

portant. Dr. Irving Langmuir, who is well known as the inventor of the argon-filled electric lamp used in every home to-day and is a Nobel Prize Winner of 1932, has been particularly impressed by the potentialities of Russian Science. Dr. Langmuir has reported, for instance, the development by the Russians of new photo-electric cells many times as sensitive as any previously known. He has

also stated publicly that in any race for the mastery of nuclear physics, such as might result from an attempt to keep the atomic bomb a military secret, he is convinced that the United States would eventually take second place to Russia. It may well be that the younger generation of Russia will take its place with that of America in the leadership of tomorrow's science.

Better Housing for Canadian Farmers

By FRANK SHEFRIN

STUDIES of the standards of Canadian farm homes have indicated that the majority of farm families live in houses that cannot be considered adequate according to any minimum standard. Many houses are beyond repair and replacements are necessary; many need structural improvements and major repairs; many are seriously overcrowded and usually lack the most primitive plumbing facilities and even running water.

The inability of a large section of the farm population to be able to afford what is considered a minimum standard of housing is common to many countries. In Canada, farmers with low incomes are often unable to remedy their housing situation without special subsidies and building arrangements. The reasons are economic to a large degree. Many farmers live on a marginal or subsistence basis as a result of the cultivation of unsuitable land, for example, exhausted or eroded soil—adverse climatic conditions, for example, drought—lack of knowledge of good farming methods or poor management. In recognition of these special conditions, various countries such as the United States and Great Britain have taken steps to assist middle and lower

income groups in rural areas in acquiring adequate homes.

In Canada, during the late thirties and the war years, there has been a slow but steady awakening of a housing conscience. This has shown itself as a growing desire on the part of the general public to see housing conditions improved.

Adequate steps to improve farm housing would advance the health and general effectiveness of the hundreds of thousands of rural people. The resulting of new construction and repairs would contribute greatly to employment and general business activity in the next few years.

Facts and Figures

What is the present housing situation? The 1941 census recorded 703,000 occupied farm dwellings in Canada, nearly all single dwellings. Almost half of these were in Ontario and Quebec, a little more than one-tenth in the Maritime Provinces, and approximately one-half in the Western Provinces. Except in Ontario, a large majority of farm homes were frame structures. Over 90 per cent of all farm homes were constructed of wood, in Ontario the proportion being 59 per cent, with brick being the other important structural material used.

Comparing the longer settled eastern provinces with those of Western Canada, farm homes and farm families in the east

EDITOR'S NOTE: Frank Shefrin, a graduate of the University of Manitoba, is a member of the Economics Division, Dominion Department of Agriculture in Ottawa.

were larger, the farm houses better equipped, longer in the possession of the present occupants, and, in the central provinces, at least, more valuable. Estimated value of homes averaged highest in Ontario at about \$1,400; it exceeded \$1,000 in Prince Edward Island, Quebec and British Columbia, and ranged down to \$938 in Saskatchewan and \$860 in New Brunswick. These values are substantially lower than those 20 years ago reflecting in some measure the degree of deterioration, the result of inadequate repair and upkeep.

A total of 274,000 houses or 39 per cent of the 703,000 farm dwellings were in need of external repairs—foundations, walls, roofs, chimneys, windows, doors. In no province is the need of external repairs less than 29 per cent of the total number of farm houses. New Brunswick and the Prairie Provinces percentages ran above average, while the other provinces fell appreciably below average. About two-thirds of the farm dwellings of Canada depended on pumps or other sources of water outside of the home. Eighty-nine per cent of all dwellings contained no inside toilet facilities. Only 20 per cent of farm dwellings were lighted by electricity in 1941, provincial percentages varying from 5 for Saskatchewan to 37 for Ontario.

Census information has been supplemented by additional surveys.

A serious situation was disclosed by a farm housing study undertaken in 1943 in the Cory-Asquith-Longham area in central Saskatchewan, where 90 per cent of all farmers claimed that their houses were in need of repairs.

In the newly settled areas of Northern Ontario, Quebec and New Brunswick, housing conditions reflected the financial status of the settlers which has as yet not reached a desirable level. In Cape Breton, the poor conditions of farm homes can be attributed to the depressed condition of agriculture in that area.

Many farm buildings erected in new settlement areas of Northwestern Quebec are of log construction, but in recent years frame buildings have been substituted to

some extent for log buildings. The average cash outlay for the construction of the settler's house, of a size varying between 14 feet by 28 feet and 32 feet by 33 feet was \$236.

In the settlements established between 1931 and 1937 and located in the northern New Brunswick counties of Madawaska, Restigouche, and Gloucester, it was customary up until recently (study was made in 1939) for a settler to build temporary log buildings and erect a more elaborate type of building when he could afford it. The cost of new or more elaborate houses ranged up to \$800. Many of these log buildings need to be replaced. The settlers lacked many of the conveniences. Only 15 per cent of these settlers had installed a pump.

In Cape Breton County, in 1939, rural occupied dwellings were classified as 41 per cent in good condition, 45 per cent fair, and 14 per cent poor. The reason for the small percentage of poor dwellings is that 21.4 per cent of all the rural dwellings in the county had been abandoned.¹

These facts and figures illustrate the country-wide low standards of farm housing supply. Obviously a major program is needed to bring the housing standards of the farm population up to a reasonable level. A housing policy must be developed in more than one direction if it is to take care of this section of the Canadian people. Housing for the agricultural population, however, raises special problems.

Characteristics of Farm Housing

Farm houses are not like city or suburban houses. They are isolated. House ownership must, in most cases, be accompanied by farm ownership. The average farm house is a centre for many farming operations as well as a family dwelling. The farm dwelling is very much part of the whole farm plant, and must be integrated with other buildings and the entire nature of farming operations. The

—1. Lewis, J. N. and Hudson, S. C. *Land Use and Part-time Farming in Cape Breton Country, Nova Scotia*. Economics Division, Dominion Department of Agriculture, Ottawa. Mimeographed Report, February 1942.

size and condition of the home is considered as one of the indicators of the productivity of the land.

The high initial cost of housing makes important the system of financing its construction or purchase. In the vast majority of cases, the amount of money available for building or maintaining farm houses is tied to the income from the particular farm on which it stands. Since the house is definitely attached to the farm business and seldom has rental or sales value apart from the farm, a system of financing farm home improvement must be somewhat different from that of village, town or city.

The costs for certain improvements such as running water and electricity are higher for the farm than for the city household. Housing equipment now on the market is, on the whole, designed primarily for urban homes.

Farm housing is a durable commodity used for 25 to 100 years and more; it is attached to the land and can be moved only at a great expense, and is one of the few consumer goods bearing a yearly tax on an assessed value.

A farm housing policy is closely dependent upon the broader agricultural planning issues, such as a reduction of tenancy, abandonment of submarginal cultivation and "factory farms" versus family farms.

Recommendations

The first comprehensive report on housing and community planning as a Canadian problem was prepared by the Subcommittee on Housing and Community Planning of the Advisory Committee on Reconstruction.²

The report presents a desirable and a minimum urban and rural program for Canada for two decades following V-J Day, the provision of housing being regarded as a strategic element in full employment policy and as a basic factor in raising the national standard of living.

The Subcommittee recommended that a farm housing program will have to plan to remove a minimum shortage of 125,000 farm homes (100,000 as replacement of obsolete dwellings and 25,000 new units to reduce overcrowding). In addition, the report indicates that at least 188,000 dwellings will have to be repaired.

It was estimated that the total expenditure of raising the standard of housing by the erection of new dwellings and the improvement and repair of existing ones during the first post-war decade will probably exceed \$200 million and may be nearer to the quarter billion dollar mark.

The Subcommittee recommended that a redrafted National Housing Act contain a special section on farm housing suggesting that the farm improvement section of the revised housing act should extend to new housing units as well as repair, maintenance, and improvement of existing farm homes.

The Subcommittee suggested that a subsidy program be adopted as the most direct expedient to lower the cost of construction to the farmer assuring him adequate minimum housing. Specifically, it recommended (a) a subsidy to reduce the rate of interest below four per cent, or (b) part of the capital sum be furnished (by the National Housing Administration) through the bank as intermediary. The risk factor could be covered either by an application of mortgage insurance of which the Government would assume the costs, or by the adoption of the pooling system. Although no specific rate was mentioned in the report, the Subcommittee seemed to infer a reduction of the present interest rate to at least 3 or 3½ per cent.

In order to reduce some of the economic barriers to the financing of new farm homes, it was suggested first that the terms of owner occupancy loans should be simplified through the elimination of a cash down payment, the whole payment being placed on a basis of installments of a total loan. The second suggestion was that payments of loans should be related

2. Advisory Committee on Reconstruction. Housing and Community Planning. Final Report of the Subcommittee. Kings Printer, Ottawa. 1944.

as closely as possible to the crop season and that schemes should be worked out to adjust the annual installments upwards or downwards, according to crop results for the year. According to the Subcommittee, this formula has now been applied in a number of instances in agricultural financing in the United States and has proved successful.

For those who rent homes in farm areas it was suggested that under a new Housing Act, provision should be made to facilitate the setting up of inexpensive cottages in villages and small farm communities (where possible through co-operative organization) and costs should be subsidized.

The Subcommittee made a series of definite recommendations aiming at a reduction of costs of construction.

(1) Provision should be made wherever possible in farm areas to utilize the labour of the builder as part of the down payment.

(2) Pre-fabrication and mass assembly method in the construction of houses should be given serious consideration and encouragement.

(3) Adjustment in freight costs of building materials should be considered for the purpose of equalizing costs in all regions. This adjustment may take the form of a subsidy or subvention, where and when necessary. This is not a new procedure.

(4) If possible, surplus war equipment and materials should be made available to farmers at low prices or in exchange for their labour.

(5) Investigation should be made of the possibilities of grants of specialized goods such as electrical, plumbing, heating and refrigeration equipment contributable either at a rebate or in return for the labour of installation in either house construction or repair and improvement projects.

(6) In order to determine the lowest costs of house building, the National Housing Administration should be given powers to undertake the necessary research and to construct and operate hous-

ing units or experimental or demonstration houses.

Public subsidies for low cost housing, both local and national, are by no means new and untried. Many countries have found it necessary to employ subsidies of various kinds to insure adequate housing for low income families. In fact, Great Britain recognizes that private enterprise cannot, on commercial lines, provide houses within the means of a major proportion of workers.

Special attention to the needs of farm labourers was given by the Subcommittee. Hired agricultural labour has never been more than a minority of the Canadian farm population, yet it is an important and frequently neglected part of the total farm population. It was recognized by the Subcommittee that one of the means whereby a farm labourer could be attracted to the farm and induced to stay there was by providing adequate housing. It was recommended that the building of cottages for farm labourers on the farmer's own land should be facilitated by means of low cost loans and cheaper construction costs.

Legislation

Assistance for building new homes may be provided by public bodies in the following manner.

- (a) The government may lend the money necessary to pay the high cost of new dwellings (or guarantee a private loan) on easy terms over a long amortization period. The government is usually the only institution in a position to adopt this role of providing cheap housing credit.
- (b) Outright subsidies may be provided by the government.
- (c) More efficient construction methods may be encouraged through research, financial or technical assistance and education.

The main forms of financial assistance provided at the present time by the Dominion Government to farmers for housing purposes include:

THE CANADIAN FARM LOAN BOARD.—The Board lends money that may be used to build or improve a farm house. The rate of interest is 4.5 per cent per annum on first mortgages to the extent of 50 per cent of the Board's assessment of farm values or a maximum of \$5,000. The time of repayment is up to 25 years.

THE FARM IMPROVEMENT LOANS ACT, 1944.—This makes provision through the chartered banks of loans to farmers for effecting improvements including electrification, drainage, livestock and so forth. Loans up to \$3,000 at five per cent per annum are provided for the construction of farm houses, additions to and improvements of farm houses. The time of repayment is 10 years.

VETERANS' LAND ACT.—Under this amended Act, the Director of the Veterans' Land Act is empowered to use up to \$6,000 for the purchase of land and buildings. This new provision, applicable mainly to small holdings, was made in view of the very serious shortage of housing accommodation and the increased prices for land and construction, and because there is a danger that the standard of veteran housing might be lowered if this change were not made. The rate of interest is 3.5 per cent and the time of repayment is 25 years.

THE NATIONAL HOUSING ACT 1944.—Loans to prospective homeowners or builders are made jointly under Part I of the Act by the National Housing Administration and an approved lending institution. The government provides a quarter of the loan and the lending institution three-quarters.

The interest rate on the whole loan to the borrower is 4.5 per cent. The minimum amount of a joint loan is half the loan value of the house and land. The maximum amount is 95 per cent of the first \$2,000 of the lending value, plus 85 per cent of the second \$2,000, plus 70 per cent of anything over \$4,000. The period of the loan is usually twenty years.

A feature of the Act is that the labour of the owner may be taken into account

in arriving at the lending value. Where the prospective home owner himself performs some of the labour of building he can still get the same size of loan, provided only that the loan cannot be more than the whole lending value minus the value of his labour.

Part III of the Act contains three special provisions intended to make Part I readily usable in rural areas, and additional provisions to encourage the production of housing equipment for farms and rural areas.

(1) The government is authorized to pay a lending institution up to \$20 to meet special expenses for each loan, plus the travelling expenses of its agent.

(2) On joint loans to farmers, the installments of principal, interest and taxes are to be paid not in monthly installments which are clearly not suitable to all farmers, but in periodic installments which will fit in as far as possible with the probable receipts of income from their farm operations.

(3) A substantial percentage of Canadian farms are already mortgaged and to meet the difficulty the Act provides for the consolidation of an existing mortgage loan with a new housing loan by an approved lending institution. In such cases, the government's share of the loan is limited to a quarter of the cost of construction of the house (including the value of the land). It should be noted, however, that in the case of a loan for the construction of a house on a farm, the appraised value of the land shall be deemed to be not more than 20 per cent of the actual expenditures for building and of the other expenses such as architectural or legal fees. The government's liability for losses resulting from the consolidated debt is limited to one-quarter, in proportion to its share of the loan.

(4) To encourage the manufacturers of plumbing, heating and other equipment to develop standardized units of high efficiency and low cost, the Act provides that the government may enter into contracts with manufacturers for the experimental production of such equip-

ment, and it may guarantee or underwrite the sale of a specified number of standardized units of equipment or component parts manufactured for installation or use in farm or rural houses. These provisions are intended to encourage large-scale production of efficient equipment and parts, by first encouraging research and second, by guaranteeing substantial orders to the manufacturers. The total liability assumed by the government in this connection is not to exceed \$5,000,000 at any time.

The four agencies will make it easier for the man on the soil to modernize the farm home. With the exception of the Veterans' Land Act, which is limited to veterans, the three acts do not, however, provide the rate of interest inferred in the report of the Subcommittee on Housing and Community Planning. Although several other features of the report have been adopted, there is no Government sponsored farm house building program, nor has any program been designed that will tie in farm home investment with a positive long term economic policy. How soon farmers will invest in housing is not known but they will probably make their first post-war capital expenditures on farm machinery and farm buildings.

Conclusion

Programs for improved farm housing must consider the extent to which farms provide farm income resources sufficient to pay operating expenses, cover family living expenses, and provide for necessary capital expenditures or debt payment. At the same time, adequate housing, like health, is part of a social security program. The Dominion and Provincial Governments have recognized their responsibilities in the health and welfare fields. Steps are being taken to broaden and improve social security legislation. Similarly in the field of housing the same direct action is necessary.

It should be recognized that housing programs, in themselves, will never be enough to solve the farm housing problem. Generally speaking, the farm families with the lowest incomes and the poorest prospects of increasing their incomes live in the worst houses. The only permanent solution will come through a combination of stable and adequate farm income, and full and continuing industrial employment. Better housing for farm people depends largely on better opportunities in agriculture and in industry.

Science and Housing

By R. HAROLD DENTON

THE effectiveness of scientific research and development when organized on a large scale and directed toward specific objectives has been demonstrated many times during the war. Radar, jet propulsion, the B-29, the atomic bomb, are only a few examples.

So many astounding discoveries have

been made, in fact, that people are beginning to ask themselves if the same kind of research could not solve peacetime problems equally well, providing increased job opportunities and a higher standard of living.

Science in American Industry

The mass production industries in America have long recognized the importance of scientific research in reducing costs and increasing volume. Many industries—such as chemicals, automobiles, and petroleum—have grown great in the last twenty-five years as a direct

EDITOR'S NOTE: R. Harold Denton is Chief Industrial Economist with the National Housing Agency in Washington. Previously he had held positions with the United States Labor Department in Washington and with the Tennessee Valley Authority in Knoxville, Tennessee. He is author of "Housing Costs" and co-author of the monograph "Towards More Housing" issued by the Temporary National Economic Committee.