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THE ADEQUACY, FROM THE POINT OF VIEW OF TECHNICAL DEVELOPMENT, OF CONTEMPORARY INSTITUTIONAL SYSTEMS

(a) LAND TENURE

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THERE are many facets to the subject of land tenure—political and social as well as economic. The subject in hand relates to the application of technical developments to agricultural production and, consequently, is of a seemingly limited nature. But the application of the possibilities opened up by technical developments is a matter of productivity and, for this reason, is essentially an economic problem which in the various parts of the world has a widely divergent significance. The application of technical developments in agriculture is dependent on the extent of the economic development of a country or land as a whole. For instance the profitableness of agricultural mechanization, considered apart from the size of the holding, is determined in the first place by the wage level in the country or region concerned. For this reason the application of technical possibilities cannot reach the same level in different parts of the world, but will have to be adapted to the prevailing economic conditions. This does not alter the fact that everywhere people are faced with the problem of what form of land tenure would best promote or, at any rate least impede, the most economically desired technical developments.

This problem is of great importance not only for the occupiers of the farms, but also for the national prosperity. For farmers it is important not to be hampered too much by the form of land tenure when making use of technical advances to increase their incomes and to raise their standards of living.

In order to raise the level of national prosperity it is essential that those forms of land tenure be promoted which present the best possibilities for an increased contribution by agriculture to the national product, or which may lead to a reduction of the cost per unit of agricultural products. In the case of a surplus of man-power or of under-employment which cannot profitably be employed in non-agricultural occupations, a form of land tenure which would

stimulate a high yield per unit of area should be preferred to a form of land tenure which encourages an extensive use of land. But if profitable employment can be found in non-agricultural occupations, the form of land tenure must not prevent the efflux of potentially superfluous man-power. This might be the case, however, if difficulties were placed in the way of farm extension; but in these circumstances any extension of the farm should be encouraged.

To what extent is the form and nature of land tenure significant for the application of technical developments? In agriculture they present themselves in many shapes, not each of which is significantly relevant to land-tenure patterns. For instance, the form and nature of land tenure are irrelevant to the cultivation of hybrid corn or the use of artificial insemination. But when manuring practices or crop rotations should be improved, the period during which the occupier has a reasonable assurance of tenure exercises a certain influence. This especially holds true for the adoption of soil-conservation practices, drainage, and irrigation. The form of land tenure will not hamper the application of these new techniques when those who incur the expenses are sufficiently assured that any future profits will accrue to themselves.

When referring to technical development we first have in mind the increasing availability of mechanical devices. Their application may and must result in a markedly decreased use of man-power for production. So far as land tenure is concerned the effect may be twofold. In the first place mechanization can make it desirable to increase the size and improve the shape of the fields. This is where the problem of re-allocation comes in.

Secondly, the labour which is saved owing to mechanization has to be profitably employed by increasing production, which in most cases cannot be achieved without at the same time increasing the cultivated area of the farm. Throughout most of the world the problem of farm extension is considered to be one of the more urgent problems of land tenure, and one which it is extremely hard to solve.

It is remarkable indeed that no similar problem seems to exist in manufacturing industry with regard to the most important means of production, the factory and equipment. In manufacturing industry the soil as a means of production is of only secondary importance and is relatively ample for the purpose. The different forms of undertaking on which the tenure of the machinery is based are apparently so flexible, and the transition from one form into another so easily achieved, that they do not present any serious problems for the application of technical developments.

Why this difference? To my way of thinking it is significant that in manufacturing industry the application of technical developments need not necessarily take place in existing enterprises only, but can also be achieved by building new factories. Industry mainly uses equipment of limited working life, which can be bought in the market and need not be procured from existing enterprises. Industry came into being at the time of handicrafts, which it gradually superseded as a result of price competition. On the other hand, the soil, as the most important means of production in agriculture, has an unlimited working life when utilized carefully. Moreover—and this is decisive—in large areas of the world practically all land suitable for agricultural production has already been brought under cultivation, and distributed among existing farms. Any technical development in production, which can have full play only in the case of re-allocation of the land and/or an extension of the farms, entails the necessity of disposing of land or even withdrawing land from existing holdings. It follows that the past hampers technical development in agriculture far more than it does in manufacturing industry.

However, the adoption of technical developments in agriculture is not fundamentally a matter of the form and nature of land tenure, but is a result of the particular character of the means of production—the land with its unlimited working life and its shortage. This latter is caused by the high pressure of population in the agricultural sectors in many countries, and this again may be brought about by insufficient opportunities of employment in non-agricultural occupations. For this reason the application of technical possibilities in agriculture depends initially on economic developments in the non-agricultural sphere and only in the second place on the form and nature of land tenure.

The Requirements of Adequate Systems of Land Tenure

We must try to find answers to the following questions: With what requirements should land-tenure systems comply so as to present the most favourable conditions for an economically optimal production, particularly with a view to the application of technical developments in production? What can be said in this connexion about the most important forms of land tenure?

1. *Security of tenure for a sufficiently long period.* For proper utilization of the soil the occupier should know its characteristics well. Scientific research, e.g. soil testing, may prove to be a valuable help in this respect, but an appreciable part of the knowledge required has to be based on the experience of the occupier. It is only possible for him to

gain this experience and to utilize it, when the duration of his tenure is sufficiently long.

Throughout most of the world, crop rotation is essential for good farm management. This involves a programme for a number of years, and the occupier rightly expects to reap for himself the fruits of this long-term planning. Absence of this expectation in most cases leads to a less than optimal utilization, nay, might even lead to exhaustive cultivation.

The occupier who owns the land or who holds it on a long lease has the best assurance as regards the duration of tenure. Nor is duration of tenure a problem with the producers' co-operatives. For the owner-occupier the restriction applies that he must not have contracted such heavy debts on his property that he runs the risk of foreclosure in case of a check.

Usually a temporary lease holds little security. Leases for very short terms do occur, and when a farm is leased for an unlimited period the term of notice is often very short. Of course, tenure for a reasonably long time will then depend on local usage and the relation between landlord and tenant, provided the farm is being well managed. Under normal conditions, and unless the landlord has a serious reason, it is not in his interest to give a good tenant notice to quit.

This uncertainty which exists no doubt when holdings are leased, is not inevitable. It only exists when there is freedom of contract in respect to the period and the lease. In some countries this has been regulated by law. There, either certain minimum periods have been fixed or leases of unlimited duration are the rule, the landlord being allowed to terminate the contract only for good reasons. In the Netherlands, for instance, a minimum period of twelve years is prescribed in normal cases, while under certain conditions the leaseholder has a legal right for continuation.

The strengthening of the position of the tenant by the statutory prescription of minimum terms, I consider to be in the general interest as well as in the agricultural interest.

2. *Freedom of utilization.* The occupier bears the risks of production. He therefore can best decide what products are the most profitable for his farm. For this reason he should be allowed as much freedom as possible in its management.

The owner-occupier need not fear any impediments. When the farm is owned collectively the individual partner is naturally tied to certain restrictions. The lease sometimes contains restrictive provisions, which have been inserted by the landlord in order to prevent

exhausting cultivation. In so far as they are effective they have a positive significance. Indeed, it sometimes occurs that unnecessary and obsolete stipulations are maintained which prevent optimal utilization. Legal provisions which make it possible to appeal to an impartial authority are most desirable in the case of such stipulations.

With share-cropping there are properly speaking two occupiers who manage the farm for joint benefit. In this case the freedom in respect to the utilization must also be shared. Share-cropping is apt to lower intensity when higher costs are at the expense of the tenant and the owner has a share in any extra profits.

3. *The advantages of improvements should be reaped by those who made them.* For optimal production it is not only important that the land and the buildings be kept in a good condition, but it is equally desirable that such improvements be made as may lead to an increase of yields. The cost of these improvements may be considered as investments, but they will be fully incurred only if the man who sinks the capital reaps the profits.

When the farm is operated by the owner, no difficulties arise. As before, it is the lease which may be inadequate, and which will usually be inadequate where there is freedom of contract. It is desirable, therefore, to demand in tenancy legislation that on the termination of a lease compensation be paid for the improvements made. For safeguarding the reasonable interests of the landlord, it should be provided that for long-term improvements permission must be obtained either from him or from an impartial authority who will judge of the reasonableness of the investment. On the other hand the landlord should also be protected in making investments. For instance, an incorrect form of rental control may make it impossible for him to obtain a fair return on his capital. In the case of communal land tenure with individual holdings and changing land utilization, improvements are seriously limited.

4. *The right man in the right place.* For reaching optimal production, the skill of the farmer is decisive, at least when the other conditions for proper management are favourable. Capability of the person as a farmer is not necessarily coupled with the possession of sufficient capital. Therefore it is of general interest that there exist forms of land tenure which make it possible for a capable farmer with limited financial resources to acquire the use of an adequate area of land. This is also of great importance for social considerations.

Ownership makes more exacting financial demands than leasing and the latter again makes heavier demands than share-cropping. This is the main justification for the existence of leasing and share-

cropping which in respect of the other three conditions referred to rank lower than ownership. The need for more capital in the case of ownership can be met by making it possible to grant credit on landed property on attractive conditions. For all that, a buffer of personal capital which will run a rather great risk will be necessary. Economically a lease may also be regarded as a form of granting credit in kind, in which the acquirer does not run any technical and economic risk, and therefore is in a more favourable position than a heavily charged owner.

5. *Reasonable prices of land and rentals.* In the case of a relatively dense farm population the prices of land and the rentals will generally rise to such high levels that the occupier will gain only a scanty living. The free regulation of prices will then have adverse effects.

Agricultural production will often be injured if the occupier has insufficient opportunity of acquiring the funds necessary not only for efficient management, but also for learning how to manage efficiently. As a result he will not be able to create better conditions for himself and his family.

Although a relatively small income in agriculture may be an incentive to seek employment elsewhere, it may also constitute a serious hindrance to the necessary efflux. Any training for other professions will cost money, and it must be possible to do without the children as co-earners in the family.

A policy aiming at an increase in income in agriculture would shoot far beyond the mark if higher prices merely led to higher rentals which would be capitalized in higher prices of land. In these circumstances agricultural production and the position of the farmers and the economy as a whole would benefit by controlled rentals and prices of land. In this connexion we may speak of a reasonable level when in practice it corresponds to the productivity of farms, always assuming that the level of income of occupiers corresponds to the remuneration of labour which would prevail when migration of agricultural labour to other branches of industry is large enough. This does not alter the fact that, apart from price control, other measures will have to be taken to increase mobility in agriculture and promote the necessary efflux, so that in the end price control would be superfluous.

6. *Collective measures aiming at an improvement of the condition of production on the individual farm.* The owner-occupier, the landlord and the tenant, when making improvements, are partly dependent on the co-operation of the other farms in the district. Improvement of drainage or irrigation and the construction of roads can only be

done jointly, and often can be achieved only with government aid. An improvement in the re-allocation of fragmented holdings which is of such great importance in connexion with the use of modern farm machinery, in many cases can be brought about only with the voluntary and often partly compulsory co-operation of other interested farmers. Although these matters do not form part of a special form of land tenure, they are inseparably linked up with it. Good water laws and acts regarding the re-allocation of farm land are of great importance for agricultural progress. In the case of communal tenure with individual management or in producers' co-operatives these improvements have a favourable basis.

7. *Promotion of the optimal size of farms.* The different forms of land tenure should not hamper an extension of farms in the direction of the optimal size. Legal provisions or other measures which would prevent the splitting-up of excessively large holdings, or the amalgamation of farms which are too small, should be discouraged. On the other hand it would be a wise plan to take active-measures to put a stop to unfavourable developments, such as undesirable disintegrations of existing holdings by inheritance or sale. In this connexion the golden rule that prevention is better than cure should be observed.

It is a pity that in many districts the situation economically speaking is not what it should be, so that measures for reorganization should be taken. Here the form of land tenure, ownership or tenancy, is of little importance.

Communal land tenure, which is frequently met with in primitive communities and involves the loss of the right of land utilization on withdrawal (it being impossible to transfer this right to others at a compensation), impedes the migration from agriculture to other occupations.

Conclusion

The treatment of this comprehensive and world-wide problem in such limited scope must necessarily be confined to rough outlines which I hope may constitute a basis for discussion. I was requested to explore the problem in a broad manner rather than give a detailed account of the country from which I come. I have tried to do so, although I fully realize that I know far too little of the concrete reality of land tenure in different parts of the world to have succeeded. Therefore let me conclude with a brief remark on the problem as it is encountered in my own country. Roughly speaking, the land in Holland is divided into two halves; one half is occupying-ownership, the other is in tenancy with fixed money rentals, compulsory legal

provisions for the length and extension of lease, and rental control. No difference can be found in management and results which prejudice the tenant farmer. In the Netherlands the form of land tenure is hardly of any importance for the technical development of agriculture.

The factors which impede the application of technical developments in large parts of the country are fundamentally the layout and size of the farms. There would be little sense in improving the layout if it were not coupled with an extension of the farm so that manpower per family at the farm could be employed profitably. But for that purpose there must be a situation of full employment in the industrial sector. So it may be that the most important technical development for agriculture is ultimately the discovery of the full employment policy.

(b) SIZE AND LAYOUT OF FARMS

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THE adaptation of technology and farm structure is a process of mutual influence. It follows the law of least resistance. In this process, the distribution of farm sizes has historical priority over modern technology. The size of farms compares well with the stage of a theatre; it is the place of action upon which different plays can be presented. For thousands of years after the revolutionary invention of the plough, agriculture featured the same play: the combination of the man with the hoe and the oxen of the cattle-breeder. This unity of family, land, draught and other domestic animals is still the heart and core of agriculture all over the world. In the beginning, the amount of farming land sufficient for the existence of a family depended on the quality of the soil and the climate. Farms of a size that exceeded the labour supply of a family originated because of feudalism, social stratification, and political dominance. These large estates cultivated their land with dependent labourers. They were instruments to produce ground-rents for the feudal lords. Owing to the growth of the 'secondary' population in towns and cities and to the formation of permanent markets for agricultural products, the scale of farm sizes extended in both directions. On the one hand, large feudal and—in the nineteenth century—capitalistic estates further increased their acreages, whereas,

on the other hand, many farms became smaller, predominantly in the neighbourhood of cities. Here it proved profitable to intensify farming, to produce more milk and meat, and to grow special crops such as fruit, vegetables, and grapes for wine. The increasing productivity of farms became the economic basis for subdivision by inheritance. Today, as a result of numerous agrarian reforms, the big estates in continental Europe that depend on hired labour have been reduced to a small minority. Large farms which usually hire some unmarried labourers are struggling for survival.

Even before the dawn of the industrial age there had been a differentiation in type of farming according to the size of farms. This was due to the old principle of saving time and labour. Even in the age of pure subsistence farming this principle served as a guide for establishing the village communities. The labour-intensive garden plots were grouped near the farmsteads. They were bordered by intensively cultivated strips of land which in turn were surrounded by fields worked less intensively, and at the margin there were the pastures. This set-up gives clear evidence of the decisive importance which distance and transportation have on the choice concerning the use of farm land. On this basic observation, Johann Heinrich von Thünen built his theory of location in agriculture. Proceeding upon these findings the Russian agricultural economist Tschajanow advanced the theory of the optimum size of farms in different farming systems. Modern agricultural economics has thoroughly analysed the influence of farm size on the type of farming. From these surveys we can derive the following fundamental rules:

1. With a decrease in the size of farm goes a corresponding increase in the number of human and animal labour units and of domestic animals per acre. Specific investigations—carried out a long time ago by myself in north-west Germany and by Cyriacy-Wantrup in Illinois—have shown that this relation can almost be translated into mathematical terms. The input of human and animal labour (in terms of money) was almost exactly conversely proportional to the average distance from the farmsteads to the fields. Therefore, the main part of the labour input on the small farm is concentrated in stable and barn. On intensive European farms mainly devoted to animal husbandry, field-work usually does not require more than about 30 per cent. of the total labour input. Excepted from this rule are dwarf farms which specialize in fruit, vegetables, and wine.

2. In a national economy with a differentiated demand for food there is a tendency for small farms to be concentrated near densely populated areas. They specialize in products requiring much labour.

Dwarf-farm units with long distances from markets have poor locations and, consequently, comparatively low incomes. In overseas countries which were settled by Europeans, production had first to be carried on far away from markets. In those areas it was the larger farm unit that ruled the countryside right from the beginning.

Economic opportunities for small farms are much more favourable in prosperous, industrialized states than in under-developed countries. This is due to the shift of consumers' demand to those types of farming which are particularly suitable for the small peasant farms. Consequently, the influence of technical development on farm sizes is primarily an influence on the systems of farming which, for historical and economic reasons, are more or less closely connected with farm sizes. Depending on the improvements offered by technical developments, the respective farm sizes are faced with comparative advantages or disadvantages which manifest themselves in their levels of income. If advantages or disadvantages reach a certain point farms are compelled to adapt themselves by increasing or decreasing their acreage.

From the very nature of technical development a preference for certain farm sizes necessarily follows, and varies from time to time.

1. Technical inventions and discoveries are the results of imagination and systematic research in the natural sciences. They are made at irregular intervals. Quite often their application in the practical field is restricted to farms of specific sizes and organization. For many farms their influence is unimportant or even non-existent.

2. As a rule, technical developments can be utilized only if farms have the necessary capital. Experience has demonstrated, however, that many farmers do not have enough savings or credit at the proper time.

3. The diffusion of technical improvements takes time. The reasons for this are:

- (a) The first application of newly developed technical methods involves some risk which frequently can be taken only by large farms.
- (b) Machinery that has been constructed for bigger farms can be adapted only step by step to the needs of small farms.
- (c) Before a new technical development can be adopted farmers must learn how to use it. Extension of this know-how is a gradual process.

The purpose of technical development is to increase the efficiency

of capital and labour. This cannot be done by material means only. The techniques of farm planning, of farm accounting, and of labour disposition as well as the techniques of human relations are all important. These mental techniques are prerequisites for the proper use of material means of production. The more numerous and more complicated those techniques are, the greater will be the influence of the operator on the returns of his farm. An intelligent farmer with ability for combination and talent for organization might offset, to a great extent, the differences in conditions of environment. Such a farmer is the best partner for the researcher, the engineer, the agricultural teacher, and the extension agent. He takes an active share in technical progress by criticizing newly developed methods and by making suggestions for their improvement. We find this farmer in all the different size groups. Therefore, technical progress is promoted most effectively when young people are given the chance to become educated farmers knowing how to use modern technology. At present, strong driving forces are at work to accelerate the process of adapting agrarian structure to technical progress. They operate in three directions:

1. If farmers do not adapt, their incomes will lag. Today the desire for technical progress is particularly great in agricultural areas near the cities where the farmers have opportunities to compare their incomes with those of other occupations.

2. In industrialized countries large branches of the economy have developed which produce farm equipment. Tractor factories, plants producing other kinds of machinery, fertilizers, insecticides, by-product feeds, &c., all are interested in high sale figures. They exert themselves to offer their products in such forms as suit the needs of as many farms as possible. Thus, the director of the sales department is always pushing the engineers into new experiments. The consequence is that the farmer is often overwhelmed by the abundance of technical equipment offered to him.

3. Governments of all countries, and international organizations like the O.E.E.C. and the F.A.O., promote the diffusion of technical know-how and new inventions through information media, experiment stations, field trips, and financial support.

After having analysed, in a general way, the fundamental conditions of the mutual adaptation of farm structure and technical progress, we can now precisely limit our questions as follows:

1. To what extent is it possible to improve farm organization and, consequently, the economic situation of farms by technical developments without changing farm size?

2. What are the critical sizes of farms which are not able to adapt themselves sufficiently?

In view of the great stability of farm sizes, the first task is to exhaust all of those reserves of technical development which are still available and feasible for the existing sizes of farm. These reserves refer to the more intensive adoption of technology for increasing production as well as for saving labour. In many cases, however, preliminary measures are required which cannot be carried out by the individual farmer. To use electric motors, for example, farms have to be connected with power lines. In order to save time and labour on dairy farms and in households, water facilities must be available. In addition, this enables dairy farms to comply with the standards of hygiene which are demanded in the interest of consumers' health. Transportation on farms is a particular problem. Most of the technical developments in this field cannot yet be used by the majority of the smaller farms because of the unsuitability of old farm buildings. In the narrow villages of central and southern Europe, for example, farmyards and stables are so small and so badly arranged that a large part of the work is unproductive. Another reason for the low productivity of labour on small farms is the insufficient use of techniques that increase production. Many farmers do not know enough about the use of fertilizers. They sow seeds of poor quality and very often they waste time and energy caring for animals which are not worth the effort.

On quite a number of farms the efficiency of labour can also be increased significantly by improving the techniques of labour planning and of labour co-ordination with regard to time and space. Through such improvements agricultural economists believe many farmers would be helped much more than by the purchase of tractors. In densely populated areas of Europe and Asia where mechanization cannot be extended rapidly, the majority of small farms can still increase their yields per acre a great deal by applying improved equipment for manual work and using modern methods of fertilization. A persuasive example is given by Japan. During the last fifty years Japanese farmers, who still cultivate their land mainly by hand, have been able to double their real income by adopting such improvements.

In all those areas where the land of small farms is excessively fragmented, consolidation increases productivity of labour in two ways: crop rotations can be improved, and the larger plots can be worked more intensively.

If the percentage of agricultural output delivered to markets

increases, the need for a system of good roads becomes urgent. The mobilization of all of these reserves of technical developments requires a considerable amount of time. From this we can draw some conclusions about the attitude of farmers. Provided they have the opportunity to move to other occupations, they can weigh present or future chances. If they find their present opportunities to be very unsatisfactory, they will leave their farms instead of devoting years of effort to making them 'going concerns'. If, however, there are strong ties binding them to their profession, they will prefer future returns from their farms to the higher incomes which they could realize at once by moving away. To be sure, this alternative exists only in industrialized countries with full employment. It is irrelevant in under-developed countries which do not have enough jobs outside agriculture. Also in industrialized countries the ideas about the lowest limit of farm size change according to the ups and downs of prosperity and depression. This leads to the conclusion that finally the critical limit of farm size is determined by the economic structure of the respective country and by the trend of total economic development.

Mechanization in the form of the tractor and the equipment connected with it, gave rise to a new perspective in the evaluation of farm sizes. Tractors primarily save labour and therefore, first of all, favour the larger farms which can keep these machines in use for a longer time of the year. Only a few years ago it was generally held that the tractor was practicable only on farms containing 50 ha. and more; but the recent design of smaller tractors and machines with multiple functions has demonstrated that smaller farms also can be mechanized. As statistics show, the tractor has already been widely adopted by the size group from 10 to 20 ha. Today this limit has been lowered to a still smaller farm size which, however, cannot be defined exactly. Developments show that manufacturers eagerly endeavour to adapt implements also to the need of the great mass of small farms. Consequently, there is no reason to make an error similar to that made by Karl Marx, when he expected that the steam plough, which was first used in the 1860's on large estates in England, Egypt, and central Germany, would enable these big estates to force family units to the wall.

What the present problems are has been answered by a conference of fifteen delegations from O.E.E.C. countries which was held at Stuttgart early in 1954. The findings can be summarized as follows:

1. At present, it is of no avail to discuss mechanization of farms smaller than 5 ha. This size group mainly consists of part-time farms with the main part of the family's income derived from off-farm

work, special farms producing wine, tobacco, fruit, and vegetables or farms where some of the income has to be supplemented by occasional off-farm work. In the future, farms of this size which do not belong to one of these categories will have to develop in one of these directions.

2. Mechanization of farms above 12 ha. is no longer seriously difficult.

3. The real problem of mechanization lies in the size group from 5 to 12 ha. Presently available tractors and types of machinery are not yet sufficiently adapted to the needs of these farms. This limitation can be alleviated to a certain degree by the use of machinery by small groups of neighbours and co-operatives, or in the form of private enterprises leasing machinery.

4. On small family farms the primary function of mechanization is not to save human labour but to increase yields. By eliminating feed acreage for draught animals it becomes possible to raise for sale more livestock and crops as well as to intensify cultivation. The increase of yields is highly necessary, because fixed and variable expenditures for mechanization have to be carried without a reduction in the family's spending power.

That conference dealt only with the problems of small family farms. On medium and large farms which hire unmarried or married workers the situation is quite different. Particularly after the war, a very large number of workers hired on farms in these size groups moved into industrial occupations. Substitution of tractors and machines for human labour was unavoidable if the size of farm was to be maintained. This defence of the farm size by the introduction of modern technology is characteristic for northern and western Europe. The substitution of machines for human labour is also reported from large North American farms. On the other hand, each family farm in those areas endeavours to enlarge its acreage sufficiently to be able to use a complete set of tractors and machines profitably. Computations show that in such a way an optimum farm organization, with a labour supply equivalent to that of two able-bodied adult men, can be built up. In Europe where farm sizes from 20 to 50 ha. constitute a relatively high percentage of the total number of farms, this labour supply of two men will not suffice at the present level of intensity, even if full mechanization can be realized. For these farms there are three possibilities: they can maintain their present systems of farming provided they succeed in improving the situation of their hired labourers to such a degree that they no longer feel they can better themselves by migrating to industrial occupations. If they

do not succeed in doing this, these farms will have to be made smaller, or they will have to shift to more extensive types of farming. In the latter event they will grow those crops for which cultivation, harvest, and transport can be mechanized most easily, and they will reduce their livestock to a minimum.

Mechanization does not necessarily force large farms to become still larger. The advantages of mechanization cease to increase when optimum use is being made of the first well-combined set of machines. If the farmer, for example, wants to double the size of his farm to apply another set of machines, expenditures for purchasing the land and for hiring labour usually are so high that he can make no additional profits. Enlargement of farms, furthermore, results in increasing difficulties with respect to farm management and to supervision of labour. In relation to the efficiency of machinery, these difficulties cannot be reduced in the same way as they can in industry with stationary machines. The situation in Russia has no bearing upon the argument, because concentration of land in large farm units of their present dimensions is not due to the demands of technology, but rather to political conceptions.

Technical development has caused many functions connected with the production and pre-market processing of agricultural goods to be taken over by industrial enterprises. These are processes that can be widely mechanized as, for example, production of fertilizers, machinery and equipment, and processing of milk into butter and cheese. Gradually, farming becomes confined to those activities that are directly related to the production of plants and animals.

In this setting, the small farmer who cannot afford tractors and machines because of high costs may still be able to use such equipment by making contracts with neighbours, by establishing co-operatives, and by renting machines from private enterprises. In these ways small farms can be partly mechanized, though full mechanization is not possible.

Farmers' opinions on this solution of the problem seem to vary from country to country. Few farmers in Germany are attracted by this solution, but rather more in Sweden, Great Britain, and Switzerland accept it. Co-operative utilization of machinery has definite economic advantages, and this is true even where it is not pursued. At least for some years, operators can save in costs and these savings may be used for other necessary improvements.

Numerous investigations have tried to determine which farm sizes and types of farming can raise their incomes through mechanization. Before discussing this more fully we have to realize that farm

budgeting has a short- as well as a long-run aspect. Because of the various effects of introducing a new technical development on the whole farm, the final evaluation must wait for several years. A temporary reduction in income may be wholly justified if, as a result of expensive mechanization, farm earnings greatly exceed their previous level after a period of adjustment. This temporary loss in spending power should be contrasted with the immediate gain. Right from the beginning, farmers are relieved of physical strain and long working hours.

The budget of the family farm is entirely different from that of the large farm working with hired labour where all of the elements of cost have to be accounted objectively. In his book *Lehre von der bäuerlichen Wirtschaft* (Economics of the Peasant Farm), Tschajanow has emphasized this fundamental difference. Net income of large farms with hired labour is computed by deducting material production costs and labour wages from gross income according to the formula: $GI - PC - LW = NI$. All these items are given objectively in terms of money. On the family farm, however, the returns of the farm are compared with the exertion which was necessary during the year. Thus, the returns will be evaluated subjectively as being insufficient, satisfactory, or favourable. The corresponding formula for the family farm is: $GI - PC \leq E$. This means that the marginal return is compared with the marginal exertion, i.e. the disutility of the last unit of labour input. The greater the family's drive to make money and the more intense its propensity to consume, the less will this disutility be felt. The behaviour of farmers can be understood only if personal well-being is added to the real income derived from goods. According to a definition of the Spanish philosopher Ortega y Gasset, mankind wants not only being but *well-being*. Thus, it is quite possible that subjectively a higher standard of life can be reached if the enjoyment of leisure is realized at the expense of part of the material income. In addition, the general esteem of modern technology has gained so many adherents that very often ownership of a tractor increases social prestige. Indeed, some time ago European agricultural economists made the observation that in some areas the traditional draught power, a team of working cows, no longer seemed to be compatible with the self-esteem of the peasants. Some small farmers replaced their cows with horses, though this shift had a bad effect on the efficiency of their farms.

The main conclusion to be derived from all of these arguments is that for both subjective and objective reasons the lower limit of farm size is a very variable one.

The effect of technical development on the level of farmers' incomes in different size groups can be evaluated only if consideration is given to the development of prices. This interrelationship between all the different branches of the economy has been analysed thoroughly by Jean Fourastié. Every technical development that increases production tends to cause a fall in prices. Such a tendency can be stopped only if increasing supplies are absorbed by increasing incomes of consumers. This is true primarily for products with an elastic demand. With regard to our problem, the conclusion is that technical developments which increase yields of elastic products will favour smaller farms producing milk, meat, fruit, and vegetables much more than the big farms which grow grain, potatoes, corn, &c., for direct sales. If the increase of wages in industry as a result of technical developments is also accompanied by increased wages in agriculture, large estates, especially, will be forced to mechanize. However, the little farms are also compelled to use labour-saving techniques to a greater extent, if elasticity of demand for their products decreases. This is the case if consumption by people in the higher income brackets reaches its physiological margin and if demand of the lower income-groups is restricted by available purchasing power.

Now, the suitability of farm sizes is determined not only by technical progress, but in large degree by the price policies of governments as well. If, for example, the price of grains is kept high through market regulations, as in Germany, Switzerland, or the United States, it is primarily the big farms that will be favoured. They will enjoy a direct advantage through sale prices and an indirect advantage, as compared with the smaller farms, because feed-stuffs become more expensive. This, in turn, tends to lead big farms to diminish their livestock because of disadvantages in comparative costs. In several countries farms already exist which have no livestock at all.

Finally, a contemplation of technological advance in farming must not overlook the effects which technical developments in other branches of the economy have on agriculture. During the last quarter of the nineteenth century, for example, competition with overseas grain farmers became very great in Europe because, with the development of the steamboat and the steam engine, transport costs greatly decreased. Again, it was not technical development in farming but the invention of refrigerators that enabled Argentina, New Zealand, and Australia to compete with Dutch and Danish farmers on British butter and meat markets. Moreover, the invention of procedures for hardening vegetable oils has tended to restrict

butter production on family farms in temperate zones but has greatly encouraged production of vegetable oils on family farms and plantations in subtropical and tropical areas.

All these examples are small hints as to how complicated the problem of technical progress is if we consider its effects in connexion with the other components of economic development. In so far as price policies always produce new configurations, prices are not only a function of technical development, but technical development is also a function of prices. Since farms need capital, systems of farming which are favoured by prices stand a better chance of making use of technical developments.

In this play of constantly changing influences on farms, however, the family farm has proved itself widely to be the pivot in this world of unrest. For the near future no tendencies are perceptible which could endanger the majority of family farms provided they are economic size units. It is to be expected, however, that the subsistence farms which are miserable remnants of the pre-industrial age will largely disappear. They suffer too much from the law of decreasing labour returns and cannot take part in technical progress. The pace of this progress will be determined by developments in other branches of the economy and by the subjective ideas farmers have about their way of life.

(c) PATTERN OF RURAL SETTLEMENT

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MODERN agriculture is in process of *technical development* in the sense that it is increasing its yield in relation to its input of the means of production; or, to put it differently without altering the meaning of what we say, it develops the use of means of production capable of obtaining that yield at reduced costs.

Technical development is but a particular aspect of economic development. The technique is that form of human knowledge and skill which is immediately precedent to action; accordingly, it necessarily assumes that the economic problem involved has already been solved. There exist no formulae that are true technically without being true also economically. Should anyone affirm the contrary, the proper answer would be that, if so, the technique concerned either would really be different from the one he assumes, or it would

certainly be wrong; or it would refer to some other times or places than those he means. In other words, there can exist no two different truths, the technical and the economic.

So conceived, technical development has spread, in modern times, with varying rapidity, over different countries and agricultural zones. Naturally, there are zones technically more advanced and zones relatively backward; there are zones of intensive and zones of extensive farming; there are prosperous and poor zones, with all the intermediate shades.

This co-existence of different technical levels and different standards of productivity is accounted for not only by the ignorance of farmers as is sometimes too lightly asserted—an ignorance which could be overcome by suitable propaganda. Very often it happens that extensive farming and poor yields are determined by the inner logic of the economic situation, and that to pretend to apply different systems of farming would mean obtaining lower economic returns and therefore having recourse to a mistaken technique. In other words, the technique suggested would not suit the conditions of the soil, of the climate, of the existing water-supply, of the layout of the farms, of their location with regard to the markets, of the forms of settlement of the farming population, &c.

I should point out in this connexion that, for many a year, I have held that agricultural economics, conceived in the purely scientific sense, cannot be anything else than a logical interpretation of agricultural reality with all its characteristic diversity. Agricultural economics, if it ever pretends really to be a science, must seek to establish the logic, for instance, of intensive and extensive systems of farming; of a market economy and of a closed subsistence economy; of a mechanized economy and of an economy wholly dependent on human manual labour, &c. The difference between these various forms of economy does not consist in some of them being good and others bad, because any of them may be good in certain environments and in certain epochs. It is agricultural economics that is called for to find out the conditions in which they are justified as meeting the needs of the situation.

Technical development, however, in the course of its progress is confronted not only by natural obstacles, such as those due to climate and soil. It also depends for its progress upon the existence of factors owing their origins to human activities, past and present, which exercise a far-reaching influence upon it. Suffice it to point to the great centres of population, to the roads, the systems of transport or markets to see how deep is the influence they exercise upon

technical progress. To a very large extent it is past human activity that accounts for present-day problems.

Moreover, there exist some factors, also determined by human activity, that do not possess the degree of stability characteristic of those I have just quoted. Such are the *institutional factors*, meaning the existing institutional framework which, according to the manner of their operation, may either assist or obstruct technical progress. These are the factors which lend themselves more easily to modification and which, therefore, it is most important to study with a view to eventual practical action.

Considered generally, the problem is a very vast one. Fortunately, however, my task is limited to only one of its particular aspects: the pattern of rural settlement.

Strictly speaking, we mean by settlement any case of the permanent establishment of a farming family on a holding of *economic* size suited to the family's conditions. It is obvious that the family and the farm holding must possess the characteristics needed for their harmonious co-existence. Particularly important is the capacity of the farm to ensure to the family, over and above all that is normally needed for its maintenance, a good distribution of work over the year and an income sufficient to secure a decent standard of life.

Although not all agriculture actually rests upon this agricultural and social type of settlement, the family type of rural settlement is predominant in the larger part of the world's agricultural regions. It has gradually asserted itself in the course of history, sometimes as a result of the activity of large and medium landowners, sometimes owing to the independent action of peasants and small farmers. There have been historical periods during which settlement in certain zones has made rapid progress, while during other periods its development stopped or even began to revert. There have been cases of settlement due exclusively to the independent and unaided efforts of the peasants themselves, and other cases in which it has been supported by the State through the grant of special legal guarantees, of credits and of other forms of financial assistance to the settlers. Some settlement programmes were promoted and carried out by the Government or by the community. Under these the settlers were bound to pay certain sums annually for the redemption of the land and farm buildings and for the live and dead stock supplied by the public authorities.

It is clear that rural settlement may take place not only on the basis of the transfer of the title of property on the holding to the peasant families but also under other systems of tenure which,

without making them owners of the holdings, involve them in various forms of contractual relations with the actual owners of the land, such as the Italian contracts of *colonia parziaria* or *mezzadria*, different types of farm tenancy, emphyteutic forms of tenancy, mostly on public land (Siberia in earlier times), &c.

History offers numerous examples of agricultural settlement under all these different forms. According to their types, they may be distinguished as follows:

1. Agricultural settlements carried out by large and medium land-owners in the course of history in many parts of western Europe, in central Italy, in northern Spain, and over large tracts of land in the Near and Far East, have been numerous and important. They have been less important in the countries of South America where, barring some noteworthy exceptions, the development of capitalist enterprise has not generally been accompanied by agricultural settlement. In those regions where such settlement has actually taken place, however, it has been followed generally by the transformation of the primitive forms of land tenure into peasant ownership just as, in the remote past, it took place in France, western Germany, Switzerland, Denmark, Holland and Sweden, and, more recently, in Great Britain and Italy.

2. Some settlements had their origin in the emancipation of former serfs who started the cultivation of unoccupied areas of land or of lands subject to vague titles of ownership which lent themselves to agricultural transformation by the labour of tenants paying modest redemption fees to the real or titular owners.

The colonization of North Africa, especially in Tunisia, Algeria, and Morocco, and numerous colonization schemes in South Africa and South America were carried out in this way. In some other cases, settlement programmes have been supported, at least partially, by the communities or States concerned, but even in such cases most of the work has been accomplished by the settlers' own forces. In this connexion we may recall the great colonization effort following the end of the Civil War in the United States. There, the State provided assistance in the form of grants of land and of legal protection of the title of ownership to the holdings formed under the Homestead Act, but the agricultural transformation and development were the result of the courage and enterprise of the farmers who migrated towards the wide spaces of the West.

Similar phenomena have also taken place in South America. There, we may point to the German colonization of the southern part of Rio Grande do Sul and to the Italian colonization of the northern

part of the same Brazilian state and of the vine-growing zones of Argentina, such as Mendoza and S. Juan. Not infrequently in these cases such colonization was due to the desperate efforts of the poorest elements of the rural population who, unable to find work and any means of existence in their countries of origin, emigrated and took their chance, generally against heavy odds. The early decades generally proved very hard indeed, but in the end these desperate colonization schemes were generally successful.

3. Finally, there exists a type of colonization in which the necessary works are mostly carried out by the State or the community concerned, and the farmers' families are settled when these preliminary works have, in the main, been completed and the land has been prepared for settlement. This form of settlement naturally demands a considerable financial outlay and is practised mostly within the territory of the State concerned or, at least, in those of its possessions which offer sufficient security and are fully subject to its political control.

Among the most important settlement projects of this kind we may point to the creation in Holland of new polders now settled with prosperous families; to the combined colonization, land improvement, and land-reform schemes carried out in Italy, in Germany, and also in Spain, where expropriated land formerly extensively farmed and poor, has been transformed by the investment of enormous sums of capital and by great technical improvements into areas suited for the settlement of peasant families. This transformation has been accompanied and facilitated by the creation of organizations for assistance, for the collective processing of the products, for the collective use of agricultural machinery, for co-operation, &c. As a rule, under these schemes the settlers pay for the land and the farm buildings and equipment in instalments over many years at low interest. As to the land, in the case of such schemes it is usually such as to need a good deal of work to make it suitable for settlement, and it is only with the intervention of the State or of powerful organizations that the initial difficulties can be overcome. I should also refer to the settlement projects carried out in Palestine, in which collective forms of farming occupy a very important place, and also to some of the schemes for the settlement of peasant immigrants in the different zones of Brazil, Chile, Paraguay, Colombia, &c.

Finally, I should point to the achievements of the country whose hospitality we now enjoy, which consist in the work carried out in Finland for the agricultural resettlement of the populations transferred from the territories ceded to Russia. Among the programmes

now being carried out we should single out that of the Valley of Jordan for the settlement of some tens of thousands of Arab refugees, and similar projects for the irrigation of the Sinai zone which should provide an outlet for the excess population in Egypt.

The process of agricultural settlement is intimately connected with technical development. This connexion is clearly demonstrated by the fact that, historically, colonization always took place in territories where the population was sparse, agriculture extensive, and living conditions difficult. The few examples of agricultural settlement that I have referred to provide a convincing illustration of this. As a rule, agricultural settlement naturally involves an increase in the rural population, a diminution in the size of farm units, a substitution of more intensive systems of cultivation for the extensive ones hitherto used, all this implying higher standards of total production and unit yield and therefore a technical and economic advance in the agriculture of the zone concerned.

A common feature of all the agricultural settlements consists, indeed, in the contrast between the 'extensive' mentality of the native population of the zone and the 'intensive' mentality of the newcomers, a contrast which in some cases resolved itself in peaceful agreements, but which sometimes resulted in violent conflicts filling the historical records of many a country. Anyhow, what I should like to lay stress upon here, is that no agricultural settlement can succeed unless accompanied by technical and economic progress.

Such progress can be promoted and facilitated, *but it can also be hindered*, by the existing *institutional framework*. That term is very comprehensive and I shall have to restrict our discussion to those of its aspects which are more important and directly relevant to our subject.

The questions to be answered here are essentially two: How does the existing institutional framework affect agricultural settlement, and how can it be modified so as to make its operation more favourable to settlement?

In seeking an answer to these fundamental questions we shall have to distinguish between three groups of problem, namely the problems of the creation of new settlements, the problems of their development and improvement, and the problems of their protection and conservation.

As a matter of fact, however, any institution exercises its influence upon practically all of these aspects. For instance, if we consider the legislation concerning the protection of the family and of the farm holding, we see that it is intended to protect the settlements already

existing but that, at the same time, it represents a powerful incentive for the creation of new settlements and for their technical progress. In fact, the institutional background tends to exercise its influence, to a greater or lesser extent, upon all the three distinct aspects of the problem. Hence, it will be opportune to examine separately the problems of the particular institutions and to consider the nature and the extent of their influence in the different phases of the development of agricultural settlements.

Among the institutions most capable of exercising an influence upon the process and upon its technical progress I shall limit my examination to the following six :

1. financial subsidies granted by the State in favour of settlements,
2. State intervention in providing the land necessary for settlements,
3. organization of an efficient system of credit facilities for the formation and development of settlements,
4. development in the settlements of associated activities, either in the form of co-operative organizations or otherwise,
5. protection of the settlements from the adverse effects of economic fluctuations and from the breaking-up of holdings among the heirs at succession,
6. protection of prices and markets.

Let us examine these six points in turn.

1. In many States there exist numerous provisions which, under different forms, involve in substance the grant of subsidies for the creation of agricultural settlements and for the technical development of those already existing. Here, for evident reasons, we cannot enter into the details of the complex legislation on this subject existing in practically all countries and covering a vast range of measures, from contributions to the purchase price of family holdings or to the cost of improvements made by the farmers, to grants made by the State for the development of whole territories. All we can do is to discuss the importance of this particular form of financial assistance. Evidently, there is no lack of criticism of such intervention from the point of view of pure economics, and it is held sometimes that it results in favouring types of productive activity which would have no chance of developing in conditions of free competition, or which at best would develop to only a very limited extent. Accordingly, it is often considered a bad method of investment, because the money gets forcibly used in promoting works which are economically unsound and therefore involve the community in loss.

Others, answering these objections, lay stress on the existence of

considerations not strictly of an economic nature, pointing to social advantages, to the necessity of consolidating the structure of rural society in the interests of the nation and of promoting an increase in the number of peasant families firmly bound to the soil and therefore able to look with serenity and confidence to the future. Without in any way denying the force and the importance of these considerations, let us develop our reasoning on the subject independently, on strictly economic lines.

The substance of the difference between these two approaches appears to me to consist not in the recognition or non-recognition of the economic nature and value of these interventions, but in attributing a different character to their economic nature. The individual engaged in his economic calculations cannot do otherwise than take the short view of his problems. A farmer who starts the cultivation of a bit of land, even if he may possess a wider outlook, has perforce to think in the first instance of the necessity of providing for his maintenance in the immediate future, and he may not be in a position to shoulder the burden of expense and the sacrifices which the full exploitation of the available land over a number of years would involve. This does not mean that he fails to recognize the economic advantages offered by a considerable technical development of his holding; it means only that he cannot wait too long to provide a sufficient income for his family, and that he is not always in possession of the financial resources needed for the necessary operations. The State, on the other hand, sees the same problem with a wider and a more comprehensive outlook. Its vision extends not only to the present generation, but to generations to come; and it sees the problem from the point of view of the creation of the agricultural basis for future economic development comprising other forms of activity, such as industry, trade, transport, the work of public officials, and so on. Thus, it is not a question of a contrast between an economic approach to the problem on the part of the individual on the one hand, and a non-economic approach to the same problem on the part of the State or the community on the other, because in fact both attitudes represent economic appraisals equally valid within their respective spheres.

Besides, some inquiries recently carried out in certain thoroughly improved and colonized parts of northern Italy have shown that such transformations are economically worth-while for the State—not immediately indeed but certainly in a few decades—because of the increase in the *total* yield of taxation from the colonized territories (an increase which naturally is not limited to the agricultural sector

alone but takes place in all branches of activity in these zones after the agricultural transformation). In this way the State was eventually compensated for its outlay on a very liberal scale, recovering its direct investment in the settlements and the subsidies it had granted.

Naturally, this does not imply that State intervention is needed always and everywhere. Unfortunately, there are many cases in which a mistaken view of the economic possibilities of the project on the part of the State has resulted in useless expenditure, in a waste of means and in works which suffered more or less rapid deterioration. The problem of economically sound choice is as important for the State as it is for the individual; and it has always to be solved with vision and a careful weighing of the real possibilities of the territories concerned.

2. The community's intervention in the technical development of settlements in many a country has assumed the form of legal and administrative provisions and of political action concerning so-called agrarian reforms. In this connexion we need only consider those reforms that are essentially concerned with processes of settlement. These reforms generally involve the expropriation either of whole agricultural estates or, in by far the greater number of cases, of parts of such estates, for the purpose of the constitution of an area of land on which to create new peasant holdings, developing at the same time all those public works, such as housing, roads, water supply, &c., which are necessary for the existence of viable peasant ownership and farming in the zones concerned.

There is evidently no lack of criticism of such reforms. It is often observed that, by diminishing the security of landed property which it threatens with expropriation, such investment in territories in which the former owners have invested but little, results in forcing economic development into unnatural channels. In this way it leads to uneconomic employment of resources and to an equally uneconomic subdivision of landed property, because all the preceding economic development of these zones had preserved large agricultural estates as being the most suitable form of farming business. Here also it would be possible to answer the criticism by referring to uneconomic considerations. The advantages of settling the zone with peasants deeply attached to their land, of achieving a more equitable distribution of landed property, of promoting improvements in social structure, and so on, are all reasonably valid arguments. Yet we prefer always to keep strictly to economic considerations.

From the economic point of view, it is certainly true that, in many countries of western Europe, though at different epochs, there has

existed a marked contrast between the old landowning class and other social groups, in so far as the former sought to keep their landed estates not for economic reasons but for considerations of social prestige, of hereditary succession, and often in order to have access to social honours and public appointments. In this way the landowning class stood in the way of the abler members of the working class and prevented their becoming independent farmers. Under such conditions intervention by the State (aimed at doing away with an *institutional obstacle* represented by large landownership) constitutes an act of political wisdom fully justified on purely economic grounds.

It should never be forgotten that farm business and the ownership of land are two different things, and that while there have been periods in agricultural history when these two institutions co-existed harmoniously, there have also been times when the development of the better type of farm unit has been obstructed by the existing structure of landownership. In this case, State intervention to eliminate the obstruction appears economically advisable.

3. Another institution of fundamental importance for agricultural settlement is *credit*. In many countries there exist very widespread and efficient credit systems; in others they are extremely deficient. A very important consideration is that while credit facilities fulfil an important function in agricultural settlements, exaggerated recourse to them is dangerous. As a general rule, it would be highly desirable to confine credit facilities to supplementing, but by no means entirely replacing, the financial resources of the settler himself. Any new enterprise has its unavoidable risks. It may be an outstanding success, but it may also prove a dismal failure; and, from one year to the next, its situation may change under the influence of factors beyond control. Exaggerated recourse to credit facilities may place the settlers in a difficult position if adverse influences should intervene in the shape of either natural conditions or market and price situations. In the case of new settlements it has frequently happened that heavy initial expenses, sometimes fully justified, have been incurred with the help of credit; but the increase in production due to the contributions of the settlement itself, and especially to marketing more produce, has brought about a depression in prices. As a result, the burden of debt, which may have appeared quite reasonable before, became excessive and involved the farm in grave financial difficulties.

Similar considerations also apply to short-term working credit. Facilities for such credit, along with their great advantages, are not

devoid of their own peculiar dangers, mainly because they may encourage the farmer to indulge too freely in technical innovations which do not always pay their way.

Thus, while being a powerful instrument in the work of colonization, credit has always to be carefully watched to avoid its becoming an instrument of ruin, as it so easily does, making it impossible for the settlement or the farm to continue. It should be noted also that the opening of banks with numerous branches in the zones of new settlement should have, as its principal object, the concentration and conservation of local savings and the attraction of savings from elsewhere, if necessary with the support of the State.

Agricultural settlements, especially in their initial phase, are always exceedingly greedy of new capital, both because of the basic works which have to be executed and because of the technical developments which necessarily accompany any sound project. Hence, it is very desirable that existing credit institutions should meet this need, and not act in the opposite sense, as they often have, by investing the savings and resources accumulated by the agricultural settlements in cities and in industrial activities, thus withdrawing them from the work of colonization, and raising the cost of credit to the settlers.

This particular aspect of the credit problem in the zones of colonization deserves greater attention than it has generally received so far. The existing credit institutions in such zones should work to promote agricultural development, on the one hand avoiding dangerously generous credit accommodation, but on the other preventing the credit apparatus from pumping capital out of the zones of agricultural settlement.

4. Among the institutions which play an important part in the work of agricultural settlement I should also mention the different types of *economic association* of farmers. These may or may not be on co-operative principles, and it is not so much their form as their substance and functions that interest us here. The associations are a powerful instrument for the development of the individual economic activities of the peasants and for making good the typical shortcomings of small farming. They are particularly important in the case of settlements aimed at the creation of peasant family farms. Co-operative forms of association depend to a large extent on the maturity of judgement of the peasants, and they are not always easy to start in new settlements. It is often necessary for associations in such cases to be organized and supported in their development by the State or the community.

The intervention of the State or of public bodies in this case is not devoid of certain dangers such as the possibility of creating associations having no vitality of their own and wholly dependent upon public assistance. Each particular case has to be solved on its merits. There is no objection to public assistance in the initial phases of such associations which, as a rule, are particularly difficult and in which support and encouragement are needed; but no less true is the need to consider with equanimity the failure and the actual disappearance of those associations which, when this initial period of adaptation is over, do not display sufficient economic vitality. Co-operative associations which represent a most powerful instrument of agricultural improvement and progress are too often looked upon with a sentimental and academic eye, instead of being considered in their real economic substance. Failing this realistic approach to its nature and functions any co-operative association is bound to degenerate into a means of wasting resources by becoming dependent on public assistance.

In the zones of settlement it has always been sought to develop some form of association. The land reforms involving settlement operations, such as those being carried out in Italy, Spain, Germany, and Holland, all provide for the development of associations among the farmers. In Italy there is an obligation on the part of the peasants who receive holdings to take part in the constitution of agricultural co-operative organizations for the processing of their products, for their collective marketing, for the mechanization of farm operations, &c.

In other zones it can be seen that the real consolidation of the agricultural settlements took place only after the whole tone of the economic life of the zone had been raised by the development of strong co-operative organizations. As an example I would refer to the co-operative wine-cellars in Rio Grande do Sul in Brazil, which have caused a decisive change in the zone of colonization which has passed from a primitive to an intensive and prosperous type of settlement.

It is well known that settlement in Palestine has been based mostly on co-operative organization, both in the production and in the processing of products. In Egypt the beginning of economic and social improvement in many an agricultural village has been due to co-operation.

5. All the institutions intended to protect the farm unit and to prevent the appearance of factors likely to produce an *excessive fragmentation of holdings* would seem, at first sight, to be necessary to

maintain and defend the newly-formed peasant property. One should not be carried away, however, by excessively absolutist attitudes and fail to base one's judgement upon the merits of each particular case. In the first place, all the institutions intended to preserve a settlement's holdings intact, or nearly so, through all the hereditary successions in the course of generations to come, have developed most in those regions where there existed a definite economic interest in such preservation. This was due, I think, not to tradition, psychology, or national customs, but to real economic interests. I had occasion to deal with this subject six years ago at our meeting at Stresa, and those interested in it will find in the Proceedings of that Conference examples and illustrations of my views. Conditions certainly exist under which the institution of the farm unit minimum or of the indivisibility of holdings may render valuable services in ensuring the success of a settlement. It might even be said that, during the initial phase of new settlements, such provisions should be greatly welcomed. But it is true also that the rigid application of such principles for all future times, irrespective of the differences between cases, would crystallize certain situations and hinder the process of natural selection among the settlers. Such selection would lead normally to an enlargement of the holdings of the abler and more hard-working farmers and to the gradual weeding-out of the misfits, a process which is absolutely necessary in every kind of settlement, and particularly in those more dependent on the State where, in choosing settlers, not enough account is always taken of their real capacity for the efficient management of a farm.

Under such conditions the blocking of the possibility of division of farm holdings would be a grave error. Experience has shown how, in the course of history, the most viable and efficient farms have been gradually formed by the steady acquisition of pieces of land, sometimes exceedingly small, by means of sustained effort, labour, and saving. Should the possibility of finding these small pieces of land in the market be precluded, so that it would always be necessary to buy a whole farm, all this process of selection and consolidation of the best farming families would be greatly obstructed. It would appear to me, therefore, absolutely essential clearly to establish the conditions in which the breaking-up of farm holdings at succession is an evil to be guarded against, and when the damage caused by fragmentation is practically negligible. Indeed, there exist crops that can be cultivated successfully even on a very small scale, such as vineyards, orchards, citrous fruit groves, &c. There are other crops that can be grown even on very small farms. When, therefore, the problem

of fragmentation of holdings and of the pulverization of landed property comes under discussion, and the institutional means by which this can be prevented are being considered, it is always necessary to keep in mind the difference in the situations characteristic of the particular cases. As was demonstrated in France by De Foville at the close of the nineteenth century, the evil of excessive fragmentation had spontaneous remedies and did not give rise to catastrophic dangers. Finally, indiscriminate intervention against it is likely not to benefit but seriously to damage technical progress both in colonization and in agriculture.

6. In numerous countries there are provisions for the defence of agricultural production on the market. They comprise the maintenance of remunerative prices, the organization of the conservation of agricultural products, of their marketing at suitable seasons, &c. Substantially, all of them aim at protecting agricultural produce on the market and preventing grave losses to farmers, especially during periods immediately following the bringing-in of the crops and in connexion with perishable commodities. Here too we must distinguish between what is good and constructive and what is dangerous.

It is a matter of common knowledge that price is the supreme regulator of economic production. When, other things equal, the demand for certain products diminishes, there is also a fall in their prices, and the farmers are induced to diminish production to the quantity effectively needed by the market. Following an increase in the demand the process is reversed. Hence, if during a period of depression of prices for certain commodities, measures are taken to keep them up, the process of adaptation of production to effective demand is impeded and unsaleable stocks are built up which tend, sooner or later, to depress the market further and to create difficult problems of unloading. These considerations might lead to an outright condemnation of a policy aimed at the maintenance of prices; and such, indeed, is the conclusion arrived at by the economists of the extreme liberal school.

While fully recognizing the logic of this reasoning, it needs qualification. First of all, it often happens in agriculture that the necessity for farmers to sell immediately all the crop just harvested causes an abnormal depression of the market. This benefits speculators but severely damages producers. Obviously, in such a case, an action in self-defence by the farmers, or the existence of institutional means permitting them to avoid a sudden glutting of the market, serves a useful purpose and helps agriculture. In some other cases

there are reasons for considering a depression of prices as a passing phenomenon due, not to a diminution of demand on the market, but to exceptional situations or to crises of short duration. But a reduction or an expansion of production cannot generally be achieved without involving expense in the form of the destruction or non-utilization of equipment or, on the other hand, of providing new equipment, sometimes at considerable cost. When such crises last longer, it may be expedient to have recourse to measures of support, to enable farmers to avoid a succession of alternate phases of investment and disinvestment, which are exceedingly costly considering the ephemeral character of the apparent adjustments of production to demand which may be achieved.

Considering the specific case of settlement it should be noted that a policy of assistance and price support plays a particularly important part during the initial phases of the life of new settlements. In fact, colonization often takes place in zones where there exist no stable marketing facilities, where even relatively modest increases in production are liable to produce profound changes in the conditions of the market, and where consumption possibilities are still uncertain. Under such conditions, sudden depressions may undermine confidence and lead to failure in the very initial stages of the life of the settlement, and price supports intended to avert excessively heavy losses may prove a valuable means of helping the settlement to overcome its teething troubles.

In closing my exposition which has been limited to a few aspects of the problem, I cannot pretend to have dealt with the problem at all exhaustively. The experience of rural settlements, particularly of those which are new, shows the need for efficient institutional frameworks both at the beginning and during the successive phases of their development. These must be such as will help and consolidate the work of colonization without going so far as to depress individual energies by too much tutelage. This is a delicate problem, and extreme solutions should be avoided.

R. FERNANDEZ Y FERNANDEZ, *National Ejidal Credit Bank, Mexico*

When carrying out land reform, undue emphasis is often placed on political and social considerations, while economic facts are either relegated to second place or are completely disregarded. This causes difficulties.

In cases of pressure of population in agricultural areas, there is a tendency to establish land-tenure systems which will increase yields

per unit of land even if labour productivity remains low. In addition, the implementation of maxims such as, 'the land should belong to him who works it', or, 'the peasant has a right to own a piece of land', leads to the fragmentation of property, and retards agricultural progress. In the long run, it is better to face squarely the problem of unemployment than to temporize with it by adopting a land-tenure pattern which may obstruct agricultural and industrial development and which, later on, may be difficult to change.

If we consider the other side of the case, it would appear that even if the surplus agricultural population could find adequate employment in other activities, the unrestricted expansion of the farm should be kept within limits, since allowing it to exceed the economic optimum would have serious social and economic drawbacks. Even such forms of technical advance as the use of hybrid seeds and artificial insemination are not entirely unrelated to land tenure. If the land is owned by an illiterate and helpless peasantry and, above all, if the land-tenure system ties the peasantry rigidly to the land, it is difficult to establish these improved techniques. Insecurity in certain types of tenancy seems to be as bad as the rigidity of other types such as the non-transferable parcel owned, not in fee simple, but in a form which grants only its usufruct. This latter form is particularly damaging in the case of small parcels which are far below the optimum size. Efforts to tie the peasant to the land protect him against the loss of it, and are a safeguard against a return of the *latifundia*. At the same time, however, such protective measures help to maintain inefficient producers by removing incentives for improvement.

One way of ensuring that improvements on the farm will benefit the peasant farmer who made them is to allow him to recover in cash the cost of the improvements should he have to leave. Without this provision, farm improvements will not often be undertaken. The lack of a mechanism or institutional process by which the farmer can sell his farm is another obstacle to capital improvements. Naturally, there is always the possibility that he will abandon his land, but this would entail the complete loss of whatever improvements have been made, and there would be no compensation for losing the right of usufruct.

When carrying out land reform, one should strive towards the establishment of land-tenure patterns with enough flexibility to allow for technical progress. Therefore, land should not be distributed indiscriminately, but should be given as far as possible only to farmers with managerial ability. This requirement could be achieved by the adoption of a system which would lead to the natural and continuous

selection of farmers, and which would automatically eliminate the least capable.

The operation of conditions which tend to make for a flexible land-tenure pattern should, of course, be kept within bounds so as not to endanger the stability of the new system. At one point, I suggested a *blitzkrieg* process of land reform in order to achieve results with the speed demanded by social conditions, while at the same time avoiding the disturbance and social deterioration which a slow process of land reform brings with it.¹ In this connexion, I held the view that once feudalism was eradicated, the *latifundia*—that is to say, extensive cultivation, unpaid compulsory service, oppression of workers, absenteeism, &c.—would not be restored because it represents an obsolete form of land tenure which persists only through social inertia, and the perpetuation of privilege. Nevertheless, one cannot be too careful in the establishment of conditions, inducements, and limitations which will ensure desirable flexibilities in the newly created system. The liberal dictum that once land can be freely traded it automatically tends to become the property of the more able and aggressive farmer is not questioned, and operates in many instances; but experience indicates that it is not enough to trust blindly to this alone.

Credit may be given to tenants, or to peasants who farm communal lands, using a collateral similar to a mortgage, in order to place tenants in as good a position as the landowners with regard to credit. Instead of using the land as collateral, the right of usufruct could be mortgaged in addition to the improvements made by the tenant. Cuba has established such a system. When land reform results in land tenancy rather than ownership, this credit system could be used to give the land-tenure pattern the desirable flexibility. The idea of associating tenancy (and other forms of restricted property) with a loan provides added flexibility. For example, the family parcel allocated as a result of land reform is a loan in kind, which is added to other financial obligations. Failure to discharge these obligations would entail the loss of the parcel. Without these flexibilities the rigid and permanent attachment of the peasant to the allotted parcel tends to perpetuate a low standard of living and to impede the movement of labour from agriculture to other activities. Mobility in agriculture—both of land and labour—is essential, not only for agriculture, but also for progress in secondary and tertiary activities where it is connected with the situation prevailing in farming.

¹ R. Fernandez y Fernandez, *Reforma Agraria para Venezuela* Corporacion Venezolano de Fomento, Caracas, 1950.

Communal land tenure, with individual usufruct or co-operative production, is a good basis for the solution of such problems. Co-operation also facilitates land improvement and reclamation, and the introduction of innovations, provided that flexibilities are introduced into the system.

Although I have had the problem of my own country in mind (and Mexico in this respect has a very special character), I have spoken in general terms as befits the treatment of this subject at an international gathering.

K. SKOVGAARD, *Royal Veterinary and Agricultural College, Copenhagen, Denmark*

The problems arising from the impact of modern technology on farm-size structure are especially important as farm-size structure has a significant influence on the social pattern of rural districts. In general, farm size is measured in acres, but for several well-known reasons this can be very inadequate or even misleading. The social measures of farm size are of much greater significance than acreage. The comparative income-producing capacity and the employment capacity of the farm are among such measures which are especially important when the influence of technical change on the farm-size structure is to be considered.

In his paper Dr. Niehaus called attention to the specific problems of the small, inadequate, or part-time agricultural holdings which are so conspicuous by their numbers and political influence. In the given context they pose a special problem and, leaving aside those of them which can be made independent economic units by the organization of specific, intensive enterprises, the problems of the vast majority should not be identified with agricultural problems in general. These smallholdings came into being, usually, to provide social security in an age in which each family had to be self-sufficient. In the greater part of the world they still serve their purpose, but in the economically developed countries they do not, and their existence is closely dependent on the employment situation and the social provisions of the countries concerned. Accordingly, the existence of smallholdings is much more subject to technical changes outside than inside agriculture. It is very conspicuous that in the industrialized countries these holdings had already started to decline in numbers by the turn of the century and the decline has developed progressively according to the development of employment and of social security.

Next, I wish to stress the point made by Dr. Niehaus with respect to the complex nature of the farm-size structure, influenced as it is by a multitude of extremely heterogeneous factors which have various effects. Some of the factors are of a strictly economic or technical nature, but many have emanated from immaterial considerations or political decisions. Furthermore, some factors are located in the agricultural sector itself, but some must be traced back to the other sectors of the economy. In addition to their complex and variable nature, the factors concerned are closely interrelated, so that it is a difficult task to trace the influences on farm size of even a single determining factor. When the influences of modern technical changes on farm size are to be considered, however, we have to deal not with a single factor but with a number of important factors which behave in various ways. In consequence, generalizations are very dangerous in this field. Dr. Niehaus's conclusions are mainly built on observations of conditions prevailing in western Europe in general and in Germany in particular; for this reason they may not hold true in other environments. In saying this I do not criticize his paper, especially as my own remarks also refer mainly to western countries.

I wish also to mention the interdependence of type of farming and farm size. Dr. Niehaus states that the farm-size structure influences the type of farming. This is admittedly true, but I am inclined to put more emphasis upon his later statement that the farm-size pattern is influenced fundamentally by the type of farming. The farm-size pattern is only one of the factors influencing and simultaneously being influenced by the type of farming, and accordingly we must determine whether technical change, by influencing the type of farming, influences the size of farms. The type of farming is the fundamental feature, the farm size being secondary.

We find wide variations in farm size within type of farming regions, and it should not surprise us that the combination of production resources, and consequently the production pattern, vary considerably from one farm size to the next. The variations can be surprisingly regular but I would hardly go so far as to translate the variations into mathematical terms, as suggested by Dr. Niehaus, since we find considerable deviations, especially in the lower and higher ranges of farm size. But the variations are well circumscribed within the type of farming.

Returning to our question, we have abundant evidence of changes of type of farming consequent upon technical changes inside and outside agriculture. But the changes which have taken place in the type of farming heretofore have had no revolutionary influence on

the farm-size structure, and radical changes are hardly to be expected in the near future. The situation is explained mainly by the fact that the technical changes have had no significant influence on the indifference to scale of enterprise so characteristic of agriculture.

The indifference to scale of enterprise, or the unresponsiveness of the farm enterprise to large-scale effects, has been a very conspicuous feature of a period in which large-scale enterprises extended throughout other industries. In relation to employment or turnover even the largest farm units are small and have remained small compared with the size of enterprise of other industries. Furthermore, the farm-size structure has remained remarkably stable, and the large farms existing in the industrialized areas were developed prior to the industrial age. The number and acreage of the large farms have been stationary or even declining throughout the last century, while the smaller farms—predominantly family farms—have gained ground continuously. Dr. Niehaus's allusion to these facts and to the mistake of Karl Marx so far as his expectations of farm size are concerned, is very appropriate, as the forecast of Marx and the dicta of Lieut. Karl Kaulsky have been disproved by the development itself.

A full explanation of this state of affairs would be beyond the scope of these remarks. It may be sufficient to say that during the industrial age the influence of technological advance has not favoured the larger farm because large and small farms alike have become increasingly dependent on external economies. The continuous transfer of former agricultural pursuits and contrivances to large-scale enterprises outside agriculture has continuously reduced the advantages formerly peculiar either to the large farm or the larger farmer. Accordingly divergencies in the economics of production of farms of different sizes have been progressively reduced.

Irrespective of size, all farms in the evolutionary areas have become more and more dependent on the external organization of education, research and information, finance, transport, manufacturing of means of production, processing of farm products, purchasing and marketing, breeding of plants and animals, use of heavy implements, &c. Furthermore, the substitution of capital for land has provided greater opportunities for the smaller farms in many countries. This is especially true in the case of livestock farming, partly because livestock is exceedingly divisible and adjustable to different farm sizes, partly because the marginal cost curve is almost flat in livestock enterprises. Accordingly, variations of the size of the livestock enterprises make it possible for the smaller farms to adjust production to labour capacity, provided that the external organiza-

tion just mentioned is adequate. In general it is quite obvious that recent technical changes have not altered the prevailing conditions fundamentally.

It is true that the tractor and the lorry have had profound influences on the prerequisites of agricultural production—so much so that we can speak of a pre-tractor and a tractor age. The influences of the tractor and the lorry, however, are entirely to the good, and they need not imperil the farm-size structure, partly because both of them are very adjustable in size to different farm sizes, partly because the implied large-scale advantages are easily divisible and consequently obtainable by all farms through organized utilization. It is of great importance also that, simultaneously with tractor development, the electrification of rural districts has to a large extent counter-balanced the potential large-scale effects of the tractor by putting the smaller farm units on a competitive footing so far as stationary power is concerned.

My conclusion is that recent technological progress both inside and outside agriculture is not likely to change the farm-size structure fundamentally. The discernible effects are to be interpreted more to the advantage of the smaller and middle-sized farms than to the advantage of the large farms, which means that the much merited and idolized family farm will remain as the economic and social backbone of agriculture for the time being.

I am not going to contest that changes in farm size according to acreage will take place, as to do so would run quite contrary to facts. I do maintain, however, that technical changes are not likely to shift or to endanger the existing social pattern of the farm-size structure. It is quite foreseeable, nevertheless, that technical changes will influence the social pattern of the rural districts profoundly. This development will not be due to changes in the farm-size structure, however, but will be brought about by the substitution of tractor power for agricultural labour and the migration of the agricultural labour to other competitive pursuits. But that is another story.

M. ROLFES, *Ludwigs University, Giessen, Germany*

Professor Bandini's paper shows that we must consider two types of institutional system. The first is the pattern of rural settlement which, as an institutional framework of farming, gives scope and draws limits to technical progress in agriculture. The second consists of the agencies of the State or other public bodies, as institutional means of modifying existing patterns or of creating new types of rural settlement.

In dealing with these governmental institutions, Professor Bandini concentrates mainly on the problems of creating new patterns of rural settlement by a very definite *ad hoc* State policy. This emphasis is particularly appropriate, both from the viewpoint of Italy and also in relation to the rural settlement problems in Finland. I have seen nothing of land-settlement work in Finland, but when I travelled from Livorno to Rome some months ago for many miles I saw little else. One gained the impression that here State land policy has created a very specific pattern of rural settlement where hitherto there had been, agriculturally speaking, little more than a void. Against this background Professor Bandini's remarks on the necessity for and the limitations of governmental support and control are particularly significant. There is unanimous agreement about the necessity, but not always about the limitations. I should like to underline the importance of the limitations.

Most certainly government action is undesirable if it aims at preserving institutions and patterns which check or obstruct economic and social development. Government action is useful if it facilitates economic and social adjustments in rural settlement. But here also there are definite limits which derive from the fact that no dynamic forces are entirely predictable in their volume, force, or direction. State action should certainly smooth the way of progress, but it should refrain from all efforts to direct into fixed channels forces which are not fully predictable in their effects thereby imposing rigidity upon processes which must be maintained as flexible as possible.

Many of Professor Bandini's conclusions are doubtless drawn from experience in land-settlement work in regions that previously showed no very intensive development either in agriculture or in industry. But there are also the problems of adapting the pattern of rural settlement to the needs of technical progress in areas which display an old-established and well-developed farming economy of the family farm type with a system of rural settlement that has grown in the course of centuries; and in regions which are also subject to vigorous industrial penetration.

Professor Niehaus has already shown that in areas of small-scale family farms the desire to make economic use of modern technology is a spur to consolidation of fragmented fields, and that it also creates a tendency to enlarge the size of full-time family farms. This implies changes in the settlement pattern. But where small-scale family farming is carried on in the settlement system of farm buildings compressed into large congested villages, the adjustments necessary to

make efficient use of technical equipment include the moving of the farmstead out of the villages into the fields. This leads to an entirely new pattern of rural settlement.

What part does industrial penetration play in this problem of fitting the settlement pattern to modern technical farming systems? In certain parts of Germany the spread of industries into peasant farming areas has been going on for many decades. For a long time the main effect was a growth of part-time farming and a diminution of the average size of farms—which is a trend diametrically opposed to the requirements of modern techniques.

But since the last war, a very different development is visible. At least in certain rural areas the possibilities of industrial employment are far greater and also far more varied than ever before. At the same time both the incomes and the social security of such occupations are far beyond what can be expected in small-scale family farming. This has led to a definite loss of interest in part-time agriculture. Frequently land which has been farmed in this way is dropping out of use. The significance of this trend in connexion with adjustment of full-time family farms to technical requirements lies in the fact that the shrinkage of part-time farming sooner or later may provide the land needed for some increase in size of full-time family farms. Thus peasant farms may develop into family farms, using these terms in Professor Medici's sense.

What I have just said is no doubt a very great simplification of very intricate problems. But it is worth while to point out that under certain conditions the two great economic forces that are putting pressure upon old-time rural settlement patterns may often supplement each other. The development seems to be moving towards a pattern of settlement in which at least a fair proportion of full-time farms will be found outside the nucleated village, whereby those remaining in the village find space for remodelling their buildings. Such a new location of the farms must be accompanied by a corresponding redistribution of land, by which all full-time farmers profit. Thus we may expect the gradual emergence of a new settlement pattern combining village settlement with scattered farms, the agricultural emphasis being in the scattered holdings, the industrial emphasis in the village. This may enable farmers to operate on holdings of sizes and types better adapted to modern technical progress. But the impact of technical advance is not enough. It clearly needs the additional pressure of industrialization to get this development under way.

R. N. DIXEY, *Institute of Agrarian Affairs, University of Oxford, England*

I want to support Dr. Horring when he says that technical progress in farming need not depend on whether a farmer owns his land or rents it. It is too readily assumed by some people that progress is impossible for a tenant farmer. That is not so. The two things that are important for any farmer in this business are, first that he should have enough ready money to be able to take advantage of new devices as they come along, and the second is that he should be sufficiently secure in his tenure to know that he will not have to quit the farm before he wants to. These two things are inclined to be incompatible. The owner-occupier has security of tenure but, as Dr. Horring says, he is often short of cash. In fact, some of the most poverty-stricken farming in my country is done by owner-occupiers. On the other hand, a tenant has the advantage that he needs a good deal less capital but he can only have security, generally, if it is conferred on him by statute. In either case, the farmer is liable to be handicapped. Neither system of tenure of itself ensures progress or even encourages it.

The difficulties of the owner-occupier are well known and a lot of able people are at work trying to remove them; there are cheap credit facilities and things of that kind. But what is often overlooked, I believe, is that—provided one is prepared to take the necessary steps—there is nothing to prevent a system of cash tenancy giving a tenant all the security that he can reasonably require, leaving the landlord to carry the relatively unrewarding burden of supplying and maintaining the long-term capital, which he is usually quite glad to do.

In my country, tenants as a whole are so secure that it is becoming quite common for an owner-occupier to sell his farm on condition that the man who buys it will keep him on as tenant, and accept 5 or 6 per cent. of the purchase price as rent. That is to say, the owner voluntarily becomes the tenant. It is not a bad way of attracting working capital into the business.

Of course, tenants have to pay for this high degree of security, and part of the price is that if a tenant wants to move, or if he wants to find a farm for one of his sons, he soon discovers that all his neighbours are protected just as he is and are staying where they are. In fact, it has become so difficult to get into a farm except by buying one that happens to be vacant, that a man will pay almost any price for a badly-farmed farm with a tenant in poor health in the hope that he will soon move on.

One way or another, we have the anomalous position that some owner-occupiers have paid so much for their holdings that they cannot afford to use the best up-to-date equipment, while some elderly tenants cling to their farms and so prevent progressive young men from introducing the latest methods if only they had somewhere to use them.

On the basis of our experience it would be very hard to say whether owner-occupiers or tenants have the greater incentive, and the greater opportunity, to go in for technical progress.

M. B. DESAI, *University of Bombay, India*

I want to speak of the tenure reforms which we have introduced in India, and also to continue the discussion begun by Mr. Dixey on the relative efficiency of tenant farmers and owner-occupiers.

In India, although there is a shortage of capital within the farming community for the purchase of land, there has always been a tendency for cultivators to purchase land so as to become owner-occupiers. This is partly because the ownership of land confers social status. But it should also be emphasized that the owner-occupier is usually a more efficient farmer than is the tenant. This is an essential difference between conditions in the United Kingdom (and in other developed countries) and conditions in India.

Land reform has been proceeding rapidly in India. In States where tenant farming was the rule some years ago, the cultivators are now virtually the owners of their land—although the payment of compensation to the previous owners has not yet been completed. Tenure reforms have also taken place in States where peasant proprietorship has been most common. In Bombay, for example, legislation has been effected to abolish such tenant cultivation as existed.

Has such legislation led to increased efficiency? Has it promoted capital investment in the land, or increased the possibilities of technical change? During the past eight years during which land reforms have been carried out, there has been no noticeable improvement in agricultural efficiency. Perhaps evaluation is not possible over such a short period. However, one reason for the apparent lack of response is the farmer's lack of capital. Another reason may be that the tenure reforms do not greatly improve the farm layout and other conditions in the agricultural set-up. Also, land reforms confer benefits on the tillers without any responsibilities in the form of minimum standards of husbandry.

On the other hand, the big agriculturists and owner-cultivators in general have responded more readily than have the smallholders and

tenant cultivators in adopting changes and improvements in farming suggested, in particular, under the community development programmes. There may be a time lag after which the tenure reforms may translate themselves into improved agricultural efficiency through technical advance.

L. E. VIRONE, *Shell Italiana, Genoa, Italy*

Small land properties and peasant farms are of national importance in the economy of many countries, including Italy. Consequently, the disadvantages of systems of agrarian production which are based on very small units are of increasing national and international concern. For example, the tendency of many small farmers to produce what is needed for the family sets limits to trade, reduces the demand for industrial products, and thus impedes progress in agriculture, industry, and commerce. These disadvantages can be attributed partly to the scarcity of capital which is peculiar to small farmers; but to a greater extent they are the results of their lack of technical knowledge. The management of a small farm is more difficult than that of a large farm; and generally speaking the small farmer has less opportunity of acquiring information and assistance.

The Institute of Agrarian Economy of the University of Florence carried out, under the direction of Professor Mario Tofani, a full and detailed study of the economy of an Italian commune (Borgo a Mozzano in the province of Lucca) which is representative of peasant farming. The results of this research, with which the name of Professor Ugo Sorbi is closely associated, will be published shortly by Shell Italiana who, in order to collaborate in the solution of the many problems connected with peasant farming, sponsored the study. The aim has been to obtain a better knowledge of the real situation and to discover methods of economic improvement which could be put into effect mainly by the farmers themselves.

SHISON C. LEE, *Provincial College of Agriculture, Taichung, Taiwan*

A land-tenure system, as an institution, is a product of technical, economic, social, and political forces acting in conjunction. Therefore any system should be adaptable to the environmental conditions of the country concerned. It should not be a reprint or copy of the system of any other nation or nations. If any institution becomes fossilized then some kind of reform should be introduced so as to enable it to meet the changing needs of the society. Generally speaking, the land-tenure system of any nation should allow the best to be made of men, land, capital, and management so as to obtain an ideal

proportion between all factors in the manner suggested by Alfred Marshall. Only thus can we secure the highest output; only thus can farmers have a better livelihood, more personal freedom, and social justice.

After World War II farmers in Taiwan strongly desired to improve the economic conditions resulting from the war. Since 1945 our government has adopted measures introducing technical innovations to meet their needs. It was discovered by investigations over a five-year period that landlords received the larger portion of the benefits of technical changes and it was believed therefore that measures of land reform should be undertaken before the introduction of more technical changes.

The land-reform programme as carried out may be divided into three main stages. The first was the reduction or limitation of land rent. Rent paid to landlords was usually 50 per cent. of the total annual crop yield. This was considered too hard on the tenants, so it was limited to a maximum of 37.5 per cent. The 'annual total crop yield' does not mean the actual yield on the farm; it refers to a standard yield based on the grade of the land at the time of lease. This standard amount was determined by the Rent Reduction or Limitation Committees in the various localities according to the prevailing conditions and is not subject to change. Research has shown that the income of tenants has increased by over 30 per cent. through the limitation of land rent. Following this, tenants have been protected against eviction or compulsory termination of lease. The price of farm land has declined throughout the province so that about 32,000 families have been able to purchase a total of over 20,000 ha. of cultivated land. As a result tenant farmers are better fed, better dressed, better housed, and are able to enjoy a large measure of well-being.

The second stage of the land reform was the sale of public land. So far, 99,000 farm families have availed themselves of the opportunity to purchase government-owned cultivated land totalling some 50,000 ha.

The third stage was the implementation of the 'land-to-the-tiller' policy. According to this, all landowners, irrespective of whether or not they live on the land they own, are permitted to retain 3 ha. of tenant-cultivated paddy field of the seventh to twelfth grade. Any tenant-cultivated land over and above the prescribed amount is to be purchased by the government at a price two-and-a-half times the value of annual main crop produced by this land. Thirty per cent. of the price is to be paid in shares in government enterprises and 70 per

cent. in land bonds in kind. In this way an additional 300,000 farm families have become owner-tillers and a large amount of landlords' capital is being diverted from the land to industrial enterprises. As a result of land reform many and far-reaching benefits are being conferred on farmers and especially on the tenants. I need to mention only the more outstanding ones. The living standard of the farmers throughout the island has been raised. Primary schools have been built in many rural districts and towns. In 1950 75 per cent. of farmers' children of school age attended schools; the percentage was raised to 91 in the fall of 1954. Owing to the use of more and larger-scale technical innovations, the food produced is more than enough to meet the needs of the population. More asphalt roads and concrete bridges have been built. Many new industries have been established. On the whole, there is greater stability and progress. We welcome visitors from other countries to see what we have done and to offer their advice.

Å. ANDERSSON, *Lantbruksnämnden i Kalmar läns södra område, Kalmar, Sweden*

I should like to call attention to legislation in Sweden which is unique, I believe, in attempting to speed up the present development towards larger farm units by the merging of smaller units with one another instead of with larger farms, legislation which is strengthened by a system of State loans and subsidies.

First, small farm units are being added to other farms which are already adequate in size in relation to present-day techniques. This development is more likely to take place under a free economic system, as larger farm owners generally have greater financial resources than smaller ones. Secondly, small units are being merged with other small units so that, in their new combined form, they constitute holdings of adequate size. Legislation affects this process through the following provisions: All forms of acquisition of agricultural property—that is, cultivated land and forest—are in principle subject to official permission. The only important exceptions to this are acquisitions by the State, by a municipality, or by close relatives of the seller. Also sanction for acquisition is given normally where the purchaser intends personally to operate the farm he has bought. We have groups of exceptions, where sanction may *not* be given.

- I. When it can reasonably be supposed that the property will be mismanaged, or that there is a question of speculation or of

financial investment, or that the purchaser does not intend to devote himself personally to agriculture.

- II. Where the acquired property constitutes part of a farming unit which will be seriously damaged as a farming unit if the transaction is allowed.
- III. Where acquisition would mean the merging of two farming units each of which is already adequate in itself.
- IV. Where it is thought that the land concerned should be used for the building of suitable farming units. Where sanction is refused on these grounds the Crown is under an obligation at the seller's request to purchase the property in its own name, and at the original valuation.

Clauses II and III give effect to our determination to prevent both the splitting up of adequate units, and the building up of large estates. The new law makes it possible to implement a desirable principle but does not unduly hamper individual initiative which aims at adapting agriculture to technical needs. Furthermore, the State can encourage a merging of properties by guaranteeing loans and State subsidies to a farmer wishing to acquire land in order to enlarge his farm or to improve his equipment. So far I have dealt with legal restrictions. The State can also enter the market on its own account as a buyer and seller. This form of State enterprise is fairly comprehensive in its scope. Like the laws themselves, these business transactions are aimed at absorbing the farming units which are too small, so as to amalgamate them into units which are both socially and economically more adequate.

A code of laws of this character has, of course, both advantages and disadvantages. Some maintain that it hinders unnecessarily the adaptation of farming to economic and technical needs and so should be repealed. Others think that, without this law, agricultural land would be in danger of becoming an object of speculation and that too much of it would be taken out of the hands of the agricultural population.

Be that as it may, a majority of members of Parliament were prepared to agree in 1945 that a 'free for all' in agricultural land sales and purchases was dangerous, and this spring they extended the period of validity of the original law until 1962.

W. E. CAVE, *Marlborough, Wiltshire, England*

I do not agree with Dr. Horring and Mr. Dixey that the tenant farmer is as well placed as the owner-occupier to take advantage of

technical progress. I do agree with a great deal of what Mr. Dixey has said, but I draw a different conclusion. I do not agree that, generally speaking, the owner-occupied land is less well cultivated than the tenant farmer's land but, of course, it is possible to find examples on both sides. In Britain we have modified our system of land tenure over a long period, and fairly recently, by the 1947 Act, we have virtually given a life-tenancy to the sitting tenant and have taken practically all powers of control from the landlord. In fact, the Act goes farther. It enables the tenant farmer, after an appeal to the appropriate authority, to carry out improvements against the will of the landlord; and it compels the landlord to pay compensation at the end of the tenancy. This should, and does, give the progressive tenant farmer complete confidence to effect technical change; but with the unprogressive farmer, unfortunately it works the other way. Security of tenure coupled with high prices keeps the inefficient farmer in business and thus prevents technical change. With the middle group, which comprises the great majority, there is a strange reluctance to invest money in fixed equipment on the landlord's property even though compensation will be given at the end of the tenancy. I cannot understand that, but I am quite certain that it is so, not only with regard to agricultural holdings, but with regard to houses and such things.

About 40 per cent. of our farms are owned by the farmers who occupy them and it is on these farms, helped by taxation concessions, that the greatest improvement has taken place in the fixed equipment which is necessary for technical change.

At one period the landlord undoubtedly played a big part in bringing about technical change, and I think it is unfortunate that the 1947 Act makes it almost impossible for him to be an effective force today. I doubt if any system of fixed rents with security of tenure can possibly give the best results. This can be achieved only when the interest of the tenant and the landlord are identical, and where the tenant has every incentive to make good profits—including the fear of being dispossessed if he does not. Also, the landlord should have every incentive to keep a good tenant and get rid of a bad one, together with the ability to do so. The system of share farming as practised in the corn belt of the U.S.A. embodies these requirements. Most British agricultural economists dismiss this system, quoting only the share cropping of the cotton and tobacco States which led to the exploitation of both cultivator and land. But the system has so many advantages that we in Britain, with the urgent necessity for higher production and lower cost, should study it closely.

My own personal experience covers, I think, all the systems of land tenure at present operative in Britain. I am a tenant, an owner-occupier and, in a small way, a landlord letting land for a fixed rent. In my latter capacity I am not at all interested in technical change. In fact, I am against it. You may laugh, but this is so and I will give the reasons. It would involve me in heavy capital expenditure on fixed equipment which would be extremely unremunerative—much less remunerative than industrial investment. On the other hand, as a tenant, I cannot interest my landlord in technical change as this would involve him in unremunerative capital expenditure.

It is only as an owner-occupier, then, that I can adopt desirable technical change, but the realization of my desires is frequently hampered by lack of capital. Share farming closely identifies the interest of the farmer and the landowner in maximizing farm profit, and this must induce the landowner to select progressive and hard-working tenants. He is also much more likely to invest capital if he can see that it will result in a greater return from the whole farm. There are several other advantages; I will mention only a few. The first is the ability of the landlord to influence general policy and thus prevent over-cropping. Secondly, share farming enables the tenant to start with a much smaller amount of capital; and thirdly and—I am not sure that this is not the most important—it very materially increases the mobility of the farmer, allowing him to move from a smaller to a larger farm and then, in old age, to a smaller farm again.

Not all land in Britain is privately owned. There is a considerable area of common grazing land of which the grazing rights are enjoyed by tenants of other land. This system considerably impedes technical change, as improvement cannot be carried out without the consent and usually the participation of all the commoners. This is most difficult to obtain. When I took over a farm with common grazing rights, for example, I refused to take over a number of ponies, as it seemed to me they gave a very poor return from the grazing. The result was that for a short time my part of the hill was free of ponies, but within six months about the same number had come in from adjoining graziers and so I was back where I started from. Or again, on the hills many lambs are born too early in the year when the weather is bad and the grazing scarce. It therefore seemed to me sensible to mate the sheep later, but I was unable to do it, for if I did not turn my rams out the neighbouring rams came in and forestalled them.

I therefore think that the landlord and tenant system as operated in

Britain does hamper technical change, but not so seriously as the more primitive system of common grazing.

D. R. BERGMANN, *Institut National Agronomique, Paris, France*

Professor Bandini did not have time to consider the advantages and disadvantages of clustered and scattered dwellings. Is it better to have isolated farms with their land about the farmstead, or farms whose buildings are grouped in a village with the fields around the village?

In Hungary and in the south of Italy, for example, there are veritable farm towns which group together several thousands of farms. The farmers have to go great distances to work in their fields. The system has great disadvantages compared with the scattered farmsteads found in Scandinavia. However, the use of tractors and rubber-wheeled vehicles sometimes counteracts some of the disadvantages of clustered dwellings. With modern methods it is possible to imagine efficiently organized small agricultural villages. The grouping of farms reduces the cost of bringing electricity and water, and it often lessens rigidity in the size of farms. When the family labour force increases, it is usually possible for a few extra fields to be rented. Further—and this point seems essential—with the grouping of farms in villages, the concentration of enterprises can be more easily achieved than with scattered farmsteads.

On the other hand, for taking cows to pasture, isolated farms are more convenient, and the movement of farmers from one farm to another compensates to some extent for rigidity in the size of each production unit. In the Netherlands, when the north-east polder was created, the planning specialists tried, while establishing isolated farms, to provide for some flexibility in distributing the fields.

I should not like to conclude dogmatically in favour of either method. But, by and large, I do not think we have seen the end of new situations created by technical progress. It is important, therefore, to avoid making structures too rigid. More precisely, I am not convinced that the 'small family farm', which has so often been extolled here, can always compete against large-scale enterprises. If consideration were being given to a system of co-operative production, the presence of scattered farmsteads would complicate the problem even more.

The subject needs more treatment than I can give it here. I can only indicate that I do not share the general optimism.

JOSEPH ACKERMAN, *Farm Foundation, Chicago, U.S.A.*

I will confine my remarks mainly to some of the problems associated with tenant farming, particularly with respect to soil conservation.

A study of obstacles to conservation on Midwestern farms, which was made by the North Central Farm Management and Land Tenure Research Committees, indicates that while both owner-operators and tenant-operators have neglected soil conservation, tenant-operators make more exploitive use of land than owner-operators do, except on farms where the tenant and landowner are related. Both owners and tenants have failed to adopt soil-conservation measures because of reluctance to change methods of farming and because of lack of information. Also, many operators do not have funds for conservation measures, some of which require a substantial outlay of capital. Even operators who have funds often do not invest in soil-conservation measures because returns from such investments are not realized for some time, and they desire high current incomes.

In order to understand why tenants have taken less interest than owners in soil conservation, an effort has been made to determine the costs and returns of soil-conservation systems to tenants and landlords. Studies show that the income of both the tenant and the landlord is increased by shifting from soil-exploitive to soil-conserving farming systems. Also, the findings indicate that the income of both is greater under a soil-conserving system with livestock than without livestock. However, with a system including livestock, the tenant's income increases more under a crop-share lease than under a livestock-share lease, and conversely the landlord's income increases more under a livestock-share lease than under a crop-share lease. This is due to the fact that under a crop-share lease the tenant receives the total income from the forage-consuming livestock, while under a livestock-share lease he shares this income equally with the landlord.

Some of the modifications needed in tenure arrangements to remove obstacles and facilitate shifts to soil-conserving systems of farming are: (1) an increase in the term of the lease to provide security of tenure for the tenant, thus encouraging him to carry out a conservation plan and enabling him to receive the benefit from it; (2) provisions for compensating the tenant for portions of the resources that are unexhausted at the termination of the lease, to encourage the tenant to invest in fertilizer and other semi-durable resources; (3) provisions for sharing of costs in the same proportions as income, so that both the landlord and the tenant will be interested in attaining

optimum production. Also, to encourage the landlord to invest in permanent improvements such as terraces, structures, tiling, &c., provision might be made for him to collect improvement rent, cash rent, or an increased share of the product.

In considering ways to make improvements the United States has often looked to Great Britain for precedents, but I understand that Mr. Cave, of Great Britain, believes some of the United States practices offer real possibilities. Many times the pastures on the other side of the fence only appear greener, but actually we can all profit from each other's experiences.