others, and finally made the decision to adopt new practices on the basis of continued personal influence. The Highly Innovative differed somewhat from the others in that the personal sources that they regarded as important were more frequently formal or institutionalized ones—extension officers, commercial agents, for example.

Given, then, that informal personal contacts were highly important sources of influence the question arises as to whether awareness of new

¹⁵ It might be argued that the data presented in Table 11 reflect only certain associations between 2 sets of behavioural measures, the first having to do with the extent of practice adoption and the second with specific aspects of farms and farming, and not a causal relationship as implied in the text. It is argued that it is legitimate to speak in causal terms, however, since clearly the data do not support a possible alternative causal interpretation: while we can conclude that the innovative are working large properties it is not the case that those working large properties are likely to be innovative; likewise, while it is true that the innovative are likely to have increased sheep numbers per acre, it is not true that those who have increased sheep numbers per acre are likely to be innovative. Similar claims could be made about the items dealing with productive emphases. This argument, of course, is not conclusive, but it does at least tend to support the point of view that other behaviours follow from an innovative orientation.

practices and the decision to adopt them came about simply as a result of general social interaction or whether there were individuals in the community who were more likely than others to exercise influence. An obvious hypothesis suggests itself, namely that the Highly Innovative were more likely than the others to exercise influence. However, like many hypotheses this was formulated in the course of the analysis and so the data which are relevant to it do not allow as precise a test as would be desirable. The relevant data relate to influentials¹⁶ in general rather than to influentials for specific practices. We know, for example, with whom the members of the sample found it useful to discuss their farming problems, we do not know who were the specific persons who brought particular practices to their attention, and we cannot identify the particular individuals who were important in their decision to adopt specific practices.

Specifically, the available data stemmed from the sociometric question: "With what farmers in this area have you found it useful to discuss your own farming problems?" The respondents were allowed to nominate three individuals, and interestingly on only one occasion was a farmer outside the Murrumbateman area nominated.

The number of times members of the sample were chosen ranged from never to 13 times, and several farmers were quite clearly chosen more often than the others. And in fact one of these stood out markedly; he received 13 choices, the next two received 7 choices and the next two 6 choices. The numbers then dropped away to 1 and 2 choices per person. These agricultural discussion leaders were all Highly Innovative, suggesting that while Highly Innovative farmers were not necessarily influentials, influentials were likely to be Highly Innovative, not quite what was hypothesised, but at least related to it.

In general these findings supported the flow of influence hypothesis put forward initially by Katz and Lazarsfeld.¹⁷ However we have not established that the influentials' higher frequency of contact with official personal and impersonal sources was actually important in their decisions to adopt the practices under study. Nor have we directly shown that the leaders actually influenced other respondents in their decisions to adopt the seven practices. The findings are such, however, as to suggest that careful and controlled investigation of how information is transmitted might provide results which would be relevant from both theoretical and applied viewpoints.

7. Conclusion

The conditions for the adoption of innovation, the identification of innovators and of change agents are problems which are increasingly occupying the attention of behavioural scientists. They had their origins in the oft-denigrated field of rural sociology, spread from there to medical sociology and are now increasingly being actively examined by policy oriented researchers and others working in under-developed areas where the key problem is how to modify traditional behaviours.

¹⁶ Or agricultural discussion leaders as Wildash calls them; (A. Wildash, *Communication and Practice Adoption*, B.A. (Hons) thesis, Australian National University, 1965).

¹⁷ Katz and Lazarsfeld, *op. cit.*

The present study can be located in this general field. As mentioned earlier, it was essentially a pilot investigation. It was undertaken partly as a training exercise and partly because of the author's general interest in the problem of diffusion of innovation. Because it was essentially a pilot study, the findings stemming from it should be regarded at best as provisional, and perhaps more realistically as hypotheses which could be profitably examined in a larger scale investigation.

In summary these hypotheses would be the following:

- (1) The information source most commonly used at the awareness stage of the adoption process varies with the social cohesiveness of the community under study: in highly cohesive communities interpersonal information sources are likely to be utilized most frequently while in communities of low levels of cohesiveness impersonal sources will be more frequently used.
- (2) At the awareness stage innovators in highly cohesive communities are likely to make greater use of institutionalized personal sources than innovators in communities of low levels of cohesiveness, who in turn are likely to make greater use of impersonal sources.
- (3) At the decision stage of the adoption process innovating farmers are likely to make greater use of institutionalized personal sources than are non-innovators.
- (4) In a study of the adoption process over time, information sources found to be important at the different stages of the process in the present investigation, will be those most commonly utilized by farmers "moving through" the adoption stages.
- (5) Older innovating farmers are likely to be more influential than younger farmers at the same level of innovativeness.
- (6) Innovating farmers are more likely to be sought out for information on farming practices than non-innovators.

The more general study which is currently under way is examining among other things, hypotheses 1, 2, 3, 5, and 6.