

Dominion and provinces from that prevailing at the present time; to state the extent to which they are prepared to assist in the event of any change in the Dominion-Provincial financial relationship which works to the financial benefit or to the financial detriment of the province; or the extent to which they are prepared to share with the Dominion in assistance to the municipalities under either of the three alternative situations.

The provinces, where they or their agencies, control the borrowing powers of the municipalities might well advise the municipalities now as to the restrictions or limitations which they propose to place upon the borrowing powers of municipalities to finance the construction of works and the factors which they propose to consider in deciding whether or not municipal borrowing will be permitted.

The provinces might well advise the municipalities as to the basis of subsidies or assistance if any to which the municipalities might look forward as a means of assisting the financing of ordinary expenditures especially in the field of social services or in the alternative the extent, if any, to which the provinces propose to enter the field of shared taxes for the relief of the municipalities, and through

them of real estate, from the burden of taxation on real property and any anticipated widening of the tax base of the municipalities.

The municipalities in turn might well review the whole program of post war works which they have developed to date. In many municipalities the problem has been approached from the angle: "What can we find to spend money on?" the aim being to build up the largest possible program coming within the remotest bounds of possibility. These programs might well be reviewed, reduced and revised. Each proposed expenditure should be treated according to priority based upon necessity, the type of service to be rendered, and the number of people to be served. It is obvious that a much needed sewage disposal plant, unsavoury and unsightly though it may be, is of infinitely greater importance than a band stand or even a recreation centre.

Having so rated the proposed works and deleted the non-essentials, a council might well delay final decision and then further revise their program in the sobriety and disillusionment of the "morning after" when post war conditions have adjusted themselves to what will then be considered as normal.

Farm Electrification

BY ANDREW STEWART

RURAL living, whether in the small town or village or on the farm, has both advantages and disadvantages when compared to life in the city; and the balance of advantages may change from time to time. People living in rural areas are constantly comparing their circumstances with those of city dwellers; and the comparison is more readily made as familiarity with the living con-

ditions of others increases through better communications and greater mobility. Many young country people have had their first real opportunity to contrast the conditions of life in the city with those on the farm through the experiences provided by service in the forces.

The movement of people from the country to the city, and vice versa, reflects this process of comparison and the judgments of people regarding the respective opportunities for satisfying

EDITOR'S NOTE: Andrew Stewart is Professor of Agricultural Economics at the University of Alberta.

living conditions. Rural-urban movement results from unfavourable judgments with respect to rural life and opportunities. It will be difficult to induce Canada's servicemen to return to rural areas, if as a result of their experiences they decide that the balance of advantage favours life in the city. Consequently, if it appears desirable to maintain rural population, and to provide conditions which will induce servicemen to return to rural areas, the most effective procedure is to seek to correct those conditions which reflect unfavourably on rural living.

However, there will always be rural people, and it is proper to consider whether there are not some things which rural people lack, with which they should be provided; possibly as the "right" of citizens in a wealthy land, or, at least, on grounds of the general advantage. Educational services have long been provided with slight regard to ability to pay; there appears to be a definite trend toward establishing health services on a similar principle; and the range of such "free" services will be extended in time.

There is probably no area of productive activity in a modern industrialized society in which human energy is so inefficiently used as in the industry of farming. In other activities, in much larger measure, human energy has been amplified by combining it with or supplementing it by other sources of energy. In many situations in this country farm work can be greatly lightened and the effort of the farm worker rendered substantially more productive by the application of modern production aids.

The case for farm electrification may be supported on all these grounds mentioned. There is probably no respect in which farm living compares so unfavourably with city life, as in those departments in which electrical energy can be applied. Perhaps no other single factor would contribute more to increasing the attractiveness of rural life than the provision of electricity to the farm home and workshop. Rural electrification would, for many, turn the balance of advantage in favour of country life.

Electricity in the home is something which, it might be argued, any Canadian citizen is entitled to expect; there is certainly little doubt that it would contribute significantly to the physical and mental welfare of rural people, and thus to the general welfare. Electricity can be applied in numerous ways to lighten the burden of labour on the farm, to release effort for other production activities, and to reduce production costs.

The Costs of Providing Electricity to Farms

The individual farmer is limited in his capacity to secure the electrification of his own farm. The cost of bringing power to his particular farm is prohibitive except for those few who are happily situated close to the transmission line. In terms of the individual farm, most farmers would have to depend on the farm electric plant, either wind or engine driven. It seems probable that many farmers are not sufficiently aware of the uses they could make or the benefits they could secure from an electric plant; and it is reasonable to suppose that, in some parts of Canada and for some time, no other means of electrification will be available to some farm people. Consequently, when there appears little immediate prospect of obtaining service from the power line, farmers would do well to canvass the possibility of installing a plant; and measures should be adopted to secure wider use of this equipment.

Although the development is a relatively recent one, we now know that it is possible to transmit electrical energy over long distances. This technical achievement has extended the possibilities of farm electrification; but the construction of power lines is costly in terms of materials and labour, and considerable loss of energy occurs over long distances.

The overhead construction costs per unit of energy supplied to the farm user depend upon a number of factors, including, (a) the number of potential users within a given area; (b) the proportion of potential users actually connected to the lines; (c) the type of line construct-

ed and the prices of materials and labour used in construction; (d) the consumption of energy per farm. The rate of extension of distribution lines throughout Canada's farming areas depends upon a favourable combination of these factors.

Density of Farms

The number of potential customers in any farming area is primarily dependent upon the size of farm. Other things being equal, areas in which farms are small present relatively favourable conditions for farm electrification. In terms of this factor conditions are more favourable in the Maritime and Central Provinces and in British Columbia than they are in the Prairie Provinces. The 1931 census shows the average size of farm in the provinces, exclusive of the Prairie Provinces, as ranging from 93 acres in Prince Edward Island to 136 acres in British Columbia. In the Prairie Provinces the corresponding averages were, Manitoba, 279 acres; Alberta, 400 acres; Saskatchewan, 408 acres. The number of potential customers per mile of line is also affected by the distribution or location of farms within the area; and by the presence of hamlets not already served.

Saturation

The proportion of potential customers who will be connected with the lines depends on several factors, including farm income and ability to pay for the service, the attitudes of people and the importance which they attach to securing the benefits of electricity, and the terms on which the service is offered. One of the factors impeding the extension of farm distribution lines has been the relatively low cash income of farm families. (More recently, when farm incomes have been at a relatively high level, extension of lines has been limited by shortages of labour and materials.) In addition, the high variability of farm incomes has made the heavy investment in line construction a hazardous one. Over a period of years the proportion of disconnections in the Prairie Provinces has been quite high.

Between areas in which farm incomes are broadly the same, significant differences in the desire to secure service may be apparent. At the present time farm incomes in the Prairie Provinces are not the limiting factor they were ten years ago; but the pressure for electrification, and the insistence that steps be taken to provide electricity, is much stronger in some areas than in others. While type of farming is often a factor, the difference appears frequently to be related to the differing background and outlook of people. This condition will doubtless change in time, and is indeed now in the process of change. However, in some areas a larger promotional effort would be required to induce the same saturation as could readily be secured in other areas. In some areas adequate farm homes are a necessary prerequisite to electrification.

Type of Line Construction

Construction costs per unit of energy used are affected by the type of construction. All provinces have electrical codes establishing standards for line construction and wiring of buildings; and it is clearly desirable that safety, permanence and adequate service should not be sacrificed unduly in the interests of cheapness. However, it is evident that, under the urge to meet rural conditions, engineers are giving increased attention to the possibilities of low cost service with substantial success. The 6,900 volt farm distribution line with a 3 kva transformer at the farm, which has been proposed for farm service in the Prairie Provinces, features low construction cost with service adequate to meet the needs of prairie farms. At 1939 prices, construction costs are estimated at approximately \$500 per mile of line on the road allowance, i.e., excluding the transformers and service tap-off. Prices of line construction materials, prices entering into the costs of wiring buildings, and prices of appliances are all important in determining the total cost of providing the service. Any arrangements which would be effective in keeping down these prices

would therefore contribute to an extension of farm electrification.

Consumption Per Farm

Finally, because of the heavy overhead costs, the consumption per farm has a marked effect on the cost per unit of energy supplied and consumed. In addition to line construction costs, many of the operating costs, for example, patrolling and repair to lines, do not vary greatly with the number of customers on the line, or with the consumption per farm. Capital costs and line operating costs represent a very large part of the total costs; the cost of the energy itself is small. Consequently, with increased consumption the cost per unit declines rapidly. Once the lines have been established and service is being provided, it is therefore in the interests of both the utility and the customers that consumption should be increased. The available information on average consumption per farm in various provinces indicates marked differences. It is high in Ontario and low in Quebec. Among the factors affecting energy consumption are the incomes of farmers and their ability to install appliances, the type of farming, knowledge of the uses and benefits of electricity, and the terms on which the service is provided.

Low incomes retard the use of electricity. Where or when incomes are low, rates, which under conditions of higher income would not seem excessive, may discourage consumption. Income also affects consumption through its effect on the extent to which buildings are wired and on the appliances installed. Even if the consumer is not called upon to contribute to the costs of line construction, he has to make some investment in wiring buildings and purchasing electrical equipment. The extent of this investment in particular cases is affected by the past and current income of the farmer. Some types of farming, for example, dairying, offer greater opportunities for the use of electrical energy than do others, for example, grain farming. Few, if any, farmers are fully aware of

the benefits which could be derived, under their own circumstances, if fuller use were made of electric energy. There is here a large field for education and promotion. While a general programme of promotion would have some effect, it seems probable that the educational and advisory service must be carried to the individual farm if the maximum benefits are to be obtained. Each farm has its own problems, and expert investigation of the particular case would undoubtedly disclose profitable uses of which the farmer would otherwise remain unaware.

Lastly, consumption per farm is affected by the terms on which service is offered. Rates do make a difference. High rates discourage consumption; low rates increase consumption. It is also desirable that the rates should vary with the level of consumption, thus providing an inducement to increased consumption.

Conclusion

It is apparent that some farming areas offer specially favourable conditions for distribution of electrical energy. Provided that other factors are relatively satisfactory, extension of farm lines in these areas may be expected to take place rapidly once materials and labour are available. In other areas central station power can be expected only in the more distant future. In these areas particularly, the individual farm plant has a place.

In all areas extension of service will be facilitated if farm incomes can be maintained at higher levels than those prevailing during the pre-war years. Adequate incomes are necessary to induce farmers to enter into a contract to accept service, and the prospect of stable incomes may be necessary to induce the utility to assure the risks associated with a heavy investment. High incomes contribute to a lowering of unit costs, and therefore rates, by increasing consumption, which is brought about mainly by the purchase of additional equipment and appliances.

In all areas extension of service would be facilitated by an effective educational programme. Such a programme would increase the farmers' knowledge of the benefits of electricity; and should be designed to show the individual farmer what can be done on his own farm. An effective educational programme would have a significant indirect effect through the relation between consumption and cost per kw/hr, and therefore rates.

Because of engineering developments, if farm incomes can be maintained at an adequate level, substantial expansion of farm distribution lines might be expected, even if all costs had to be met from revenues derived from the sale of energy, that is, from the customer's bill. The limits of expansion would be extended, and the process expedited, if part of the cost was borne out of general governmental revenues, and rates were correspondingly reduced. Extension of the

practice of government assistance to farm electrification seems probable.

There are some areas in which rural service has been self-sustaining, but, in Canada, these areas are the exception rather than the rule. Even when service has been provided by private companies, the farm service has usually been supported out of revenues obtained from urban and industrial rates. Provincial Commissions have ordinarily been in a position to offer assistance to rural extensions; and provinces which have not previously contributed to rural service appear to be moving in this direction.

The extension of farm electrification in the immediate future appears therefore to depend on the level and the stability of farm incomes, and on the degree of support from provincial treasuries, that is, on the general prosperity of the country; and on the success of the utilities in reducing costs and stimulating the desire for increased service.

Local Government in Australia

By F. A. BLAND

AMONGST the many characteristics of Australian politics that arrest attention when comparing the institutions of the member States of the British Commonwealth of Nations is the rudimentary nature of its local government. A partial explanation for the difference in political systems is to be found in the fact that for the first fifty years of their existence all the colonies, with the exception of South Australia, were organized and administered as convict settlements. The governors were usually naval or military officers who applied to the inhabitants the discipline of the quarter deck or the barrack square. It was not

until the 1820's that the home authorities and the governors began to envisage the possibility of the cessation of transportation, and, in the light of Canadian experience, of the assumption by the inhabitants of the administration of their own affairs. Except in the case of West Australia, convicts were not transported after 1840, while the system of Responsible Government was accomplished in gradual steps by Imperial measures passed in 1823, 1828, 1842, and 1850.

Despite the desires of the home authorities and the efforts of the governors, the inhabitants showed little inclination to assume the management of municipal matters. To do so would have necessitated their raising local rates for the provision of services the cost of which had always been borne by the home authorities or from revenues raised by the

EDITOR'S NOTE. F. A. Bland is the only Professor of Public Administration in Australia. He was appointed lecturer in Public Administration at Sydney University, N.S.W., in 1914 and was elevated to Professorial rank when the Chair of Public Administration was created in 1935.