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APPROPRIATE SIZE AND LOCATION OF RURAL DEVELOPMENT AREAS

COUNTRY EXPERIENCES

(1) ITALY

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THE considerations with which I shall deal derive directly from the condition of agriculture in Italy, but they pose problems and indicate solutions which have a common interest for all countries. The example provided by Italian agriculture is of special interest for the following reasons: (a) Italy is a country characterized by profound territorial imbalances which are due to some complicated reasons of an historical rather than a geographical nature. The imbalance which dominates the general situation is that between the north and the south, but the phenomenon is by no means confined to this division. Clear manifestation of it exists within the northern areas, and within those of the south. These disparities occur between agricultural and industrial areas and between the plains and the mountain areas, and so on. More recently, one of the factors contributing to this lack of economic equilibrium has become considerably more important than it was formerly, the factor of markets and lines of communication. (b) During the past ten or twelve years the remarkable industrial development which has occurred in Italy has brought about a reduction in the agricultural labour force from 41 to 25 per cent. of the total, whilst the agricultural proportion of the gross national product has fallen during the same period from 27 to 16 per cent. In absolute terms, the agricultural labour force decreased at the rate of 2.2 per cent. per annum; the number of male agricultural workers fell from 6,068,000 in 1951 to 3,608,000 in 1963. (c) A mass migration of labour from the south to the north has taken place, mainly into industry. Employment outside the agricultural industry rose in the twelve-year period by 3,130,000 in central and northern Italy, and by 800,000 in the south. (d) There have been some profound changes in the structure of Italian agriculture. There has been an outstanding increase in fruit and vegetable growing, from 22 to 30 per cent. of total production. The number of tractors has

risen from 45,000 to 380,000; and there has been an appreciable increase in the number of family farms. (e) It is highly probable that these trends will continue in the near future, with fluctuations here and there. (f) Similarly, the trend in demand for agricultural products has followed the well-established pattern, with increased demand for higher quality produce such as meat, sugar, vegetables, fruit, and dairy produce, and a falling away in demand for basic products such as wheat, potatoes, and beans.

These phenomena, together with many others, suggest that Italy offers one of the more important fields for agricultural research, providing examples of economic development which are of great interest to all. The considerations that I shall develop, accompanied by a few essential statistics, emerge from an historical and evolutionary review of the radical change that is now occurring. In Italy, as elsewhere, there is no lack of attempts at a mathematical evaluation of the process of economic growth; and there is no doubt of the value of such attempts, provided they are properly interpreted and critically examined, and not just automatically adopted. Economic growth, in its historical entirety, cannot be reduced to purely mathematical terms, which tend to over-simplify any given situation and which do not permit the understanding of the problems as a whole.

The Fundamental Nature of the Problem

The persistence of imbalances of various origins and descriptions within the development of the national economy is of particular concern to agriculture. Indeed, it is this sector of the economy that provides the most important examples of such disparities, either considered as a whole or in terms of its many depressed areas or from the standpoint of agricultural wages. These imbalances, which fall within the usual categories of sector, of area, and of social implication, are worthy of some analysis. A study of the situation reveals two fundamental factors. The first is that the difference in the level of production between the various agricultural areas is extremely great. If the net unitary product is taken as the basis for comparison, profound differences can be noted; for example, between extensive pastoral agriculture and that of intensive cultivation, whether arboriculture or irrigated.

These differences for the most part are logical. That is to say, they are due to the fact that in one particular case a better financial yield may be obtained from pastoral agriculture and in another intensive cultivation will be more profitable. The differences are not a defect of

the agricultural system, but rather one of its characteristics. In the conditions of a balanced economy, the reward to the producer, either in interest or wages, should be the same, even in different areas. Obviously, this equalization is determined by the fact that in the areas of extensive agriculture only modest amounts of capital are employed and, therefore, given the factor of decreasing productivity, the financial return is levelled up to the higher yield which was formerly obtained. As regards wages, it is the compensatory effect arising from the scarcity of agricultural labour that theoretically makes possible the achievement of parity. This argument can be applied conversely to those areas where there is a high unitary yield. Economic theory, therefore, does not admit any judgement of superiority as between extensive and intensive agriculture, and considers it a major error to describe the former as poor, primitive, and backward and the latter as rich, well-developed, and advanced. If we pass from the statement of elementary economic theory to an examination of the actual situation, we observe the persistence of profound differences of another kind—differences that find no justification at all in the purely economic argument that has just been expounded. These differences are often the consequence of historical factors which have prevented, whether for centuries or for months, the achievement of the desired equilibrium. In such cases, and only in such cases, may one speak of territorial imbalances.

By way of example of some of the more important historical factors which contribute to this lack of balance let us consider the following points. (*a*) There are causes arising from economic restrictions, from unorganized markets, from excessive nationalism or protectionism, from the transitory upsets arising from competition, and from private monopoly. The influence of such factors can be eliminated relatively quickly by sound economic policy and improved international co-operation. (*b*) Then there are factors resulting from excessive agricultural population, owing either to original overpopulation or to a higher birth-rate or a falling mortality rate, as well as to the difficulty of moving the labour force, either into other occupations or into other agricultural areas. It is clear, in this case, that the lack of balance can be eliminated in two ways: either by reducing the population by means of emigration or birth control, or by intensifying cultivation, as well as by the full utilization of unemployed or underemployed labour. (*c*) Finally, there are imbalances of a specifically agricultural nature, legacies of the past, resulting from under-investment in the land. The investment concerned takes various forms: roads, public supplies of water and power, irrigation

systems, plantations, &c. Even when such investment has been made it has generally been done badly; for example, wrongly planned land reclamation, structures based on independent activity, and a lack of co-ordination in public intervention. The persistence of an un-economic system of land tenure, of latifundia and minifundia, the lack of organizing ability and of skilled workers, artificial distortions created by government policy, finance or savings applied to low-productive purposes, the general absence of a sense of security. All these are examples of the causes of the lack of equilibrium, and Italy can provide an abundance of such examples. These are the causes of territorial imbalances, and of their artificial prolongation.

The second fundamental fact is the place of agriculture in the economy as a whole. The relative major or minor importance of agriculture is not in fact an indicator of the existing imbalance, but rather a manifestation of clearly definable economic factors. The fact that agriculture carries relatively little weight in the economy of the province of Turin, for example (roughly equal to that obtaining in England), or that in the province of Caltanissetta agriculture is relatively equal in economic importance to that obtaining in India, is not of itself an expression of a lack of equilibrium. Similar differences are to be found not only within the limits of the province of Turin itself, between land under extensive cultivation and that under intensive cultivation, but also within the limits of any district of that province.

Agricultural and Non-Agricultural Incomes

The considerations so far examined allow a better understanding of the problem of the difference between agricultural incomes and those in the other productive sectors of the economy. This is often due to an inadequate adaptation of the available labour force to the economic conditions of the various areas. In times of rapid economic change these disparities become increasingly evident.

The disposition of labour within the agricultural industry is, however, very much inhibited by the many factors resulting from the immobility of rural populations. This is an immobility that derives not so much from psychological reasons as, for example, from the difficulty of adapting the specific skills of the agricultural worker to other employment. There are difficulties associated with social immobility and the acceptance of a different way of life and with considerations of temperament, &c. The effect of these influences varies according to the kind of community; in the older established communities they are very much stronger. As a result, the lower

prices obtained by the output create a situation in which the reduced incentive to engage in agriculture becomes chronic.

The phenomenon of under-payment of agricultural labour in the industrialized countries since the beginning of the nineteenth century has been chronic in nature. It cannot be maintained that differences in economic structure or technical development are the explanation. Conditions of continuous over-production could justify the flight from the land, or the movement of population or the persistence of sub-marginal farming. But such conditions, at least since the end of last century, cannot be said to apply either to the industrial countries or to the predominantly agricultural countries. A close correlation exists between the size of the rural population and the general level of prosperity. As prosperity increases, the proportion of rural population decreases. Modern evolutionary processes, which bring about a reduction of rural population and the creation of efficient industrial complexes, have produced results that are clear for all to observe. But it would be as fallacious as it is an over-simplification to draw the conclusion that the only way to promote the prosperity of people is by the immobilization of the agricultural population, concentrating all effort and resources on industrial development or on tertiary activities. The fact is that the agricultural and industrial structures of all national economies have been determined by very precise situations, and often there are deep-rooted historical reasons that must be taken into account in order to interpret those situations.

In the same way that there is a certain logic in the structure of agriculture, so there is a logic in the structure of the overall economy. The present situation can be interpreted by attempting first of all to understand the root causes and by identifying evolutionary trends, with the object of preparing the way ahead. But it is not safe to presume that the enforced industrialization of a rural community would rapidly resolve its problems. On the contrary, it is probable that the effort of creating an artificial industrial system, unable to stand on its own feet, would result in the worsening of the general situation.

Agricultural Development in the Various Areas

Within the overall framework of Italian agriculture we can identify areas which are progressing and those which remain static. In making this preliminary distinction it is essential to understand the prime importance of an economy which is directed towards the market, both internal and external. Generally speaking, those areas in a favourable position as regards the consumer markets are at

present in a phase of expansion. Already the influences are visible of improved rail communications, which are progressing slowly, of road communications, where the prospects for future progress are favourable, and of shipping services, which are also making appreciable headway. The physical distance of the areas of cultivation from the markets is therefore relatively less important than it was at one time.

The areas of economic expansion are situated mainly in the Po valley, along the Adriatic coast from Ravenna to Puglia, along the Ionian coast from Metaponto to Reggio, along the Tyrrhenian coast from Liguria to Campagna, in the coastal districts of Sicily, especially to the east, and in the Sardinian *campidani*. Also of some importance in this connexion are the Arno and Chiana valleys and the roman Campagna. The expanding areas include those already distinguished by intensive cultivation, often established for some considerable time. In these areas agriculture has changed, and is changing, at a rapid rate, as in the cases, for example, of the large fruit-growing areas of Emilia, Verona, Alto Adige, and Piedmont. Then there are the flower-growing areas of Liguria and the traditional horticultural districts of the Marche, Tuscany, and the Naples area. But in many of the areas intensive cultivation is of recent origin, or the process of intensification is still in progress, and the completion of this development will bring about important results, the indications of which are already evident. Included in this group of areas are several in which land reclamation is being carried out, especially where irrigation can be introduced. This is the case in several districts of the pre-Alpine belt, in Upper Novara, the Garda area, and Upper Veneto, and also in the Adriatic land reclamation area from Friuli to Ravenna. The area associated with the construction of the Emiliano-Romagnolo canal and almost all the Adriatic valleys fall within this category. Then there are the 450,000 hectares which are being irrigated in the south, in the areas of the Garigliano, Volturno, Venafro, Sele, S. Eufemia, Tavoliere of Foggia, Ofanto, Metaponto, the plain of Catania, the Campidano of Oristano, and Sulcis, among others. Finally there is the roman Campagna and those areas where land reform has been carried out—the coastal districts of Maremma, in Puglia, on the Sele, Sibari, &c.—where the first phases of colonization are beginning to provide clear evidence of an impetus to the economy in general.

The distinction which has been made is of great importance, since in the first, that is well-established, group of areas, agricultural expansion is occurring by means of radical changes and always with

an intensification of production, but without creating centres which attract large labour forces; on the contrary, the process is sometimes accompanied by a drift from the land. In the second group, however, centres are being created which attract agricultural populations from nearby, especially from the higher hill and mountain areas.

We must now consider those areas of intensive cultivation where there is a trend towards less-intensive cultivation, or which present fundamental and obscure problems of transformation, as a result of the flight from the land. Examples of this situation are to be found in the Piedmont wine-growing areas of Monferrato and Langhe, and in the livestock areas of the upper plainlands of Cuneo, in the pre-Alpine hills of Lombardy and Veneto, and in the Emilian hills. A similar development is occurring in the south along the Amalfi coast, in the Gargano, on the slopes of Etna and in the Abruzzi valleys. But the phenomenon is much more striking in the areas where share-cropping predominates, in Tuscany, Umbria, the Abruzzi hills, and Veneto. In these areas, the flight from the land is particularly marked, whilst the problems associated with transformation are rendered more difficult by the existing land-tenure system. Currently there is some substitution of share-cropping with owner-cultivation or with the creation of managed farms by means of the amalgamation of a group of farms, leading to farming on a larger scale. In the better hill areas this development does not greatly alter the habitual type of agriculture, such as cereals, wine, olives, and cattle; but in the higher hills, or in the lower mountain areas, where there was perhaps too much intensive cultivation in the past, a trend is emerging towards a different kind of agriculture, with an expansion first of pasture land and then of afforestation and extensive cattle breeding. A similar tendency can be observed in several southern hill areas, such as Avellino, Benevento, and Campobasso.

Now let us consider the static areas, where development is relatively at a standstill. Here the traditional systems are maintained, without any outstanding variations in production, but always with a steadily decreasing labour force, which is often underemployed. This group includes a wide variety of areas: the Alps and higher Appennines, for example, and the traditional horticultural and fruit-growing areas of the south and the islands.

Finally, there are the classic grain-growing areas, more or less of the *latifundia* type. Here the trend in cultivation is increasingly towards extensive cereal production with the use of machinery which, although profitable, renders a low unitary yield. Medium-scale mechanized farming is also tending to increase. Elsewhere, pastoral

agriculture is following the same pattern of development, as in Sardinia, for example.

To sum up, any discussion of the developments in Italian agriculture should be related to the following analysis:

<i>Type of area</i>	<i>Principal areas</i>	<i>State of labour force</i>
Traditional development	Fruit, horticulture, livestock	Limited drift or no change
New development	Irrigated, colonization	Increase
Static	Wine-growing hills, share-cropping	Flight from land
Decreasing production	Alpine and Appenine mountains, Southern cereal-growing and pastoral	Strong flight from land

This simplified analysis enables a better understanding of the nature of the flight from the land, or more generally, of the movement of the agricultural population. At first, the drift from the land originated in the south, with a movement towards several central and northern areas which were experiencing a shortage of labour. The Sicilians moved to Tuscany or the Marche, and the Calabrese to Liguria for flower-growing. This was followed by a considerable movement from Veneto to the Piedmont hills, accentuated by the attraction of labour into industry. Finally, there was a movement from the overcrowded eastern coastal areas of Foggia and Bari towards Romagna and Emilia. These movements, which were initially quite considerable, later developed into a mass migration towards the industrial areas of the north, into the industrial triangle of Milan, Turin, and Genoa, and to the area of Ravenna. Between 1951 and 1963 about 1,800,000 were concerned in this long-range emigration. A large reserve of labour has been the key to industrial growth in Italy. Apart from this, some appreciable shorter-range emigration took place, often within the geographical limits of the southern and central areas. In very general terms the migration can be described as a movement of the population to lower altitudes and always nearer to the lines of communication. The population of the valleys increases, whilst the hills above become depopulated, and the labour force is attracted either to industry in central Italy, in Tuscany, Umbria, and the Marche, or to the newly created industries in the south, or to the cities such as Rome, Naples, Bari, and Catania, but also to a considerable extent to the expanding agricultural areas. These trends have reduced the phenomenon of migration to marginal proportions, which are counter-balanced by the repatriation of skilled industrial or agricultural workers.

The picture is therefore complex. When considered as a whole it reveals two fundamental features, so far as agriculture is concerned,

- (a) The accentuation of the difference between high production agricultural areas (irrigated, plantation, and plainlands) and low production areas (extensive cereal-growing and mountain areas).
(b) The reduction of the difference between *per caput* incomes owing to the compensatory effect resulting from the movement of labour.

Areas more Susceptible of Development

We have thus arrived at some fundamental clarifications of the problem. The imbalances, basically of an historical and economic nature, are becoming attenuated by current economic trends and increased efficiency deriving from economic integration made possible by modern communications and contacts. Public action and government intervention can do much to assist this. In the first place, they can aid the improvement of the system of land tenure, so as to avoid the basic causes of the persistence of these imbalances. The principal forms of this intervention should be communications, public services, vocational training, power, utilization and control of water, housing, and social assistance. It is unnecessary to attempt to demonstrate the importance of such intervention. In the second place, the process of the economic development of rural land should not be based on an increase in the value of agricultural produce. Instead, an improved economic system of production must be evolved, and this can be achieved, in the various areas, in a number of ways: (a) By an increase in production proportionately higher than the increase in the labour force involved. (b) By a reduction in surplus labour, with production remaining steady. (c) By a reduction in production proportionately less than the reduction in the labour force involved. (d) By an increase in the productivity of labour, through mechanization, technical methods, increased skills, &c., with the labour force remaining steady. (e) By an improved agricultural structure with a more economic co-ordination of all the factors of production.

This analysis could be further developed.

What we have just said could bring us to an apparently strange conclusion. If instead of understanding economic development as meaning an increase in production (which is what we understand it to mean), we take it to mean a more economic system of production, that is to say one of lower unit costs, it would follow that the problem is not one of choice of particular areas for development, but rather the choice of the type of development most suited to each particular area. In other words, there is a reason and justification for

intervention in every area. No area should be abandoned or excluded from consideration because it presents no problems, and no area should be the subject of special attention because there are indeed problems. For all areas the object should be to select the best form of intervention.

The strangeness of this conclusion is dispelled when it is considered that, with the argument that we have just developed, there will be areas where a considerable amount of intervention is required, whilst others will require little, or will be able to find from their own resources the means for adaptation to the changed situation. It is in the light of this distinction, of a qualitative more than an absolute character, that we can arrive at some conclusions applicable to the situation in Italy.

These are some conclusions drawn from an examination of the more important agricultural districts of Italy together with an attempt at defining their position within the framework of the development of Italian agriculture.

Alpine and Apennine mountain areas. The fairly extensive depopulation in these areas gives rise to the kind of development that we have described as static, accompanied by a reduction in the labour force. Production is therefore directed towards a major expansion of pasture and meadow lands, afforestation, and some specialization in livestock (beef and dairy cattle in the north and sheep in the southern Apennines). Public intervention is considerable when looked at as a whole, but spreads very thinly over such a vast area. The size of family farms will increase as a logical consequence of these conditions.

Irrigated Lombardy plain. Development here follows the lines of a further intensification of beef and dairy cattle farming. No great changes are foreseen either in the structure of the farms or in the type of activity. Here development takes the form of an increase in production accompanied by an unchanged or slightly reduced labour force.

Family farming in Veneto and Emilia. The trend of larger-scale family farming is expected to continue in these areas, accompanied by a reduction in the labour force. Development falls into the category of a slight increase in production, together with a reduction in the labour force and an improvement in the technical co-ordination of production.

Fruit-growing in Emilia and Veneto. Development here is marked by a large expansion of fruit production (apples and pears), of importance also for export markets. It takes the form of a large increase in the value of production, accompanied by a labour force that remains

steady and the wider employment of technical resources, especially machinery. The completion of the important irrigation work to the south of the Po, the Emiliano-Romagnolo canal, will bring about the addition of 500,000 acres to the area already undergoing transformation and the intensification of meat livestock farming as well as of fruit production.

Share-cropping in the central Italian hills. Development in these areas comes into the category defined as static, and in some cases of reduced production, accompanied by a proportionately larger decrease in the labour force. The size of family farms tends to increase, whilst in the valleys and the limited irrigated areas, owner-cultivation is increasing, but with a different type of agriculture, characterized by an important increase in production with an unchanged or slightly larger labour force.

Southern irrigated areas. In the agricultural areas of the south, where important irrigation projects are under way, affecting 1,100,000 acres, development takes the form of a considerably higher output accompanied by an increase in the labour force.

Extensive cereal-growing areas of the south. Here the outstanding reduction in the labour force tends to bring about the growth of medium-scale farming, of between 300 and 1,000 acres, mainly producing wheat with the aid of machinery. There is also a reduction in the number of small rented family farms. Development therefore comes into the static category, accompanied by a reduction in the labour force.

These are some of the more important examples. It would be possible to give others, but these are sufficiently representative for our purposes. They enable us now to provide a better reply to the question concerning the location of the areas for development, in order of importance according to degree of intensity, and therefore of cost, of the transformation which is in progress.

First of all come the southern irrigated areas, the less extensive irrigated valleys of central Italy and the fruit-growing areas of the Po valley. These comprise in all about 1,800,000 acres, destined for substantial change and increased production together with a relatively smaller increase in the amount of labour employed. Agricultural development in these areas involves important problems of planning, of the reorganization of the system of land tenure, of an increase in the size of the farms, of the development of the processing industries and of transport, &c. These are the areas for major development, both in absolute and relative terms. Next come the areas where family farming, including share-cropping, predominates, marked by

a slower and less intensive transformation, not always accompanied by static production, together with the need for revision of the type of farming, and for mechanization and co-operation, according to the requirements of the structure of agriculture in these areas. It is estimated that this group of areas accounts for about twelve million acres. All other areas come into the category of less radical change, with no great transformation in structure.

This, in very general terms, appears to be the picture of the development of agriculture in Italy. It involves the solution of a great many other problems, especially those associated with international markets and, in particular, those of the European Common Market and with the place of agriculture in an economic system which is predominantly industrial.

(2) SWEDEN

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IN common with other industrial nations, Sweden strongly differs from the developing countries as regards the preconditions for economic planning. This must be emphasized at the outset, because the differences are so great that the subject of this paper must be dealt with in quite dissimilar ways as between an industrial and a developing country.

In countries with a low degree of industrialization, the division of labour is not carried very far. Most of the work essential to the national economy is performed either in agriculture or in closely related pursuits. Capital is short, and most jobs are done manually. There is a plentiful supply of cheap labour. Considering the relative costs of labour and capital, there is little incentive to mechanize on any large scale. As a rule, resources are not available to permit a development scheme to embrace the whole country; it must therefore be confined to selected districts. The preconditions existing in *highly industrialized societies* are quite different. Labour fetches a high price, but capital is relatively cheap. As a result the ratio of labour to capital input contrasts markedly with that in the developing countries. Particularly, in so far as agriculture is concerned, a good supply of fairly inexpensive capital equipment engenders production increases which usually tend to outstrip increases in consumer demand. This

¹ Read by H. Astrand.

depresses prices and profits, which in normal circumstances would cause a shift of manpower to more profitable industries. Owing to the sluggishness of agriculture, however, this shift proceeds at a relatively slow pace.

With depressed rural industries and a declining population as our background, we shall proceed to outline rural development problems. A point to remember is that Swedish schemes for promoting growth in rural areas are usually nation-wide. For this reason, we cannot really restrict ourselves to examining the appropriate size and location of rural development areas. The tendency is for growth-promoting measures to concern the whole economy within specified regions including built-up areas, and not rural areas alone. Moreover, the measures applied tend to differ according to the specific conditions which prevail in each geographic area. Therefore, our description will apply to urban and rural planning in equal measure, as a strict separation between the two is difficult, if not impossible.

Objectives of Urban Planning in Sweden

The community at large sponsors growth programmes in order to promote the optimal utilization of available means of production, to maximize national income, to provide full employment, and to shape the public environment in a way which assures everybody, to the greatest possible extent, an equivalent level as regards social and cultural services.

It has been found most practical in Sweden to have the greater part of production conducted under private auspices. In other respects, it can be said that equilibrium is maintained between public and private enterprise. By and large, the commitments of the central Government are limited to certain nation-wide services. The Government's role as a producer of goods is negligible. However, there are a few governmental industrial undertakings, such as Norrbottens Järnverk (steel mill) and Statens Skogsindustrier (forest products). These undertakings are started in order to stimulate business and provide jobs in areas where full employment is difficult to attain. Most of the *direct* influence on production growth has hitherto been exerted by private enterprise. In consequence, the economic motives for plant location in one locality or another are dictated primarily by the cost structure of private companies.

The costs of these companies do not include public services, transport to and from work, the inconveniences of long commuting journeys, &c. Because these factors have not had any appreciable influence on plant location, a costly expansion of the larger population

centres has become necessary, while important rural investments in housing, enlarged service facilities, &c., have become partially superfluous. The economic consequences of this have not been adequately explained. Heavy migration of labour in recent years has also incurred moving expenses and, in some cases, dissatisfaction with the new environment. This last factor, as well as others that do not lend themselves to direct economic measurement, is very hard to assess. However, these circumstances are by no means peculiar to Sweden.

To sum up, it is primarily left to private enterprise in Sweden to see that available means of production are optimally utilized, although the community is assuming increasing responsibility for shaping the public environment in which the business community operates. As the trend in Sweden towards an ever more specialized division of labour has continued, the public services have become much more important. Among these are: (a) Planning for land use and house building, including the provision of water supply, drainage, roads and highways, &c.; (b) Communications; (c) Education; (d) Medical care; (e) Postal, telephone, and telegraph services; (f) Other public services.

Public services become very expensive to maintain when the population in an area falls considerably. This may not have received sufficient attention. In the rural areas, at any rate, the decline in population is a burden on the organization of services. In urban areas planning for land use and house building is usually governed by development and building regulations concerning roads, water supply, drainage, &c. Roads play an important role for industrial growth, and in a sparsely populated country like Sweden demand great attention. Every three years a master plan is drawn up which outlines road and highway development for the ensuing five years. The railways have become increasingly less important for short hauls. In the educational sphere, recent years have witnessed a rapid expansion, presenting local authorities with considerable problems. Compulsory school attendance has been prolonged to nine years. Vocational training is also expanding rapidly. The final years at compulsory school allow for some specialized instruction. To provide this specialisation in the school classes at a reasonable cost, requires a population of at least 7,500 persons. This figure is also considered a minimum for purposes of co-operation between local governments, discussed in greater detail below. Certain public services, such as medical care and a police force, require an even greater population. The best arrangements for these services, however, are considered to be made by county and national authorities.

Measures to Promote Growth in Sweden

Historical background. The design of schemes for economic growth, and the way in which this growth later occurs in practice, depend on the technical and economic environment prevailing at the time. First of all, the technical conditions must be fulfilled. But this by itself is not enough. Motives for exploiting economically a known technique must also be present. An obvious example is the mechanization of agriculture. Technical innovations did not come into widespread use until higher wages altered the relative price of labour to capital.

Schemes to promote the growth of private industry are of long standing in Sweden, dating back several centuries. As early as the seventeenth century, for example, the immigration of skilled workmen from Belgium and other countries was encouraged to help develop the mining industry. In the eighteenth century the Government gave considerable support to the textile and hardware industries.

The means adopted to make agriculture more efficient was to repartition land so as to eliminate scattered holdings. In addition, the old compact peasant villages were broken up when homesteads were located on the arable land of holdings. At the beginning of the nineteenth century, country agricultural societies were formed by private initiative to promote the growth of farming by giving information and advice. In order to cope with the problems caused by a rising population and the shortage of job opportunities from the latter half of the nineteenth century up to the 1930's, the rural resettlement or so-called home ownership movement arose. This fostered the formation of small holdings in two ways: first, by the division of independent holdings into smaller units; and second, by the formation of new holdings on suitable virgin land. There was also some regional planning, for example, in forested areas. In the ironworks areas in central Sweden the forests were divided into districts for delivering charcoal to a specified ironworks.

Present-day promotion of industrial growth. Action programmes to promote the growth of private enterprise exist in fact only in the agricultural sphere. One of the main reasons for this, as already mentioned, is the tendency in industrial nations for agricultural production to outstrip consumer demand. In addition, the pattern of farm holdings has been unfavourable owing to technical advances. The units are too small, depressing profitability even further.

One objective of the Government's programme for agriculture is to stabilize prices, partly as a protection against the vagaries of the

world market. From 1948, Sweden also has followed a growth-promoting programme which aims at establishing a system of production which takes the new technical conditions into account. This programme, directly conditioned by advances in technology, is the complete opposite of the earlier rural resettlement movement, which was the result of different conditions and led to a continued fragmentation of holdings. The programme, covering the whole of Sweden, aims at: (1) external rationalization, (2) internal rationalization.

External rationalization has to do with the size of individual holdings and, to some extent, the total acreage of arable land. The steadily increasing efficiency of agricultural producers (who in industrial countries must compete for manpower) brings undesirable increases in production. In Sweden, however, it has been possible to neutralize these by taking less suitable land out of cultivation. This external rationalization is effected by the Land Acquisition Act, which regulates the right to acquire farmland. The Government uses this Act to improve the structure of agricultural and woodland holdings. It enables the Government to buy farms when necessary for furthering structural rationalization. The Government has no intention of adding to its land-holdings, but seeks to facilitate sensible consolidations of holdings by reselling to individual farmers. A relatively long period must elapse before this has appreciable effects on agriculture as a whole. However, structural rationalization pays quick dividends to the individual farmer.

The Government encourages *internal rationalization* by supporting both the planning and the execution of measures primarily for more efficient production within the existing framework of holdings.

An official commission of inquiry, appointed in 1960, is currently re-examining government support for agricultural rationalization. It is expected that the inquiry will lead to increased government commitments in structural rationalization because of technical/economic developments. The formation of larger holdings will be encouraged.

Local measures by Government and local authorities. In recent years the county authorities have sponsored important surveys to shed light on the current economic situation and to make forecasts for the next ten or fifteen years. Particular attention has been devoted to the future supply of and demand for labour, and to measures essential for future developments. The forecasts of future labour supplies are intended in particular to show management the location of suitable sites in regard to the supply of labour.

Measures for concentrated rationalization in northern Sweden

have been introduced in recent years. This programme owes its origin to the fact that agriculture in the north increasingly lags behind the rest of the country because of fragmentation of holdings, small units in general, and lack of understanding of the growth potentials of northern agriculture. To prove what a rationally run farm is capable of doing in this part of Sweden, the National Board of Agriculture has concentrated its activities in certain villages, where efforts are made to build up efficient farms of appropriate size. These serve as models for the desired development which indeed is already taking place.

Non-public measures. To exploit the benefits of large-scale operations in forestry, in spite of the obstacles posed by fragmentation of holdings, owners have formed 'joint areas', whose purpose is to introduce common planning, felling, silviculture, &c., in private forests.

Regional planning. In 1963 the National Board of Agriculture published a regional classification of Swedish farms and woodlands, based on local censuses of farms with and without woodland. This dealt in detail with arable land and its prospects of remaining in cultivation with reference to criteria, such as reasonable expectations of yield and the prerequisites for effective mechanization. It is supposed that arable land in use will be reduced by 800,000 hectares from 1956 to 1975. Of this some 250,000 hectares have already been taken out of circulation.

The following main groups are used in the regional classification: (1) farm land areas, (2) mixed land areas, (3) forest land areas.

Generally speaking, the target is to create sufficiently large family-run enterprises. With regard to *farm land areas*, this signifies an estimated reduction of the number of holdings by between 15 and 50 per cent., depending on the location. On the other hand, it is considered undesirable to reduce arable acreage to any substantial extent. With regard to *mixed land areas* of better quality, the target can be larger farms without woodland in certain cases. Otherwise the normal objective in these regions is to form larger farms with woodland. Rationalization means that the number of holdings will have to be reduced by between 30 and 50 per cent. from 1956 to 1975, with less of a reduction in arable land acreage. With regard to *forest land areas*, the objective is to build up primarily forestry operations, and secondarily farms with woodland. Up to 1975 the number of holdings is estimated to drop by between 25 and 75 per cent., the proportion varying according to type of area. A sharp decline in arable land is forecast, with extensive cultivation of the remaining acreage.

Central and local government planning for the economy as a whole. In connexion with the demands which a well-developed system of public services ought to meet today or in the near future, the National Labour Market Board has prepared a regional classification of the country into A, B, and C regions which applies to the whole of the economy. Every C region is built up around an existing population centre and is based on a population of at least 7,500, the minimum necessary for local authorities to provide public services independently. The A and B regions are based on populations of 30,000 and 15,000 respectively.

Examples of the services which require a population as indicated for the three regions are: for C regions, a comprehensive school and old-age care; for B regions, separate retail outlets for different lines of trade, medical services, apothecary, vocational school; for A regions, an academic upper secondary school, a multi-curricular vocational school, a municipal general hospital, and a well differentiated retail trade.

This classification, particularly for the C regions, has taken on great importance as a guide for merging local authority districts, as part of the government policy to encourage the formation of larger units of local government. The C regions may play a key role for the location of industry inasmuch as offices of local government may be established in their respective centres. Factories and housing estates tend to be sited close to seats of local government. Accordingly, the regional classification may serve to localize economic expansion into fewer population centres than before, while some of smaller rural centres will be faced with mounting difficulties.

Programmes of action for rural development must pay special attention to labour market policy. The aim of this policy is to create a high and effective level of employment. This is fostered in part by public works in areas of rising unemployment. In the past few years other measures, such as retraining courses and allowances for moving expenses, have proved very efficacious in transferring workers from areas of surplus labour (where there is housing and a system of public services, though both may be of inferior quality) to areas of labour shortage (but where housing may also be in short supply and public services badly need to be expanded). It is obvious that this development generates problems for rural areas. But it is equally obvious that it helps to solve crises for those not fully employed. At the same time, added difficulties often confront those who stay behind in areas of limited job opportunity. In addition to measures of employment policy, other steps have been

taken for plant-location purposes. For example, restrictions on building have been used to direct the establishment of new businesses or company expansion projects towards certain areas. Credit policy has similarly been used for the same purpose.

Recently an official commission of inquiry into location of industry submitted proposals for stimulating employment in certain parts of the country. This inquiry owes its origins to the already mentioned vigorous growth of cities and towns and decline of rural areas. Urban expansion has led to a severe housing shortage and heavy outlays for new construction. As mentioned earlier, other drawbacks follow in certain cases, such as long journeys between home and workplace, and dissatisfaction with one's environment. On the other hand, rural decline has in some cases threatened the operation of public services and impaired the exploitation of assets in the form of farmland, forest, and an already developed system of public services. Besides, the welfare of older people in such an area must be considered. They should not be compelled to train for new occupations and move to new localities.

The commission of inquiry recommends: (1) establishment of a location agency, and (2) government support of plant location. The agency's function should be to guide developments so that the location of built-up areas, industry, service facilities, &c., proceeds on satisfactory social and economic criteria. This can be achieved in two ways: first, by giving information and advice (for instance, on the availability and price of building land and labour, and the extent of other costs which help to determine plant location); secondly, by the introduction of a government programme for plant location.

The Government should encourage industry to set up plants in areas where sound motivations exist, and where employment opportunities and industrialization are relatively poorly developed. The proposed measures to promote employment will affect 700,000 out of Sweden's total population of 7,600,000. It must be emphasized that the measures described here are still only proposals.

On the subject of restraining the rate of expansion in the Stockholm region, another official commission of inquiry recently published its recommendations on the transfer of government offices to outlying areas. The report names a number of departments which, it is thought, could leave the capital without too great inconvenience. A number of alternative locations are discussed.

Planning under private auspices. Regional planning under private auspices is chiefly the work of producer and consumer co-operatives. These are regional enterprises with a co-ordinating organization at

summit level, representing one or more lines of business. In response to greater demands for efficiency, these regional enterprises tend to extend their areas and to concentrate their internal organization. These tendencies, naturally, lead to increased population in fewer localities and declining employment opportunities in the smaller localities.

As mentioned earlier, public development programmes are shaped with reference to the technical and economic prerequisites. As a rule developments pass through certain phases, and short cuts seem unlikely. Farsighted public planning may shorten the time for a certain phase. An inept economic policy will certainly prolong it.

(3) PERU

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THIS is an attempt at an analysis of the criteria which have determined the distribution and optimum dimensions of agricultural development areas in Peru. But a simple, strictly objective analysis would not give an adequate picture. A critique, equally objective though short, is indispensable. In both analysis and critique we shall first consider the distribution of the areas, rather than their optimum size, in view of the conditions, notably altitude, which have such a marked effect on the character of natural life, and consequently of agriculture. However, the need for clarity and order must lead us to distinguish between general and specific criteria. The distinction is justified by certain criteria which from a wider frame of reference have influenced both the size and the distribution of the agricultural areas. These criteria we shall refer to as general.

General Criteria

These criteria have principally operated—characteristically indeed—to determine the norms of agricultural development as a whole. It is evident that they have not had a particular influence on the development of any one point of our analysis. But it would not be wise to ignore them on that account. Specific and general criteria are so bound up with one another that the effect of the former, is frequently compromised by the latter. I shall hope to demonstrate this. The general criteria are ostensibly four in number.

(1) *The land-population ratio.* For at least twenty-five years it has been affirmed in Peru, first and insistently by Ferrero,¹ that the ratio given by dividing the cultivated area by the number of inhabitants is very low in comparison with other countries. About 2,100,000 hectares and 11,300,000 inhabitants, in 1964, gives a ratio of one-fifth of an hectare a head. Further, this figure has not undergone any appreciable variation in twenty-five years. Gonzalès-Tafur,² however, has drawn attention to the simplification which this figure conceals. He proposes, as an alternative, the inclusion in the cultivated area of areas equivalent to the production of the following utilized natural resources, natural pastures, fisheries, and forests. By this means the figure was raised from 0.2 to 0.7 hectares a head in 1949, a date at which these resources were much less intensely utilized than at present. In spite of this, the alarm initially aroused persists. This is demonstrated, between 1959 and 1963, by Belaunde-Terry,³ Diez-Canseco,⁴ the Banco Central de Reserva del Peru,⁵ and Seoane,⁶ all of whom condemn this ratio as being too low and consequently postulate the urgency of increasing the area under cultivation. It is the present official position of the first and last named,⁷ however, rather than their scientific authority, which is effective. This is shown by the working report, *National Agrarian Policy*, which lays down as its first principle the improvement of the land-population ratio, and proposes, within five years, 'the habilitation of a million new hectares for cultivation'.⁸

(2) *Food Consumption.* Consumption per head per day has been deficient for many years: about 2,000 calories.⁹ The corresponding production is in the region of 2,300.¹⁰ This considerable difference seems to be due, inevitable losses apart, to grave defects in distribution and retailing. The estimated needs, in any case, are of the order of 2,600.¹¹ This is made clear in the report previously referred to on national agrarian policy. This is good news, since formerly official documents and national experts set the figure at 3,200.

¹ Romulo Ferrero, 'Tierra y Hombre en el Perú', *Artículos diversos, 1938-64*, Lima, 1938.

² O. B. Gonzalès-Tafur, *Perú: Poblacion y Agricultura*, Lima, 1951.

³ F. Belaunde-Terry, *La Conquista del Peru por los Peruanos*, Lima, 1959.

⁴ O. Diez-Canseco, *Fe Espaldas al Desarrollo Agrario Peruano*, Lima, 1960.

⁵ Banco Central de Reserva del Peru. *Actividades Productivas*, Lima, 1961.

⁶ Edgardo Seoane, *Surcos de Paz*, Lima, 1963.

⁷ Respectively President and First Vice President of the Republic.

⁸ Ministry of Agriculture, Sectional Office of Agrarian Planning, *Política Agraria Nacional*, Lima, 1964.

⁹ Ministry of Public Health, *La Alimentacion y el Estado de la Nutision en el Peru*, Lima, 1960.

¹⁰ The author's unpublished estimates.

¹¹ F.A.O. Second World Food Survey, Rome, 1963.

(3) *Previous formation of agricultural technical capital.* As a country develops, it industrializes. But industrial investment, throughout the history of the West, rests upon the capital derived from agricultural activity. This system has become general in the countries which are still backward; it is both applied and expounded. Brahmañanda,¹ for example, discussing the experience of India, attempts the exposition of it. But is it applicable in every country seeking the way to development, its way in relation to its social realities and its economic experience? The individual way followed by Peru, perhaps not altogether intentionally, has always been this. It is, too, most definitely the present path, its defence is naturally closely linked with the improvement of the land-population ratio.

(4) *Full employment.* Perhaps only in the last ten years has it sunk into Peruvian consciousness and into the Government that one of their objectives is the full use of the labour force, although, for lack of the most basic statistics, policy in what concerns the utilization of human resources has been imprecise. However, figures derived from the national population census of 1961 are now being prepared.² Let us state the figures.³ In 1964, the rural population is between 49.2 per cent.⁴ and 41.6 per cent.,⁵ depending on definition. The urban population is therefore between 50.8 and 58.4 per cent. The economically active population is 31.5 out of 53 per cent. of working age (15-64 years). It should be noted that of the active population 94 per cent. is masculine. The unemployed population is barely 1.6 per cent. of the economically active population. The under-employed on the other hand, defined as excess economic-potential, form a considerable percentage. This too is a symptom of under-development. More easily determined, urban under-employed amounts to the grave figure of 20.9 per cent. in the commercial sector and 29.5 per cent. in other services. As to agricultural underemployment, only the increase between 1950 and 1961, amounting to 11.3 per cent. is known. This underemployment is of structural origin, and if in Argentina it can be expressed in terms of 218 effective working days per annum, in Chile 210, in Colombia and Ecuador 200, &c., it is reasonable, given the enormous concentration of rural ownership

¹ P. R. Brahmañanda, and others. *The Economic Development of Latin America*, F.E.E., Mexico, 1960.

² Instituto Nacional de Planificación, Dirección de Estadística y Censos. Sexto Censo Nacional de Población, Lima, 1964.

³ Servicio del Empleo y Recursos Humanos. *La Población, los Recursos Humanos y el empleo en el Perú*, Lima, 1964.

⁴ Corresponding to the definition of the census, qualitative rather than quantitative.

⁵ Corresponding to the definition of the Servicio del Empleo y Recursos Humanos, according to which localities of over 2,000 inhabitants cease to be rural.

and the correlative elimination of the small farmers on the other, to suppose that in Peru it amounts to more than 200 days. So, no less than 33 per cent. of our agricultural labour resources are not being utilized. What policy should be adopted? To increase the total cultivated area to absorb the excess of 'necessary' agricultural labour? To absorb even the urban excess? Agrarian reform? In any case, to successive governments the solution has seemed to be linked with the improvement of the land-population ratio and the previous formation of agricultural capital.

Specific Criteria

The analysis of these criteria—much more, than that of the general ones—is closely concerned with geographical facts, physical, economic, and human. This is especially true when the geography is as distinctive as that of Peru. The basis of Peruvian geography is the Andean chain, which divides it into at least three regions, coast, mountain, and forest. The coast, a narrow strip between the sea and the Andes, is desert, but irrigated by swift rivers from the mountains, with up to 35 per cent. of the national population. It is the most developed area both agriculturally and generally. The mountain region lies in the Andes, divided between valleys lying 1,500 to 3,500 metres above sea level, and high plateaux above 3,500 metres. Both sub-regions are watered by seasonal rains and very partially by gravity, with 55 per cent. of the population. The area is predominantly dedicated to food crops and internal trade and is perhaps the most backward. The forest extends to the east of the Andes, comprising over 60 per cent. of the national territory, although occupied by a bare 10 per cent. of the population. It is divided into a high mountain subregion and a low one forming part of the Amazon plain, their topography being respectively broken and undulating. Both have high and virtually permanent rainfall and, as one might expect, vast reserves of timber.

In the coastal region there are about 650,000 hectares under cultivation; in the mountain region, 1,100,000, besides 9,000,000 in natural pasture; in the forest area there are 350,000 under cultivation and over 2,000,000 in woodland. But in the mountains, there are no less than 400,000 lying fallow each year.¹ The dominant agricultural unit is the large estate. Out of 880,000 agricultural units and 18,600,000 hectares of land in total use, rather more than two thousand owners, each with a 1,000 or more hectares, possess 70 per cent. of the land; while

¹ Latest facts supplied by the Statistical Office of Agrarian Planning, Ministry of Agriculture.

800,000 holdings, each with ten hectares or less, make use of only 8 per cent.¹ Fortunately, on the coast these big units have acquired characteristically industrial forms. In contrast, in the mountain region the almost feudal type of great estate dominates. Hence, the high proportion of uncultivated land side by side with the considerable underemployment of human resources. In the forest large, medium, and small exploitations coexist; the former as usual wrongfully keeping an immense majority of their holdings unutilized, and of course disposed to speculation.

In Relation to Distribution

Essentially conditioned by the general criteria concerned, most notably, with production, formation of capital, and full employment, the distribution of rural development areas has been precisely determined by the following specific criteria:

Effective demand. The priority due to effective demand as an objective economic rule is reduced, in our particular circumstances, for lack of adequate information, and of aims which tally with the individual and collective needs of agricultural and general development. Thus, on the one hand, the distribution has been based on superficial investigations rather than on valid analyses of demand. On the other hand, the superior buying power of nations of more highly developed economy has controlled production interests or ended by altering the supply originally orientated towards the internal market. This is the case of the rich coastal valleys which are covered with sugar-cane or cotton, of the high plateaux whose pastures are converted into wool, and of the mountain forest obviously more profitable on account of the coffee it will grow. Also the related case of areas publicly and even privately planned in terms of food production, but gradually taken over by the export economy. And even the case of irrigation or colonization projects, whose cost-profit ratio is justified at present largely by the creation of new plantations. Excepted, of course, is the proven excellence of some particular fruit or dairy product, &c., but this will involve only one or several big holdings, never a whole region. These are general or individual developments, private rather than public in origin, profitable to the owners, and sometimes to the workers. Are they equally profitable to the country? Or favourable to the needs of its development? These questions provide matter for further debate.

Accessibility of markets. This criterion, complementary to the

¹ Instituto Nacional de Planificación, Dirección de Estadística y Censos. Primer Censo Nacional Agropecuario. Principales Resultados obtenidos por Muestreo, Lima, 1964.

preceding one, is most concerned with the distance and means of communication between the production and consumer centres. It supposes an equally effective influence of external and internal markets. Thus, the majority of the coastal valleys have developed much more than the areas of mountain and forest, because of their nearness to the sea and consequent access to the international demand for such products as sugar and cotton. The national demand has been, and continues to be, represented principally by the dominant market of Greater Lima. This is because it not only contains nearly 20 per cent. of the total population, but also has the highest average income per head, and the greatest buying power. The valleys also have an advantage in relation to the great market of the capital, because of their easier access across the longitudinal 'Panamerican' route. The cultivation of potatoes in the area around Lima, a crop traditionally and profusely located in the mountains, is an example of competition both with its Andean equivalent, and with cotton contributing to the apogee of certain areas. If we now consider the mountain and forest regions, each in turn, a similar influence of our dominant market is observable. Apart from the difficult access to both regions caused by the Andean barrier, the first areas to develop and the furthest developed even today, are those nearest to the capital city. The interandean valley of the Mantaro constitutes its source of food. In the mountain region, three or four valleys are developing thanks to Lima if not to international trade. The transverse routes over the Andes and into the forest, the most important being the *centra* from Lima, have opened up these areas. The present Government is vitally interested in the extension of the road network, especially in connexion with the production of the high forest. And now the airways allow of trade in the meat produced, still on a modest scale, in a promising zone in the northern forests.

Adaptability of the climate. If for simplification we define this in terms of temperature and precipitation, we establish easily that the development of coastal agricultural areas has an advantage over that of the mountain and forest regions. For one thing, the temperature on the coast is subject to very little variation. For another, it practically never rains; which is to say, that the region is not threatened by excess rainfall, nor by corresponding droughts. The mountain area, on the other hand, is exposed to frosts, caused by the sharp oscillations in temperature between day and night, as well as suffering periodically from drought or floods. The forest region is restricted only where very heavy rainfall prevents intensive cultivation, as in great tracts of the Amazon plain, evidently best suited to forestry.

In spite of these facts, the climate has not been a factor of prime importance. In fact, Peru is an agricultural paradise by the variety of its climates. The problem is that of determining in some cases, and creating by genetic means in others, the species capable of giving the highest and best quality yields in each ecological area, on the basis of a plan of economic distribution of the products, modified in accordance with the needs of development.

Availability of irrigation water. Irrigation, because of its regularity and reliability is preferable to rainfall. This has been the case on the Peruvian coast. There the use of Inca and pre-Inca irrigation channels, supplemented by some contemporary works, have had the effect, in conjunction with the previous criteria, of determining the localization of the most important development areas. The high cost of irrigation, however, recently demonstrated in the work of irrigating and colonizing San Lorenzo in the north, may and perhaps should determine that in future it will be the availability of rain-water which most economically and rationally permits the agricultural development required and allowed by the general development of the country.

Suitability of soil. Much has been said of the superiority, fertility, and depth of the alluvial soils of the coastal valleys, whose influence has undoubtedly surpassed that of the preceding criteria. But since the edaphological studies, begun systematically and on an adequate scale a few years ago, it is possible to find land similarly suited to agriculture in the mountain and forest areas. It emerges from the present zonal evaluations being carried out by specialized governmental organizations that soil has been and will be, even more strongly, a determining factor.

Topographical considerations. The coastal valleys are practically flat. The mountain area of complex topography makes use of marginal lands for agriculture, although the valleys and high plateaux certainly count upon an apparent relief, showing and still able to achieve higher degrees of development. This is, besides, the official policy with regard to the development of the Andean region, as also to the colonization of the more promising forest areas. In the lower forest there are no problems caused by broken ground, the difficulty is rather that of accessibility and possibly of climate and soil. The rational substitution of lands of high gradient by others of gentler slope, in any case, is not made pressing by the needs of intensive mechanization. The present underemployment of human resources, together with the restriction of capital, both characteristic of under-development, would make this absolutely unjustifiable.

Concentration of production. On the coast, as we have seen, the large-scale exploitation of sugar-cane and cotton plantations is an efficient capitalist enterprise. Demand, accessibility of markets, climate, water, soil, topography, have happily conjoined to attract the powerful investor. The concentration of production duplicates the concentration of ownership. In general, there is adequate use and combination of resources there. Unhappily, the same cannot be said of the distribution of the profits. Wages cannot be called just. Profits and increments do not always contribute, by means of new production of indispensable consumer goods or strategic capital goods, to the best interests of national development. And capital drains, corresponding to investments abroad, are deliberately produced, in the search for larger profits or greater security. At this juncture perhaps I should say that under the influence of the criteria we have examined, what has been produced in the rural areas is rather an economic increase than development in the proper sense of the term. For it has not really brought either general prosperity or the more rational means of production required by any national order or planning for development. In spite of this, the objective efficiency of the concentration of production remains. Also evident is the adverse result of the concentration of ownership, when it is not subjected by the State to the demands of the public interest.

Technological changes. These changes achieved by the concentration of production, are a proof of proper distribution. The principal ones are: the use of improved seed and livestock, fertilization, and control of pests and diseases, as well as the mechanization which has been introduced and become widespread in the coastal valleys. However, from the viewpoint of national development, this has had, and continues to have the adverse effect of adding to the copious waste of human resources.

Mental changes. The concentration of production and technological changes has been possible by reason of a modification of the mental structures of certain sections of the population. On the one hand commercial agricultural concerns have appeared; on the other, agricultural workers, and even small farmers and peasants of the coastal strip, as a result of a more continuous and intense means of information and communication, have assimilated efficient methods and techniques.

Demographic pressure. These must be taken into consideration, not because they have affected the localization of development, but because they are in the process of producing it. This fact is commented upon here for didactic reasons, since demographic pressures, peasants

without land, require the liquidation of the semi-feudal concentration of ownership. The agrarian reform law, recently introduced, gives priority to the zones with the highest peasant population, disproportionate to the availability of land/capital resources. The present Government, in anticipation of the law, put such a priority into effect.

Interregional tension. This point is not concerned with the natural regions which we have discussed so far, but rather with economic regions, although these are not yet precisely defined, and also with political regions, by which we understand the administrative division into departments which, in the main, do not coincide with what may in future be the outline of development areas. Greater Lima and its sphere of influence is probably the only area which may be considered as a region, by the existence of basic industries, 'propelling' industries, to interpret François Perroux. Peru as a monolithic republic, with antiquated political and administrative centralization, has favoured this effect. The provinces, for their part, either have seen their goods and resources flow into the capital instead of enriching themselves, or have languished for lack of potential resources. In either case, the effect has been the same: the generation of inter-regional tensions, demands mostly very well founded, and political pressures. The solution: the establishment by law of development corporations, usually departmental, under state control and, the most important point, with their own substantial incomes. This is how the tensions are now being converted into means of development, and consequently of the development of rural areas.

National security. This, the last criterion we shall consider, has been treated as a weapon and to some extent made use of by recent governments in order to place some areas of agricultural, and even general, development in boundary regions. Economic reinforcement, it is expected, will assure national sovereignty on the frontiers. Undoubtedly, above all other arguments or reasons, the irrigation and colonization of San Lorenzo, amounting to about 40,000 hectares in a zone close to the boundary with Ecuador, which has now begun an openly accelerated course of development, owes much of its justification to this view of what is the public interest. There were, and are, several other projects for the exploitation of land along the Peruvian coast with equal or better ecological and economic conditions. The development of the department of Tacna, both agricultural and general, under the responsibility of a para-statal *corporatio*, is similar. It is an insurance against Chile. For the conquest of the forest, much of which borders on Brazil, the same argument

is adduced, among others. This is not without reason, since in past times Peru has suffered the loss of vast tracts of its Amazon lands, which passed into that nation's hands.

In Relation to Optimum Dimension

Nothing in the studies, evaluations, investigations, or plans reproduced in Peru has any direct bearing on this point. In other words, the determination of the optimum size of the areas of agricultural development has not and does not interest the scientists and technicians, the State or private enterprise. It is another matter that the dimensions of such areas have been defined in accordance with ecological characteristics, and with the physiographic and economic ones. But these dimensions, indeed, are very varied, one might even say extreme. On the coast, valleys with an area of over 50,000 hectares have been developed; but others barely top 5,000 or 10,000. In the mountains, on the other hand, the current working of marginal lands and the irrigation by rainwater make correct estimates more difficult. In the forest the development of agricultural areas is expensive, a matter of progressively reclaiming land by clearing and cultivation, inseparably associated with settling, the whole process constituting colonization. But even so, the natural resources of the region indicate the development of tracts of varying size in accordance with the conditions in the area. In the department of San Martín, for example, there is talk of reclaiming 500,000 hectares—over a period of thirty years, by means of successive five-year plans.¹ On the right bank of the river Apurímac it is a question of 30,000 hectares; 15,000 insufficiently exploited, and 15,000 newly cleared.² The Perené-Satipo-Ene zone comprises nearly 200,000 hectares suitable for cattle-rearing, to be taken into use over twenty years.³

Thus, the optimum size of agricultural development areas in Peru has been determined by specific criteria: (a) *Effective demand*, in relation to buying power, but it must be conditioned by national and individual consumption rather than by the fluctuations of international trade. (b) *Accessibility of markets*. Especially in the mountain and forest regions, where for many years the unreliability of communications has restricted development. (c) *Climate*, to a rather small

¹ Ministry of Agriculture, Scipa, *Evaluación de recursos naturales de la selva*, Departamento de San Martín, Lima, 1960.

² *Ibid.*, Programa de Colonización, Zona Río Apurímac, Lima, 1961.

³ Ministerio de Fomento y O. P., Oficina Nacional de Evaluación de Recursos Nacionales, *Evaluación e integración de potencial económico y social de la Zona Perenesatipo-ene*, Lima, 1963.

extent, and with different periodicity, but which again limits the size of agricultural areas in the mountains and forests (frosts, floods, droughts, &c.). (d) *Availability of water*. Mainly effective on the coast where the exploitation of land by irrigation is based upon the given, and variable, volume of water provided by the rivers. (e) *Soil suitability*. Effective in all three regions. (f) *Topography*. Taken into account recently for the development of the mountain region; as in the plans for reconditioning and agrarian reform in the mountains, where the use of marginal lands of steep gradient is relatively widespread.

Critique: General Criteria

The general criteria, as we have maintained, through the agricultural development as a whole, determine the localization and appropriate size of rural development areas. From our analysis it emerges quite evidently that the agricultural development of the country is not being carried out in accordance with the needs of its general development. This has been the cure suggested, without exception, by our national experts, within or without the ranks of government. Agronomists and economists are more or less self-taught, owing perhaps to the desperate lack of authentic and experienced development experts and synthesizers from which Peru suffers. The aid of foreign experts (for these there are, and good ones, though unaccustomed to our social realities and economic experience) seems not to be sufficient or satisfactory. The fact is that development is not solely a matter of techniques widely and effectively applied, of simple or complex mathematical models, of econometry. To begin with, it is necessarily a question of the basic economy; of collating it with facts and experience natively acquired; of comparing all this with the reality and experience of other under-developed areas; and then of deducing the lessons. Only then can it be a question of constructing the model, or models, understandably simple, for development. This is a thesis which at once presumes the individual critique of each of the general criteria we have analysed.

In the first place, is the land-population ratio a good, not to say necessary, criterion for agricultural development? Can it be comparatively, indiscriminately used, in situations and countries with such different conditions of climate, soil, topography, yield per unit of surface, and time, &c.? Definitely not, when it is the result of dividing the total cultivated area by the number of inhabitants. It is less deceptive, and so more acceptable, when in the numerator other utilized resources of land and sea are allowed for; but it is not

convincing. No, for at this stage better criteria can and should be employed. That of necessities, of course. That of the goods to satisfy them, in consequence. The quality and number of necessities or goods, in synthesis. The objectives of agriculture are the production of: (1) foods; (2) raw materials for internal industrial consumption; and (3) export goods with which to acquire foreign currency. Let us qualify and quantify these goods. Let us establish their unitary yields, and the possibilities of increasing them year by year. Let us finally estimate the total cultivated area, the utilized natural resources, which together are required to satisfy the progressively growing needs of the population according to its annual rate of increase.

By this means it is not difficult in Peru, to conclude and to demonstrate that the acquisition by irrigation of huge areas on the coast and the colonization of vast tracts of forest, over longer or shorter periods is without reason. Our needs are more modest. It will suffice to begin by raising the minimal unitary yields of food crops, principally by spreading the use of good seed and fertilizers, and by a better ecological and economic distribution of crops and livestock in general. Simultaneously and ruthlessly agrarian reform should be put into effect to end the wastage of labour resources and of land capital fit for cultivation but not being used. This will be enough for ten years, without even touching the total area now destined for export crops.

Otherwise, an agrarianist way of thinking, or an agricultural development based on the unrestricted extension of the cultivated area, inevitably leads to a general development which is slow, uncoordinated, without motor force, to stagnation, and sooner or later to strangulation. For example, to produce more agricultural exports, only to go on suffering from the consequences of the deterioration of our terms of exchange; thus in turn holding back the growth of other sectors, mainly those of industry and education. The development of all these should be carried on with the objective of economic investment and consumer and production goods in mind. Peru in any case is under-populated. With a large immigrant population, and external financial backing, we could colonize the forests and irrigate new lands on a large scale. This would help to diminish the over-population of the world, especially of Asia.

Food consumption, then, is a sound criterion. The formation of agricultural technical capital, on the other hand, is both inapplicable and inexplicable in a country like Peru. A powerful mining economy, a flourishing fishing economy—the largest in the world—make this dogma totally ineffective. Full employment is a legitimate criterion from any viewpoint. But in an under-developed country we must

begin by regarding it in a different way from that applicable in developed situations, as with Keynes or Robinson. There are relatively few unemployed in Peru. Instead, there are underemployed. In the country this will be brought to an end by agrarian reform. How can it be ended in the city? By making more jobs in agriculture? Will those who know and enjoy, however miserably, the attractions of the city, return to the country? Is it possible, in turn, to block the migratory current from country to city, which modern communications seem irremediably destined to intensify? The demographic structure of Peru is almost 50:50 rural and urban. Modern industry creates few jobs. The development of mechanical trades may assist, but mainly in the country. In conclusion, a new examination of the conditions of urban underemployment is indispensable. The answer might be this: the excess of jobs in the public service sector may not be productive, but it may well dispose of problems in the transitory stages of development, as it justifiably solves them in full development. In fine, every man should work to maintain and increase his capacity for acquisition.

In Relation to Distribution

Being modified by the influence of three of the general criteria the specific criteria are rather represented by norms arising from natural or ecological conditions than by economic or, strictly, developmental reasons. Climate, water, soils, topography, within certain limits cannot be other than they are. Demand and accessibility of markets are incontrovertible, although clearly not beyond the possibility of improvement. The changes should be promoted, intensified. Tensions, demography, national security, may all be explicable. But, economically speaking, it is out of the question to consider the cost-profits ratio as a criterion. At present there are cost-profit calculations in connexion with certain development projects; but taking these in isolation, without general estimates, a proper selection of the areas for developmental priority is impossible.

The concentration of production, finally, should concern us as a developmental norm. By means of agrarian reform it is hoped to make general small and moderate ownership, agricultural units based upon the family. This is not a bad thing if we begin by trying to raise the living standards of the country people. But it would not be at all good if, forgetful of the lessons of the past, we left them all to go their own ways, making small profits and savings at the expense of much hard work, and difficulty, as the result of high costs. Association or co-operation, whether more practically at the level of distribution,

or in order to improve the level of production, must necessarily enter into this policy; with the continuance also of the traditional Peruvian rural communes, nowadays converted rather into a network of associations of smallholders.

In Relation to Optimum Dimensions

The correlative analysis will not support longer commentary. Could the lack of information, interest, or awareness on this point be due to poverty of objectives and plans? Is it that the plan for agricultural and general development awaited by the Peruvian people does not yet exist? This final question indeed arises from the whole analysis, from the whole of this paper. Let us believe that by the unsurpassable means of democratic planning—in which everyone has a voice—we in Peru may put an end to intuition, subjectivity, and authoritarianism in major economic decisions.

SHERWOOD O. BERG, *University of Minnesota, U.S.A.*

In my discussion of the three papers I wish to cover three points. First, to comment on the complementary nature of viewpoints that characterize the papers originating, as they do, from three rather widely scattered points in the world. Second, to give explicit recognition to the contribution that agricultural economists can give in analysing economic development areas. And third, to evaluate the performance of the agricultural economist in his role as development analyst as revealed, in part, by the papers we have just heard.

The complementarity of the papers. The papers have both explicitly and implicitly underscored the need for rapid and continuous expansion of the national economy as a prerequisite for substantial success of a rural development programme. Professor Bandini, for example, does not display concern over the relatively minor importance of agriculture *per se*, but he does stress the desirability of development in such a way that the 'existing imbalances' are corrected, that is, that relative factor prices reflect their productivity in an equilibrium sense. Dr. Holmstrom goes further in his discussion of the place of agriculture in the economy and argues that we cannot confine our analysis to the appropriate size and location of rural development areas. He maintains that an entire geographic area is involved, including the cities and towns of a region, and that it is difficult, if not impossible, to separate urban from rural. This is particularly true, he asserts, in the planning phases.

In any case, the point rings clear that the problem of rural

development is not exclusively, or even primarily, an agricultural one, and that the solutions must look well beyond that of agricultural development to total area development.

The second thesis which flows from these papers is that rural development is a story of change and adjustment. This gives rise to a two-way classification of problems. The adjustment problems are based upon either difference in natural resources endowments or on inadequate structure within agriculture and allied industries relative to contemporary economic conditions, that is, the problem of the area's position in today's inter-regional competition for factor inputs and product markets, or both. The first type of difficulty is found in areas where the basic problems lie with the inherent characteristics of the soil or climate. The marginal productivity concept, from the viewpoint of the authors, operates as relentlessly in the Apennines of Italy as in the Andes of Peru. The second type—structural problems—is typified by a stagnating rural community located upon good productive soil and water resources but clinging to an outmoded socio-economic structure, particularly in view of some new scientific and technological innovations available for adoption. Present difficulties may stem from century old, labour-intensive farming systems of fragmented holdings in Italy, or the unexploited latifundia in the highlands of Peru, or the groping for the marginal number of hectares to assume the optimum size for a state farm or a collective in the central U.S.S.R. In any event, most papers suggested that the ultimate solution to either type of adjustment problem is found in local employment growth or in migration of labour to other sectors.

The authors' attitudes towards the role of non-agricultural institutions in the development process varied greatly. Professor Holmstrom emphasized the positive role of public agencies in planning guidance and programming in the promotion of private industry. Professor Bandini dismissed many of the institutional factors, including economic restrictions and imperfections in the credit market, &c., as artificial or temporary aberrations. These can be eliminated relatively easily, he states, by means of sound economic policy and improved international co-operation. A large order! Professor Gonzales is rather awed by the rigidities and imperfections he observes in the Latin-American system. And Director Djalilov has expressed the view that research and additional capital would accelerate the production of corn in the central Asian republics.

In addressing themselves to the main subject of this afternoon's symposium, the size and location of rural development areas, the authors have shunned a frontal attack on the problem. Undoubtedly,

this reflects the paucity of integrated, co-ordinated, across-the-board studies or reports of rural development. Much of the economic research, at least to this point, has been piecemeal. In listening to the papers, one learns that the sizes of development areas vary greatly, and one gains the impression that size and location are determined largely by geographical, ecological, and political considerations. Within these broad restraints—and let us accept them—the authors give some attention to the economies of size of units. These are primarily those in the private sector whereas little attention is paid to the economies of size in the public services. Dr. Holmstrom recognized this in speaking of different public services and the different sized regions, which they can most effectively serve. It is true that many of the economic parameters that determine location, for example, were listed or catalogued. Professor Gonzales's and Dr. Bandini's papers are marked by this approach. However, little effort is made to give weight to these factors. Little evidence is presented of country studies that quantify the parameters in question.

The role of the agricultural economist. This brings me to a question: what is the role of an agricultural economist in rural development? Does he have something unique to offer? Could these papers have just as readily been authored by a competent economic geographer, a political scientist, a sociologist, a person trained in public administration. What is it in demonstrable, preferably in quantifiable, measurable terms, that the economist has to offer to the overall planner or decision maker? How can he make a constructive contribution to helping people who have to make a choice among alternative courses of action?

I suggest that the factors which affect the location of economic activity or rural development can be classified somewhat arbitrarily, as follows:

- (1) The supply matrix to include (a) the supply schedule of inputs or production factors, (b) the geographic location of inputs, and (c) the transportation rates of inputs.
- (2) The input-output ratios or production function, including the public services.
- (3) The demand matrix to include (a) demand functions for products, (b) the geographic location of markets, and (c) the transportation rates on final products.

Agricultural economic competence lies here to the degree that a rural development cost-benefit ratio/marginal-cost area, by its own volition, or by programme assistance from outside, can modify or manipulate

any of the elements cited above, and can influence the location of economic activity and hence influence its own development.

Agricultural economists working with natural and social scientists, as an interdisciplinary team, can assist in modifying each of the elements. Efforts have been made to modify product demand by research on tastes and preference of different income groups and by families of different compositions in the selected markets. There is need to know more of such patterns in less-developed areas. Production functions have been modified by the creation of non-profit research or governmental organizations (such as in the E.P.A.) with the purpose of attracting technologically progressive firms or of stimulating the rate of progress in existing firms, or of helping farm firms. Frequently, efforts are made to influence the actions which set transportation rates or to increase competition among carriers; the work on improved waterway transportation is an example. Input supply functions for capital have been modified by public policies designed to mitigate capital aversion by potential borrowers and capital rationing by commercial credit agencies. Factor supply functions for labour have been modified by vocational training for youth, retraining programmes for those who change occupations at various stages in life, and job information services.

For small rural development areas, it appears that the factor or supply matrix can be affected more readily by group action than the other elements. In general, however, the larger the community or area, the larger the number of elements which can be influenced by joint community action and the smaller the number that will be determined by forces outside the community area. Professor Holmstrom's paper is a case in point to substantiate this point of view with many policies in Sweden regarded as nation-wide.

In the first session of this Conference one of the commentators suggested that the hidden hand, described by the early economist, Adam Smith, was becoming more and more visible and, moreover, that we should have an interest in whose pocket that hidden hand was being placed. My hope is that the handwork of the agricultural economist, as part of a team representing various disciplines, will become more visible, will become more and more legible, more easily discernable, so that, in rural development schemes, we can make our approximations truly meaningful, to politicians, to planners, and to people involved alike, and that those who make decisions can make them more wisely, and can more readily select policies and programmes that assure that pockets around the world, in the future, are not picked but that pockets are filled.

C. H. SHAH, *Department of Economics, University of Bombay, India*

I should like to attempt to define the criteria that are likely to govern the determination of the appropriate size and location of the rural development areas. In doing so I shall bring out the sharp contrast between the criteria that operate in the developed, and those in the developing, economies. I would emphasize that in developed economies the main impulse for regional development comes from the rapid development outside agriculture. The agricultural sector is mainly faced with the problem of adjustment. In developing economies, agriculture has to be the engine of economic advancement. The process of development thus has to start from within. In this context neither the institutional frame-work nor the bundle of techniques of production in use, or that can be evolved, are taken as given. And once these constraints are taken off, the concept of appropriate size, as well as of location, becomes extremely fluid.

The appropriate size and location in the context of a free competitive market economy with non-intervention by the Government would be determined in the long run by the conditions of optimality. In this context, the areas which face similar problems or grow similar products would constitute a region. Their sizes would be determined by relative returns to fixed assets. Under Von Thünen's model based on transport costs, or even in Professor T. W. Schultz's model based on the working of factor markets, these regions may form concentric circles around the industrial nexus. Their shapes and sizes may be altered by the transport system, making them oblong, elliptical, &c. Government intervention may be necessary on two scores. First, the process of attaining conditions of optimality may be long drawn out and arduous. Government intervention may be called upon, therefore, to facilitate and speed up the process of attaining optimum conditions. In a dynamic situation of continuous expansion of industries, the intervention may be required continuously and almost indefinitely. Secondly, government intervention may be required to force the pace of rural development which, left to itself, is stubborn in its response to market forces. This happens mostly in cases of traditional agriculture, as in India.

The problems the Government will be called upon to tackle in the two different circumstances will be different. Where the market forces are operating in the right direction, as in Italy or Sweden, government action is required to facilitate their working. Government actions may take all or any of three forms, depending on the acuteness of the problem. They are (1) creation of new skills through

training for industrial jobs; (2) improvement of the technological base of developing rural areas; and (3) facilitating the flow of physical inputs—tractors, fertilizers, &c.—by institutional changes. Thus, the programme may consist of technical training, general education, irrigation, technological improvements through introduction of new and better crops, seeds, new techniques, &c. Institutional changes may involve reconstitution of the structure of land-holdings through consolidation, redistribution, reforming tenancy, and even taking land out of cultivation and putting it under alternative uses.

In cases of traditional agriculture and general conditions of economic development such as prevail in India, government intervention will take essentially a different form. It will have to contend with: (1) lack of occupational redistribution of labour; (2) wide disparities in inter-sectoral, inter-regional, and inter-class (particularly rural classes) income distribution; (3) widely varying levels of production efficiencies, particularly inter-regional; and (4) relative excess of resources—human and material—in certain regions. The Government will be required to force the pace of rural development in these conditions in order to help industrial expansion. Any general measure of rural development is likely to fail to make an impact or, even if it succeeds partially, to lead to a widening of income inequality. An instance is provided by the 'Grow More Food Campaign' in India. Forcing the pace of agricultural development along traditional lines would mean making available an increased supply of traditional capital—land substituting and labour complementary. If a Government depends on resources available from within the local community, not much will be achieved, and the achievement will be confined to few relatively prosperous regions. Hence, forcing the pace of development through the following measures becomes necessary: (1) by technological change; (2) by improved productive efficiency of available resources; and (3) by improving skill of human labour for farm production.

In these circumstances the transfer of population from rural to urban areas will not feature largely. A deliberate and conscious effort may be necessary to locate development efforts and determine their magnitude in respect of local needs, so as to narrow inter-regional and inter-class income distribution and obtain maximum output for given efforts. Government measures will include elaborate institutional reforms; agricultural extension; training in schools and in jobs; and building the infra-structure, such as power supply, roads, schools, water supply, sanitation, rural industries, rural housing, &c.

Institutional rearrangements are expected to lead to better

utilization of available resources and, hence, improved production efficiency. Institutional reforms will be necessarily elaborate. They would cover reconstitution of land structure, reforming marketing organization and reorganization of the supply of credit. Mostly, private individual agencies will be replaced in distribution, marketing and credit supply by co-operative institutions. In an extreme case, production may also be reorganized on co-operative lines, through co-operative forms or in dilute forms such as service co-operatives. Besides, extension work will have to be carried out by direct demonstration in view of the low literacy level and the ineffectiveness of other media of communication. Both these programmes—co-operativization of institutions and stimulating agricultural extension—would imply direct involvement of the people into the planning, execution, and supervision of development programmes. On the other hand, technical expertise, and administrative acumen will be equally important, and must be fused together in optimal proportions. All these measures may not require equal degrees of local participation nor will all of them need equal amounts of services of technical experts or of administrators. To illustrate, marketing organization will depend on supplies available, whereas efficient credit organization will depend on maximum knowledge of local conditions and on close contact with borrowers. It can be deduced from this that there cannot be a unique size and a unique location of development area where a comprehensive rural development programme is to be undertaken. It would be economically harmful to adopt uniform measures, invest uniform amounts of resources in uniform areas of development. India has had bitter experience in this, both in her experience of community development and in expansion of rural credit and marketing. Administrative aberrations given as explanations are mostly the reflections of bad handling of economic forces.

The problem of the location of rural development areas is complicated. If we include in rural development programmes, the training of rural labour for jobs in urban areas we can see that, even in developed countries, rural development will have to extend over an entire country. Then the problem is not of location of rural development areas but location of suitable types of programmes in different regions. Benefit/cost ratios, if they can be reliably worked out, will be a helpful guide in locating different programmes in different regions. In countries like India, the need to cover the entire country with development programmes is felt all the more. But the limited supply of investment resources imposes severe restrictions in these

economies. Areas in the vicinity of the developing centres are likely to experience a fillip in the demand for the products they produce or which they have the potentiality (in terms of economic feasibility) to produce. Investment in these areas may bring larger national returns. The problem becomes complicated, however, since such a decision is likely to widen inter-regional income inequalities.

The benefit : cost ratio is a useful guide, no doubt, to investment in rural areas even in the above circumstances. But what needs to be emphasized is that not individual programmes but all related programmes taken together should be considered. Taking the ratio of social benefit and social cost of a constellation of related programmes might help to open up relatively less fully developed areas. In the long run, the benefit : cost ratio may also be influenced by redirecting technical researches so as to break the tougher technological barriers. In brief, the problem of location may be considered not only in terms of the redistribution of labour, which would happen through free market forces with marginal government intervention, but also as a problem in redrawing the development map with the help of new techniques, the combination of new resources, and the development needs of different regions.

J. L. DJACHI, *Tbilisi, U.S.S.R.*

In connexion with the examination of the rational division of agricultural undertakings, and decisions on sowing different types of plants, allow me to make the following remarks. They define problems of the economy and agricultural organization of mountainous regions and will enable you to share some of our experience with this type of work.

The rational use of land is the most important problem of agriculture and on its solution depends to a great extent all substantial increases in agricultural production and the further development of the well-being of the population. Its solution in some republics, including the Georgian S.S.R. from which I come, is based on the study of the best use of land in mountain areas and in the foothills. In the Georgian Republic the proportion of mountain territories situated at 1,000 metres above sea level is more than 55 per cent. and the proportion of those in the foothills is 75 per cent. of the entire Republic. In most countries this problem is topical, as a severe process of progressive erosion is taking place coupled with the departure of population from these regions.

From familiarity with the problems of world agriculture, and as a

result of papers presented to this Congress, I have come to the conclusion that questions concerning the agriculture of mountain regions do not get enough attention. This is a heritage of olden times. The whole study of agriculture is based on experience in the plains. For the last thirty years, scientists in our country have been studying the rational use of land in mountain regions in all its aspects, with the participation of agronomists, zootechnicians, climatologists, engineers, foresters, &c. As a result of this scientific work, one can arrive at some conclusions regarding economic mechanization in these regions.

Depending on height above sea level, every area has different agrotechnic systems. They have been worked out to deal with cultivation of soil, cultivation of crops, combination of different cultures, use of varying types of machinery, i.e. mountain tractors, mountain ploughs, mountain cars. New types of subtropical agriculture have been established in mountain areas as a result of planned methodology. In addition, in connexion with the organization of subtropical agriculture, a tea-harvesting machine has been invented which is now widely used, and is of interest for tea-producing countries. Work is made easier through the use of this machine. Productivity increases and the cost of production of tea decreases.

The study of the agriculture of mountain regions should be put on the agenda of the thirteenth Congress.

D. S. THORNTON, *University of Khartoum, Sudan*

Some countries at the beginning of their development are faced with the problem, not of how to balance the pace and form of agricultural development, but where to find the most promising localities which can make an appreciable contribution to the national exchequer. Their resources are frequently (as for instance in East Africa and Sudan): (1) Land areas for which accessibility to external markets is as important a determinant of development as is inherent fertility. (2) A small number of highly educated people who formulate national objectives and take the main decisions. Unfortunately, in the agricultural sector technical men often outnumber businessmen and social scientists. (3) Capital, which is often available from outside in large lumps. The World Bank, I was recently told, does not like dealing in sums of less than \$1 million. (4) An uneducated substratum which is regarded as a potential labour force.

The tendency in these circumstances is to take 'large' decisions. This appears more justifiable to the decision makers when all-or-

nothing investments, such as large dams, are among the alternatives. For, instance, since Independence in 1956 Sudan, beside encouraging small-scale local developments, has added 800,000 acres to its Gezira Scheme (over 50,000 tenancies), and has set up the Khasm el Ghirba Scheme of 500,000 acres, the first stages being designed for the resettlement of those displaced by the rising waters of the Egyptian High Dam. It is now contemplating further large schemes following the provision of more water from the Sudanese Roseires Dam, running eventually to 3 million acres or more, and is negotiating for a loan to open up 800,000 acres of rainland agriculture.

How far are these plans likely to succeed? It depends not only on their technical and commercial merits, which are the responsibility of the educated élite, but also on the willingness, not to say availability, of large numbers of rural people.

The original Gezira Scheme presents some interesting indicators of the effect of large-scale development on the local people. This is a complex subject, well documented by Arthur Gaitskell up to the mid-50's,¹ but much has been learned since then. I would underline two lessons. First, the assurance of the basic food supply of the local people is a primary consideration; if this is assured the settler is prepared to carry considerable risk in his cash income and submit to considerable discipline. Second, the people, whether encouraged or not, form their own community grouping and representation with which to confront the organizers, who must work closely with them, and remain flexible enough to accommodate increased talents and the desire for responsibility among the settlers. With the future intensification and diversification of the Gezira which is scheduled for 1967, major changes in the organization of the people appear to be inevitable. In particular the appearance of co-operatives and, perhaps, companies *within the Scheme* are expected. Therefore, while in the first stages of development large-scale investment may be justified (provided there is no doubt of its potential profitability), the type of organization devised must be flexible enough to allow full expression for the capabilities and aspirations of the people as they grow to competence in a modern cash economy.

G. GALIZZI, *Facolla di Agrarie, Piacenza, Italy*

The experiences described in this symposium present considerable differences. In effect, they concern countries characterized by important differences in economic, social, and political conditions. Nevertheless, this enables us to notice similar points in the localization

¹ A. Gaitskell, *Gezira*, Faber & Faber, 1958.

processes of rural development, and especially a symptomatic uniformity of some of their characteristics, characteristics which are of first importance, and which provide useful opportunities for brief study during this discussion.

The first of these characteristics is the typically dynamic nature of the localization of rural development, which tends to surmount the political frontiers of each country. In effect, this localization expresses the structural changes and differences which characterize, in both time and space, the development of a national economy. Very complex conditions are involved, as well as a very dense network of multilateral relations. We can say that this localization reflects an historical and economic situation, and we can assume that it is a result of an historical evolution. The tendency of agricultural and industrial protectionism to reduce the connexions between agricultural and industrial development allows us to consider the localization of rural development as an expression of natural modifications of the international division of labour.

A second characteristic, which is partly a necessary consequence of the first, is a result of the ubiquity and general aspect of the problem of localizing rural development in all countries. In effect, this problem is characteristic not only of developing economies, that is to say, countries with peripheric economies following Prebisch's theory, nor of countries characterized by divergent development in different regions. It exists also in fully developed economies. In fact, it mainly concerns the latter. This means that we must not confuse the localization problem of rural development with that of the industrialization of agricultural countries. The more interesting characteristic is the possibility outlined by Professor Bandini and Professor Gonzales-Velasco, of identifying the problem of optimum location of rural development with the problem of optimum location of agricultural production. Consequently, the location of rural development depends considerably on the location of the general factors in agriculture.

J. P. A. VAN DEN BAN, *Provinciale Landbouwkundige Dienst van Gelderland, Arnhem, The Netherlands*

We have not been given a definition of rural development areas. Perhaps, Mr. Chairman, this was intended to keep the discussion open. I have in mind that there are activities in some areas to promote regional development with government funds. There are some regions selected for these activities, and the best results may be expected when the population in the area co-operates in the development. In my country these activities may be land consolidation,

improving the system of water control and drainage, improvement of agricultural roads, regional intensifying of extension work, &c.

In our circumstances in the Netherlands we have money available to invest in rural areas but we must set priorities. We cannot start in all the areas we should like to. When I am in a position to advise the people who have to take these decisions, I like to ask the agricultural economists to help. In comparing plans in different regions I like, not only to see cost: benefit ratios, but to know also what future development may be expected in a special area when the plan is carried out, and also what the future development would be without the plan. Development also goes on in an area when we do not invest in that particular region. For more complicated decisions we like to have economic calculations of alternative plans.

This problem of priority of rural development areas is also found in Italy, according to Professor Bandini; but it does not seem to exist in Sweden or Peru. Professor Bandini said that the advice of the economist is important and necessary, but he did not explain what economic calculations are made in Italy. Professor Berg did discuss this question from an economic point of view.

Nobody touched on the point that very often in a rural development area we want to have the co-operation of the population. This means that an area must not be so large that the people who live there cannot oversee the plan. The experience with land consolidation in my country shows that for a plan of more than 10,000 hectares it is extremely difficult to find representatives of the community who know the area as a whole, and who represent the inhabitants of all the villages. This depends, of course, on the density of the population and on the social structure. But in all rural development areas where we want the co-operation of the population, this aspect limits the size of the area.

M. BANDINI (*in reply*)

I agree with many of the observations that have been made. But in my opinion several important difficulties remain. We must not only understand problems but also assess their priority. We are not able to quantify those problems. We cannot express firm opinions regarding the present and future trend of markets especially in view of the uncertainty surrounding international agreements. We have only half-formed opinions on likely changes in demand. We argue on the basis of a continuous process of growth, forgetting that economic life does not follow such a direct course. In my opinion the number of conditions that a knowledge of economic reality imposes on us

is so immense that we ought to avoid trying to forecast future situations on the basis of mathematical equations.

J. GONZALES-VELASCO (*in reply*)

All I wish to say is that I am completely in agreement with the remarks made by various speakers who would prefer quantitative assessments to be made. I think that I have expressed my regrets at not being able to make them at present. Further, I am in close agreement with Dr. van de Ban when he said that it was very difficult to find criteria for determining the most suitable size for areas of agricultural development. Indeed, the conclusion to be drawn from the analysis is evident. It is possible, as several Russian delegates have remarked, to find criteria for determining the optimum size of an agricultural unit. But it seems much more difficult to find criteria for determining the dimensions of a whole zone though perhaps we shall gradually discover them in the future. I would just like to add, that the only remarks of direct interest to me were those made by one of the Russian members about studies in his country on the agricultural development of mountain areas. These could be extremely important for Peru, where the greater part of the agricultural area lies in the Andean region.

SHERWOOD O. BERG (*in reply*)

I do not believe that the situation at the present time in many and perhaps most of the countries is as dismal as Professor Bandini would have us believe. I think that there is available to the general economist and to the agricultural economist a number of studies that can be used to centralize materials that go into the decision making process. I am certain that in many of our countries there are farm management studies at least that will give us some of the technical coefficients that give meaning in terms of the productivity of factors that go into the production process. I do not think we shall ever reach the day when we shall know prices in the future, and I do not think it is necessarily the economist's job to predict those prices. But I hope the economist does have the competence to take a series of prices and project them into the future, and to programme in such a way that he can ascertain the effect in terms of returns in agricultural and rural areas. This is being done in many cases today. For example, if we have changes in the support prices of various commodities, some go up, some go down, we can calculate the effect of these changes in terms of supply response for the commodities that

farmers produce. We have the techniques at hand to ascertain some of these things. I admit that in some places, perhaps, we have under-developed economists as well as under-developed areas, but I have confidence that both will move forward. I want to point out that, creeping into this meeting, we find guide posts or sign posts, that give me every confidence. One of the novel things that we have witnessed this afternoon was the fact that Professor Holmstrom gave quantitative facts of what he considered to be minimum units for the provision of certain public services to people in his country. He gave the base required for his secondary schools, the base required for an optimum establishment of a hospital. I think we are moving in these directions and we shall ultimately get there.