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# THE ROLE OF AGRICULTURE IN ECONOMIC DEVELOPMENT COUNTRY EXPERIENCES

## (1) NIGERIA

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THE emergence of independent states in Africa raises issues of fundamental economic importance largely because the permanence and stability of political and social life in these countries depend on the viability of their economies. These countries are conscious of their backward economic conditions and desire to effect radical changes in them. It is widely held both inside and outside these countries that the desired economic change can be achieved only through an industrial revolution. The problem, therefore, concerns not so much the desirability of economic change as the means of establishing the preconditions of economic change. This paper is essentially a sectoral case study. It is a study of the role of agriculture in the transformation of African economies from a predominance for agriculture to one for industry.

### *The Economic Landscape*

The general features of the economic landscape in Africa are sufficiently well known for a brief reference to them to suffice for the purpose of this paper. In all African countries agriculture forms the predominant industry. In Nigeria, for example, about 80 per cent. of the working population is employed in agriculture and over 60 per cent. of the gross domestic product is contributed by agriculture, forestry, and fishing. In contrast, manufacturing and mining produce about 10 per cent. of the gross domestic product and employ less than 5 per cent. of the working force. The so-called service industries account for approximately 20 per cent. of the gross domestic product and absorb about 15 per cent. of the working population.<sup>1</sup>

<sup>1</sup> In 1950-1 agriculture and allied occupations contributed 68.3 per cent., manufacturing, mining, construction, and craft industries 10.1 per cent., and the service industries 21.6 per cent. of the gross domestic product. In 1956-7 the proportional contributions

Agricultural output per unit of employed resource is low in comparison with output in countries producing similar crops. For instance, the average yield of rice in Nigeria is about 1,300 lb. per acre as compared with over 3,500 lb. in Japan; maize yields average less than 800 lb. per acre in Nigeria as against over 2,000 lb. in the United States. The average per acre yield of millet in Japan is about 1,000 lb. and in Nigeria less than 600 lb. The low level of agricultural productivity, which is the rule in African countries, reflects the primitive and backward character of the underlying techniques and tools of cultivation. The hand hoe and the cutlass are the main implements of cultivation, while under the system of bush fallowing (shifting cultivation) the farmer depends upon natural regeneration for the maintenance of the fertility of his soil. Natural and artificial manures are rarely, if ever, used by African farmers.<sup>1</sup>

In 1950-1 the *per caput* income in Nigeria averaged £20; the estimate for 1956-7 was put at between £25 and £29 *per caput*. The build-up of social overhead capital which has continued steadily since the early decades of this century is as yet not sufficiently pervasive to provide an adequate basis for sustained economic growth. Since 1938 the mileage of railway tracks in Nigeria has remained at 1,903. In 1958 there were 36,907 miles of roads of all descriptions serving a country of over 300,000 square miles; of these, only 4,031 miles were tarred or surfaced with bitumen. In 1958 there were 29,352 telephone instruments for a population of over 35 million.<sup>2</sup>

### *The Stage of Growth*

The brief examination of the features of the economic landscape in the preceding section leads to the conclusion that Nigeria exhibits all the characteristics of a transitional economy. In spite of the rapid rate of development in the last two decades the country has still to break away from a predominantly subsistence economy and create conditions conducive to sustained economic growth. This assessment of the economic situation necessitates a careful consideration of each sector of the economy to determine its role in the transition and at the different stages of growth.

were 61 $\frac{3}{4}$  per cent., 14 per cent., and 24 $\frac{1}{2}$  per cent. respectively. See A. R. Prest and I. G. Stewart, *The National Income of Nigeria 1950-51* (London, 1953), and *The Economic Survey of Nigeria 1956-57* (Lagos, 1960).

<sup>1</sup> In 1956, 243 wheeled tractors were imported into Nigeria for agricultural purposes and a total of about 7,000 metric tons of artificial fertilizers were imported in 1957-8. See F.A.O., *Production Year Book*, 1958 (Rome, 1959).

<sup>2</sup> Federal Department of Statistics, *Digest of Statistics, 1958* (Lagos, 1959).

*Agriculture in the Transition*

The transition is essentially a period in which a country attempts to shift from a subsistence economy by establishing non-agricultural industries producing goods either for the export market or for domestic consumption in substitution for imports. The transition is also a period of expanding commerce and of a rapid build-up of social overhead capital. All this will lead in effect to a substantial transfer of population from agriculture to urban occupations. Agriculture must provide adequate food both for the rising urban population (which no longer contributes to agricultural output) and for the expanding overall population which occurs in the transitional period partly from improvement in health and medical facilities and partly from increases in the general level of incomes which tend to encourage large families in the early stages of development.

Apart from supplying food in adequate quantities for the urban population the success of the new industries may depend on the adequacy and cheapness of agricultural raw resources. The industries which are economic to build during the period of transition may be found to be those processing raw agricultural materials for the domestic market and probably for export. In general it is for the former type of goods that effective home demand exists during this period. The classic examples of such are cotton textiles and processed food products on which the urban workers and the new *élite* tend to spend increasing proportions of their rising incomes.

Newly established industries in developing countries can hardly be expected to achieve immediately the same level of technical and economic competence as similar industries in technically advanced countries. For one thing, costs of machines, power, fuel, and technical and managerial skills will be much lower for industries operating in mature economies than for industries operating in developing countries. For another, output per unit of labour will probably be higher in the advanced countries than in developing countries. Thus, industries in advanced countries enjoy real competitive advantage over similar industries in backward countries. This initial advantage may, however, be offset if there are present within the developing country cheap sources of labour and raw materials. The wage rate and, therefore, the wage bill of the new industries will be determined to a considerable extent by the prevailing level of prices of food-stuffs. Similarly, the cost of raw materials to industries will depend upon the efficiency of the raw-material-producing section of agriculture. In effect, the rate of expansion in the non-agricultural sectors

of the economy is closely tied up, in the transition at least, with the level of productivity in agriculture. On the demand side increasing agricultural productivity means that the farmer 'has an ever-increasing surplus to offer in exchange for manufactures; ever-increasing productivity in agriculture means an ever-increasing market for manufactures'.<sup>1</sup>

Finally, the establishment of industries both in the transition stage and in the early stages of the take-off into sustained growth, and the rapid build-up of social overhead capital which must occur during the period of transition require an adequate supply of liquid capital (loanable fund) with which to pay for the imports of capital equipment. In a developing economy taxation and foreign trade are the major sources of internal capital. Traditionally, the export sector of agriculture has provided an important source of capital accumulation.

Developing economies [writes Rostow] have created from their natural resources major export industries; and the rapid expansion in exports has been used to finance the import of capital equipment and to service the foreign debt during the take-off. United States, Russian and Canadian grain fulfilled this function, Swedish timber and pulp, Japanese silk, etc. Currently Chinese exports to the Communist bloc, wrung at great administrative and human cost from the agricultural sector, play this decisive role.<sup>2</sup>

### *The Nigerian Experience*

In Nigeria the shift from subsistence production which began in the early decades of this century has been characterized by two major developments. The first is the production of raw agricultural materials—notably cocoa, palm oil, palm kernel, hides and skins, groundnuts, cotton, and rubber—for the export market. The second is the building of modern systems of transportation and communication.

Production of cash crops for export provided the base for the growth of an exchange economy and the development of trade both in home-produced goods and in imported commodities. The proceeds from taxes on exports and imports (the volume of imports in a given year is directly dependent on the amount of cash available to farmers from the sale of their exports) provided the Government with the liquid assets required for the building and maintenance of roads,

<sup>1</sup> W. Arthur Lewis, *Industrialization and the Gold Coast* (Accra, 1953), p. 2. See also W. W. Rostow, *The Stages of Economic Growth* (Cambridge, 1960), pp. 8 and 23, and P. T. Bauer and B. S. Yamey, *The Economics of Underdeveloped Countries* (Cambridge, 1957), pp. 235-6.

<sup>2</sup> Rostow, *op. cit.*, pp. 48-49.

power installations, railways, ports, schools, hospitals, and communication systems.

Since the end of the Second World War there has been a rapid build-up of social overhead capital: new industries have sprung up; the capitalist sector of agriculture has been expanded considerably.

The accumulation of capital in the export sector of agriculture has played a significant role in post-war development and the produce marketing boards have been the chief instruments for capital accumulation since the end of the war. These boards are statutory organizations charged with the exclusive marketing of the major export crops—cocoa, oil palm produce, groundnuts, and cotton. In broad terms the law lays down their functions and the pricing policies they are expected to follow. They are authorized to withhold in good years a proportion of the sales proceeds of the crops they market and to use part of the accumulated reserves to subsidize producer prices in years of falling prices. During the immediate post-war years the boards accumulated large reserves of capital. They stood at about £75 million in 1954.<sup>1</sup> Through the agency of the regional development corporations part of these reserves was used for the development of industry, agriculture, communications, and health facilities.

Table 1 shows the major development expenditure of the development corporations which derived the bulk of their funds from the marketing boards.

TABLE I

*Major Development Expenditures of the Regional Development Corporations  
1949-58<sup>2</sup>*

<i>Project</i>	<i>North £</i>	<i>East £</i>	<i>West £</i>	<i>Total £</i>
Agriculture . . .	1,353,186	1,157,623	3,034,098	5,544,907
Industry . . .	204,006	500,000	684,229	1,388,235
Communications . . .	1,390,817	529,026	1,371,643	3,291,486
Others . . .	224,240	31,635	407,213	763,088
Total . . .	3,172,249	2,218,284	5,497,183	10,987,716

During the first ten years of their operations the regional development corporations devoted the bulk of their funds to the development of agriculture and communications because of the realization both

<sup>1</sup> For a comprehensive discussion of the West African produce marketing boards see P. T. Bauer, *West African Trade* (Cambridge, 1954).

<sup>2</sup> Sources: Reports of the Northern, Eastern, and Western Nigeria Development Corporations.

on the part of those who framed the laws and those who execute them that efficient agriculture and good means of transportation are essential to industrial development.

*Agriculture and the 'Take-off' in Nigeria*

One of the conditions of the take-off as defined by Rostow is the development of one or more substantial manufacturing industries that are capable of generating growth throughout the economy.<sup>1</sup> The experience of the advanced countries does not leave room for any dogmatic generalization about the industries which will lead a successful take-off in a given country. Different industries have initiated the take-off in different countries. However, an examination of the flow of expenditure on imports will yield some useful answers about the manufactured goods for which there exists appreciable home demand, for in the final analysis the establishment of industries with growth potentialities depends in part on effective home demand and in part on cost-supply conditions. Table 2 shows the expenditure on certain classes of imports in Nigeria.

Table 2 does no more than indicate the intensity of demand for certain classes of manufactured goods. Although a necessary condition, the mere existence of effective home demand for a particular item of import is not a sufficient condition for establishing an industry to manufacture this good at home. Supply of technical skills, the existence of adequate and cheap sources of raw materials, the nature of these raw materials (whether, for instance, they are weight-losing) may be important considerations in the decision to establish a given industry to produce for the home market. These factors are likely to be of considerable importance for industries manufacturing such imports as cycles, motor vehicles, sewing machines, tools, and implements, because of the scarcity of local skills and even of raw materials.

However, Table 2 shows a pattern of demand that is of considerable importance in the development of local industries. In the last decade expenditure on processed food and drinks, on clothing and building materials, and on motor vehicles has shown significant increases. Table 2 lists only a very few items of food imports and does not show the full magnitude of changes in total food imports. In 1959 about £4 million was spent on meat imports, £621,773 on eggs, and £3.9 million on fruits, both fresh and processed, and including jams and marmalades.

Already beer, cement, cotton-textile, shoe, and food-canning

<sup>1</sup> Rostow, loc. cit.

factories have been established to take advantage of the favourable home market. With the exception of the beer and cement factories they depend on local agriculture for their raw materials. Excepting also the beer industry which is financed mainly by external capital, part of the capital used in financing these industries has come from the surpluses of the marketing boards.

TABLE 2  
*Expenditure on Selected Imports in 1950, 1955, and 1957<sup>1</sup>*

Commodity	Expenditure (£'000)		
	1950	1955	1957
<i>Food and drinks</i>			
Sugar . . . . .	665	2,439	2,578
Salt . . . . .	797	1,535	1,632
Flour (wheaten) . . . . .	672	1,766	2,334
Fish . . . . .	659	4,840	8,484
Milk . . . . .	265	598	971
Beer . . . . .	905	2,729	3,158
<i>Clothing, shoes, and bags</i>			
Cotton piece-goods . . . . .	14,148	18,033	14,469
Rayon piece-goods . . . . .	3,759	9,893	11,446
Bags and sacks . . . . .	1,006	2,317	1,932
Boots, shoes, and slippers . . . . .	524	2,069	2,413
<i>Building materials</i>			
Corrugated iron sheets . . . . .	1,515	3,709	3,766
Cement . . . . .	1,098	3,631	4,638
<i>Other manufactures</i>			
Sewing machines . . . . .	325	476	269
Tools and implements . . . . .	440	747	780
Cycles . . . . .	1,277	1,911	1,193
Private cars and taxis . . . . .	940	3,654	4,143
Commercial vehicles . . . . .	1,633	4,536	5,163

A few examples will bring out the part which capital accumulated in the export sector of agriculture is playing in the current effort at industrial development. This development is marked by the regional development corporations joining with overseas partners in building essential industries. For example, the Western Region Development Corporation contributes 39 per cent. of the £4 million required for building the first stage of the Ewekoro Cement Works. When the cement factory is completed it will have an annual capacity of 200,000 tons, or about 42 per cent. of the total imports of cement in 1957.

<sup>1</sup> *Digest of Statistics 1959*, Federal Department of Statistics (Lagos, 1959).

Similarly, the investment of the Northern Region Development Corporation in the Kaduna Textiles Ltd. stood at £100,000 in 1958. This project, which is jointly owned with overseas partners, attained a weekly output of 800,000 yards of cloth in 1957-8. The Eastern Region Development Corporation also has a total investment of £497,500 in the Nigeria Cement Company, jointly owned by federal and regional governments and overseas investors. As has been remarked, the regional development corporations derive the bulk of their funds from the produce marketing boards. Thus, Nigerian cocoa, palm oil, palm kernels, groundnuts, and cotton are playing decisive roles in the industrial development of the country.

## (2) BRAZIL

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**D**URING the first centuries of its history, the Brazilian economy was characterized by having its productive activities evolved in cycles according to the possibilities offered by certain colonial export products. Thus, after the discovery of the land by the Portuguese in 1500, the first economic activities initiated were those related to the export of 'Brazilian Red Wood', desired in Europe as a source of dyes. Later, beginning in 1580, it was sugar cultivation which led the economic activities of the country, principally in the north-east region, until the end of the seventeenth century, when mineral development burgeoned with the export of gold as the basic activity. This product centralized and concentrated the economic and demographic activities of Brazil up to the end of the eighteenth century. At the beginning of the nineteenth century coffee planting began to be developed and soon assumed the leading position which it lost only recently with the generalized growth of the Brazilian economy. Historians identify these different phases of growth with the name of the export commodities which determined them. Thus they refer to the sugar cycle, to the gold cycle, and to the coffee cycle, not to mention others of less importance.

The income derived from the exports of these commodities reached considerable sums.<sup>1</sup> At the end of the sixteenth century

<sup>1</sup> Export values during the colonial period were computed by Roberto C. Simonsen, *História econômica do Brasil* (São Paulo, 1937), and Celso Furtado, *Formação econômica do Brasil* (Rio, 1959).

Brazil was already exporting £2.5 million worth of sugar, attaining £3.7 million by the middle of the eighteenth century. These amounts are particularly high if we bear in mind that at that time the country's population was scanty, some 300,000 inhabitants all told, of whom 100,000 were of European descent, and that sugar was the most important commodity of international trade, Brazil being its largest exporter. During the gold cycle, export figures reached an average annual figure of £2.5 million for the decade of the 1760's, later falling off to £1.0 million during the 1780's and to around £0.3 million by the end of the century. According to Simonsen,<sup>1</sup> *per caput* exports during the colonial period must have been about £2.5, and during the epoch after the country won its independence (1822) only £0.73. With the coffee boom under way, total annual *per caput* exports increased again—reaching £1.33 in the middle of the nineteenth century, and later rising to £2.10 during the last decade of that century.<sup>2</sup>

Despite the satisfactory productivity achieved in the export sector, an overall growth in the economy did not occur during these cycles. Brazil continued to present the characteristics of a colonial economy with its productive activities separated into two rather stagnant sectors: the export sector with a satisfactory level of income and the subsistence sector with little value productivity, hardly benefiting at all from the flow of income from the export sector. On the absence of data which readily prove the low overall development of the economy, we can avail ourselves of statistics bearing upon the growth of the country's manufacturing. We may note that growth was practically nil during the first cycles, and even in 1850, when the country was already in full coffee boom, it had little more than fifty establishments, including a few dozen salt-boilers and barely two textile mills, although the population already stood at 7.6 million. In 1866 the textile industry consisted of nine factories with a total value production of one million dollars, while in the United States during the same period over a thousand establishments of this type were operating with an output worth over 115 million dollars.<sup>3</sup> Only in more recent periods has development taken on a broader character and acquired a more dynamic aspect. The two World Wars, as well as the violent crisis which took place in the 1930's, represent

<sup>1</sup> Simonsen, *op. cit.*, p. 222.

<sup>2</sup> Caio Prado, Jr., *História econômica do Brasil*, p. 305 (São Paulo, 1945). At the beginning of the present century the coffee situation improved and the country's total export attained £2.68 *per caput*. With the crisis during the decade of the 1930's, this figure fell to £0.91.

<sup>3</sup> R. Simonsen, *The Industrial Evolution of Brazil* (São Paulo, 1939), pp. 24–26.

important mile-stones in this respect. And, in the most recent years, new constructive impulses have brought about a much greater rate of development within the country.

At the moment the Brazilian rate of growth is favourable. It is estimated that in 1959 the industrial production index was 80 per cent. above the 1955 level, representing an annual rate of 15 per cent., a rate which compares favourably with that of any other country whose rate of industrialization is high.<sup>1</sup> The enumeration of some statistical data will better define the current situation. The automobile industry, which in 1955 was composed of a few assembly plants, produced in 1960 about 130,000 vehicles with a very high rate of domestic production of parts. In the electric energy sector, power output in 1955 was 3 million kilowatts and ought to reach 5 million by 1962 and approximately 8 million in the near future when current construction work is completed. Steel ingot production, which was 1,160 thousand tons in 1955, had reached 2 million in 1960, and should attain 4.5 million in the near future. Cement output, which was 3.5 million tons in 1955, surpassed 5 million in 1960, meeting the country's current demand. The same occurred in the oil-refining sector, which passed from 86,800 barrels per day in 1955 to 308,000 at the end of 1960 and early 1961. Similar examples can be found in the production of cellulose, heavy machinery, electric material, ship-building, the alkali industry, fertilizers, rubber, and other products of the petro-chemical industry. In the same way, the building of highways to penetrate the country, the improvement of port facilities, and the capacity of the merchant marine have been stimulated.

This short historical account shows how marked is the contrast between the current rate of development of the Brazilian economy and that maintained in the past. Many factors are responsible for this difference. The greater in-flow of foreign exchange through coffee sales is, obviously, one of these. Albeit the importance of this factor is seriously limited, as is proved by the fact that the previous boom periods did not bring about a satisfactory overall growth rate, despite the high rates of exportation then reached.<sup>2</sup> The general improvement of the country's infrastructure, due to the characteristics of coffee growing, as well as the increasing immigration of European settlers for agricultural and industrial work, could also be cited as important elements in this modification.

<sup>1</sup> *Conjuntura econômica*, Nov. 1960, p. 153. Fundação Getúlio Vargas, Rio.

<sup>2</sup> O. G. Bulhoes gives special emphasis to the high productivity of the coffee industry, which allowed for investing in other sectors and touched off the economic 'take-off' in the São Paulo region. *Agriculture and Economic Development*, July 1960, International Economic Association.

We do not intend to study in detail all the factors responsible for this change, nor to analyse the importance of each one of them, although this aspect (like many others) of Brazil's economic history is particularly stimulating for those who wish to study the determining factors in the development of countries exporting primary goods. We merely wish to stress the importance of two measures regarding agriculture which played a fundamental role in the recent change in the country's rate of economic growth.

The first of these concerns the measures taken to benefit coffee during the crisis of 1930. In order to save coffee growers from economic ruin, the Government proceeded to buy up the unsaleable coffee surpluses. It is reckoned that in 1931 alone nearly a billion cruzeiros were in this way injected into the nation's internal economy. This counterbalanced the reduction in investors' expenses, which in that year had been reduced by two billions in relation to 1929. The maintenance during this period of a satisfactory level of investment, estimated at about 7 per cent. of the net national product, was thus assured.<sup>1</sup>

However, the most important aspect of this scheme was that it was not based on a foreign loan as had been true in previous cases. Purchases were carried out by means of issues of currency, thereby hindering purchases from abroad and increasing the demand for articles of domestic production. Production for the international market was stimulated and the use of resources which had been idle owing to the crisis was rapidly improved. The country recovered from the crisis before there was any improvement in the prices of export commodities. Between the years 1929 and 1937, industrial production grew by 50 per cent. and agricultural production for the home market by over 40 per cent., while the national income, notwithstanding the drop in the value of exports, increased by 20 per cent.<sup>2</sup> Thus foreign trade ceased to be the dynamic sector of the system. The issues of currency during the decade of the 1930's, besides taking care of the coffee growers' financial difficulties, came to constitute a fundamental element in the recent structural modification of the Brazilian economic structure.<sup>3</sup>

The second factor worthy of mention concerns the adoption of a system of exchange control, through which a part of the income

<sup>1</sup> Celso Furtado, *op. cit.*, p. 224.

<sup>2</sup> Export figures fell from an average of £80 million sterling per year from 1928-30 to nearly £38.7 million covering 1931-7.

<sup>3</sup> Celso Furtado stresses this aspect of the matter and declares that the coffee price support scheme at that time constituted an example of anti-cyclical policy on a scale not employed up to that time by other countries. *Op. cit.*, p. 224.

from the export sector was 'confiscated', the proceeds being used to 'subsidize' domestic activities considered important for economic development.<sup>1</sup> Historically speaking, the Brazilian economy has always been guided by liberal economic ideas. Only during the 1930's were foreign exchange control measures imposed, with the object of obtaining resources for payment of foreign debts and trade arrears. Finally in 1953, having experienced several advances and retreats in the systems and in the degrees of exchange control,<sup>2</sup> an organic system of multiple exchange rates was adopted, through which the Government was able to exercise more effective influence on the volume and direction of foreign trade, as well as on the development of certain of the nation's internal activities.

By this scheme, the free exchange market is reserved for transactions relating to travel expenses, profit remittances, &c., whereas operations in the import and export of commodities are transacted through the official market. The official market rate is maintained at a fixed level but, for exports, provides in addition to the above rates for the payment of *premiums* variable according to the category into which the goods are classified. For imports, auction systems are set up whereby exporters request foreign exchange, paying *surcharges* in addition to the official rate. The amount of foreign exchange offered for auction, in the different categories, is computed by the Government, whereby *surcharges* are paid at rates varying according to how essential the imported product is. In this way the Government sought to protect the domestic market and certain sectors of consumption<sup>3</sup> as well as to stimulate the installation of large industries, e.g. the automobile industry, through the guaranty of the future supply of foreign exchange at fixed prices for importing essential parts. Exchange was also reserved for the payment of foreign debt and trade arrears and for facilitating government purchases abroad. The most noteworthy thing is that through this system heavy cruzeiro resources were accumulated. To this end the Government established a system of *premiums* payments to exporters at levels below those paid by importers in the form of *surcharges*, thereby accumulating cruzeiro surpluses which were deposited in a special account to be used in coffee purchases, enlargement of agricultural

<sup>1</sup> No explicitly defined government policy in these terms is to be found. There are many official measures taken in contradiction to this line.

<sup>2</sup> *Desenvolvimento e conjuntura*, Nos. 4 and 5, 1958, Federação Nacional da Indústria, Rio, relate the principal exchange modifications from the 1930 crisis on.

<sup>3</sup> Fuels, wheat, newsprint, and certain farming implements are imported at *exchange cost*, i.e. the official rate plus the average premium price paid to exporters.

credit, paving of roads, but chiefly to cover part of the budgetary deficits of the Government.

Through this system (exchange forfeit) there was effected a heavy drainage of income from the export sector (95 per cent. agricultural products) to the other sectors of the Brazilian economy. It is estimated that during the period from 1947 to 1958 this averaged annually 130 billion cruzeiros, at 1958 prices.<sup>1</sup> Within the terms of the national economy, this is a substantial amount indeed, particularly if we bear in mind that the gross national product in 1958 was 1,289 billion cruzeiros and that the gross internal capital formation was 166 billion cruzeiros. These figures have only an approximate value since the amount of the transfer cannot be determined with precision owing to the difficulties of estimating the level of exchange which would prevail in the absence of government control and owing to the agricultural sector also being benefited, in some ways, by favourable rates for the import of fertilizers, machinery, &c. It would appear, however, that this transfer was a large one, constituting a substantial factor in the country's recent economic development. It is difficult to judge the results obtained from the use of this system.<sup>2</sup> Although they have generally been favourable to the country's economy judging by the present rate of its development, it should not be forgotten that the agricultural sector felt the repercussions of this measure. There was a loss in several export commodities, such as babassu, cotton, maize, rice, and skins and hides, which only aggravated the country's balance of payments position. Despite the fact that coffee was the product most penalized under this system, its planting was not sufficiently discouraged, so that the problem of coffee surpluses was not resolved.

On the other hand, on the positive side there was an improvement in agricultural production for the home market. Agriculture received the benefits of the urban-industrial development, the importance of which has been amply demonstrated in the research work done by Nicholls.<sup>3</sup> Thus production for home consumption increased, in index numbers, from 100 to 203 during the period from 1939 to

<sup>1</sup> *Conjuntura econômica*, Fundação Getúlio Vargas, July 1959, p. 53. The original data refer to 50 billion cruzeiros and do not include the contribution made by coffee. In order to include this product, we used a similar process of reckoning, adopting the equilibrium exchange rate constructed by the International Monetary Fund, based on wholesale price index development in Brazil and the United States.

<sup>2</sup> At the moment the tendency is to unify exchange rates, there having already been several modifications to this effect, among which the most outstanding and effective measure is instruction 204 issued by S.U.M.O.C. (The Superintendency of Money and Credit).

<sup>3</sup> W. H. Nicholls, *The American Economic Review*, vol. 1, No. 2, p. 635.

1958. This is certainly a substantial increase, yet in some ways it has proved to be insufficient to take care of the domestic demand. Thus, between the years 1953 and 1959 it is estimated that food production increased by 22.6 per cent. while the country's population grew by 14.8 per cent. and *per caput* income by 22.6 per cent. In theory, then, this means an increase in supply of 22.6 per cent. against an increase in demand of 37.4 per cent., assuming an average coefficient of income elasticity equal to unity. Even with a coefficient below 0.6, it is still evident that supply remains unfavourable.<sup>1</sup>

In conclusion, although in principle the scheme is accepted as having contributed towards raising the country's growth rate, the agricultural sector was prejudiced since there did not occur in this phase the necessary increase in the export of agricultural products, and even the home market was not sufficiently provided for.

### (3) BURMA

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**B**URMA is a country of some 260,000 square miles, consisting of a considerable area of mountainous territory which is sparsely populated, and the valleys of the great rivers Irrawaddy, Chindwin, Salween, and Sittang all flowing into the Indian Ocean. It is one of the group of small countries lying between India and China, in the south-eastern part of the Asian land mass. Its present population is estimated at a little over 20 million persons, mostly belonging to a Tibetan family of the Mongolian races.

Burma became a part of the British Empire by stages as a result of the three Anglo-Burmese wars, in 1824, 1852, and 1885. British rule continued up to 1948, when Burma became an independent republic. The British rule was interrupted by the Japanese occupation of Burma between 1942 and 1945. The period of British rule up to 1941 represents the first stage in the modern development of Burma. The present study of the role of agriculture in the economic development of the country is confined to the British period up to 1941. This

<sup>1</sup> *Desenvolvimento e conjuntura*, Federação Nacional da Indústria, Rio, Nov. 1960, p. 13.

<sup>2</sup> This paper was read by Prof. U Tha Hto.

period is a convenient and interesting one for many reasons. First, the extensive records, so typical of British colonial administration, have left us with an excellent documentation of the pattern of development that actually took place. Secondly, although there was some political and commercial intercourse between Burma and other countries before the British annexation, it was British rule in Burma which brought about the real opening up of the country. Thirdly, the early British administrators were under the influence of the British classical economists and sought to apply their economic policy in the administration of the new colony. Economic development in Burma during the British period may therefore be considered an excellent example of the effect of applying the classical economic policy of *laissez-faire* to the economic growth of a country newly opened up to international trade.

The long history of British rule in Burma may be broken up into two periods, divided by the opening of the Suez Canal in 1870. The nature of the actual economic development that took place during the whole of this period may therefore be described, for the purposes of a brief discussion such as this, by taking three snapshot pictures of the Burmese economy: around 1800 before the advent of the British in Burma; in 1870 at the time of the opening of the Suez Canal; and in 1941 shortly before the Japanese occupation.

The Burmese Kingdom round about 1800 consisted of a population of about 5 million persons, mostly concentrated in the dry central part of the country, about 400 miles from the coast. The economy was based almost entirely on agriculture with a domestic textile industry adequate for local needs. The country was largely isolated from the world economy except for a certain amount of overland trade with China and an export trade in teak, a considerable part in the form of ships built in Burma for export. Part of the food supply of the population concentrated in central Burma was provided by rice lands watered by irrigation works dating from about A.D. 1000. Rice, fish, and salt were also supplied from the rich plains of Lower Burma. Land in these plains was abundant but cultivation was extended only to meet the needs of a slow expansion of population. The position around 1800 was therefore of a people dwelling in a self-sufficient economy at a low standard of living.

If we take another look at the economy round about 1870 we find a population of about 7 million people, nearly 3 million of them living in the British-occupied part of the country, which had formerly been sparsely populated but had acquired large population increases

mainly through migration from Upper Burma, still ruled by Burmese kings. The entire coast-line of the country was under British occupation, so that almost all the foreign trade was under British influence. The extensive migration from Upper Burma to Lower Burma indicates that people preferred the settled conditions of life and the opportunities for new economic activities under the *laissez-faire* policy. There was quite a brisk trade between the two parts of the country, foreign-made consumer goods imported into Lower Burma, or British Burma as it came to be called, being re-exported to Upper Burma in exchange for timber, crude petroleum and a few other local products.

At that time, it is recorded that rice cultivation had expanded to about 2 million acres, less than in proportion to the growth of population in Lower Burma. Lower Burma continued to supply the food deficit of Upper Burma as in previous times, but taking the country as a whole, cultivation was still for home consumption rather than for export. Over the whole period of the British occupation up to 1870 there had been a rise in paddy price, but the demand was far from steady, and exports fluctuated between high levels at times of poor harvests in India and China to a mere trickle at other times. The paddy was exported in the form of cargo rice (just unhusked without polishing). The cargo rice exported to Great Britain was actually cleaned by rice mills there. This method of export was dictated to some extent by the need to keep the rice during the long sea route past the Cape of Good Hope. Under these conditions rice was a risky business and a solitary rice mill established in Rangoon in 1861 was unprofitable.

It was true that the country had been opened up to world trade and the country had a larger volume of foreign trade than ever before. But the early British administrators deplored time and again that what they could see to be great potentialities in the country had not begun to be exploited in spite of what they considered to be most favourable conditions of administration. They made a number of tentative experiments in economic intervention so as to promote new developments, in deviation from their political maxim, as, for example, in actively subsidizing the immigration of Indian labour into Burma, but without any notable success. The position has been summarized by the late J. S. Furnivall in the conclusion: 'Before the opening of the Suez Canal the results of leaving economic progress to private enterprise were disappointing.'<sup>1</sup>

In our third snapshot picture, of the Burmese economy around

<sup>1</sup> J. S. Furnivall, *Colonial Policy and Practice*, Cambridge, 1948, p. 50.

1941, we would find a population of nearly 17 million persons recorded in the 1941 Census, of whom an estimated  $1\frac{1}{2}$  million were foreigners, mostly Indian and Chinese males attracted to Burma by the economic opportunities there. The Indian was largely a floating population, migrating into Burma at the rate of about 350,000 a year between 1920 and 1940, and returning to India at the rate of nearly 300,000 a year, creating the conditions of what has been called a perfect labour market,<sup>1</sup> responding sensitively to economic conditions in Burma. There was a clear racial division of labour in the country's economy, leading to the conditions of a 'plural society', the native Burmese people largely confined to agriculture, cottage industries, and domestic commerce, while foreigners dominated the sector of capitalist production in the exploitation of the country's timber, petroleum, and other mineral resources, and the sector of foreign trade, finance, and the professions.

Of the labour force roughly 70 per cent. worked in agriculture and related occupations, 10 per cent. in trade, 10 per cent. in industry, and the remainder in the public and professional service. An area of about 20 million acres, itself only about half the area classified as potentially cultivable, was sown under crops, about 12 million acres being under paddy, mostly in Lower Burma and largely for export. The rice was fully milled in modern rice mills which formed the bulk of the factory establishment constituting the industrial sector of the country. The second most important type of factory was devoted to the timber milling industry, again largely for export. The mineral and petroleum resources of the country were exploited, again mostly for export as there was no industry in the country to use these raw materials for further manufacture. The most modern methods were applied, employing foreign capital and few native labourers.

Foreign trade played a critical role in the economy. Both exports and imports had increased enormously since 1870, in value terms at an average rate of 5 per cent. over a period of seventy years. Throughout this period, trade figures show a consistent surplus of exports (valued f.o.b.) over imports (c.i.f.) of the order of nearly 50 per cent. of the total value of exports. The export bias of the economy is indicated by the fact that exports were nearly a third in value of the gross domestic product, according to an estimate for 1938-9. Agricultural products constituted the bulk of the exports, and of these rice was the main item. Out of a total production of about 7 million tons of paddy, between 3 and  $3\frac{1}{2}$  million tons of rice were

<sup>1</sup> H. Bernardelli, 'New Zealand and Asiatic Migration', *Population Studies*, vi, 1952-3 (Cambridge U.P., England, 1953), p. 41.

annually exported, constituting about 40 per cent. of total exports in value. The remainder of the exports came from the capitalist sector, including forest, oil-well, and mineral products.

Compared with 1870, the economy had now achieved a great expansion of production in a number of sectors. But the main element in this economic development was in the agricultural sector. Paddy cultivation had become a highly organized economic activity, not for subsistence, but for a world market. It had now come to occupy 70 per cent. of the working population, to contribute as a single item 40 per cent. of exports, and nearly half of the national product; agricultural processing in rice mills accounted for nearly 70 per cent. of about a thousand industrial establishments at the factory level. Agricultural taxation, by means of land revenue, was the largest single item of the revenue receipts of government. This remarkable development of agriculture and particularly paddy cultivation was due to a complex of suitabilities in Burma under British rule after the opening up of the Suez Canal, so that during this period 'Burma emerged at breakneck speed as the world's foremost exporter of rice'.<sup>1</sup> We may now turn to a brief examination of the factors behind the dramatic progress of this sector during the period 1870 to 1940.

At the beginning of the period there was an abundance of land, relative to population. The reason for the low density of population may be found partly in the fact that Burma was settled comparatively recently since when population had grown at only a small medieval rate of natural increase, and partly in the fact that the sea on the one side and high mountains on the other separated Burma from its densely populated neighbours, India and China. This kept migration down to a thin stream until the age of steam navigation had reduced the costs and dangers of sea travel and British rule in Burma had established completely free conditions of migration. There was, further, the great suitability of soil and climate, almost perfectly adapted to the cultivation of paddy with little labour. Whatever additional labour was needed for the development of agriculture was provided partly by the increase in the rate of natural increase of population, owing to the first stage of the control of mortality by public health measures, medical progress, and improved internal communications, and partly by the cheap and easy conditions of migration. Whatever capital was needed for the clearing of jungle land for cultivation was provided in the first instance by Western-type banks established in the capital city of Rangoon and was dis-

<sup>1</sup> H. Bernardelli, *op. cit.*, p. 39.

tributed by Indian money-lenders who provided a wide network of retail credit. Whatever capital was needed for the setting up of related industries such as processing and transport was readily provided by foreign investment. Above all, the Suez Canal reduced the cost and time taken to transport goods between Europe and Asia and at the same time the demand for rice in India and other countries provided a ready and growing market for as much rice as Burma could produce for export.

With all these favourable circumstances, it is still a matter of some interest to determine which particular factor contributed the motive force for initiating the expansionary movement in Burmese agriculture. Somewhat strangely this appears to have been the establishment of great steam rice mills. Stimulated by high prices for white rice during an Indian famine in 1874, a number of rice mills were established in Burma to process paddy into white rice. A rice mill was then a considerable investment and, to make it pay, it was desirable to keep it running for as long as possible in a year, and therefore necessary to ensure a sufficient supply of paddy. Hence rice millers soon adopted the system of making advance purchases from farmers through their agents, helping to establish a secure market for the farmers, and providing them with the incentive to expand cultivation as much as possible. Thus, in a period of some seventy years, cultivation, starting from less than 2 million acres, had spread to 20 million. In historical perspective, this was a great achievement on the part of the peasants. At the time of the opening of the Suez Canal, Lower Burma was a vast deltaic plain of swamp and jungle. By dint of hard work, and in response to economic incentives, the Burmese cultivator had transformed this into a great granary of food for the deficit areas of Asia and elsewhere. In reflecting upon this great increase in production, it is important to distinguish between an increase due to technological changes in production and that due to increased use of resources with an old technology. In Burma, apart from some improvement in the type of plough used, and the introduction of some new varieties of paddy in greater demand for export, the cultivation of the soil continued to be mostly along traditional lines. There was simply no need and no attempt made to mechanize any of the field operations, and the use of chemical fertilizers was uneconomical in spite of the great expansion of production. While agricultural production expanded at an enormous rate, agricultural productivity per man and per acre remained almost unaffected by the great transformation.

This contrasts with some of the other developments that were

taking place at the same time in other sectors. Modern technology was introduced and fully established in industry, particularly agricultural processing industries, finance, trade, and transport, and the extractive industries in timber, oil, and minerals. These areas constituted the capitalist sector, and were mostly built up by foreign investment and carried on by foreign entrepreneurs. A key characteristic of these areas was that they served mostly in the export sector. Domestic industries producing consumer goods for domestic consumption, however, failed to attract foreign capital, and apart from a fugitive cotton textile industry, soon succumbed to the competition of cheap imports.

Economic development is not just a matter of increasing production. It is relevant to study also the effects of increasing production on the conditions of welfare of the people. Towards such a study, it must be recalled that as part of the process of agricultural development there grew up a plural society in which a powerful minority of foreign races had established control over key sectors such as trade, transport, industry, and finance. The result was that the Burmans themselves barely participated in the economic progress of the country. Some indications of increasing welfare are given by the increasing volume of imports of consumer goods that flowed into the country, but part of this served only to compensate for the decline of domestic manufacturing industries, through which Burma had been largely self-sufficient during the first part of our study. There is also some dispute about the extent to which this growing volume of imports reached the indigenous people, rather than the economically better-off foreign element of the population, concentrated in the urban sector. That the domestic cottage industry producing a rough cloth out of imported yarn on hand looms continued to survive in the face of the competition of mass-produced foreign textile goods is an indication that the indigenous people could not afford to buy even these cheap imported textiles.

But there is more telling evidence of the failure of the Burmese agriculturists to participate in the progress of agriculture itself. The typical farmer was dependent on money-lenders for financing his annual production and subsistence, and borrowed at rates of interest ranging from 24 per cent. to even 150 per cent. per annum. He was in a chronic state of indebtedness. This has been attributed often to the improvidence of the cultivators, but it has been held by many authorities that the growing agricultural indebtedness has indeed been a condition of economic progress, for it was by giving advances to the farmers that the miller could ensure a supply of paddy for his

mills. Such debt was incurred on the pledge of the land, and after it accumulated to a certain point, the farmers had no more chance of redeeming their land, and it passed into absentee ownership. Hence by the end of the period under study, nearly half the cultivated land of Lower Burma was owned by non-agriculturists. A consequence of this was that a large proportion of farmers were tenants, who now had to pay rents for the land they had cleared and owned previously. To the landlords, the land was just a form of commercial investment from which they sought the highest return, so that rents were raised to the limit that the farmers could be made to pay. As a result, the rice cultivator was only just eking out an insecure and inadequate living in the country which was the world's largest exporter of rice. On the other hand, there is abundant evidence of the share of the growing prosperity of the country that was accruing to the foreigners. They owned almost all the investments in the capitalist sector, as well as a great part of the agricultural land; they monopolized the highest-paid employments in government, in the professions, and in the trade of the country. That part of the income accruing to them which they did not spend in the country accounted for the large and steady export surpluses which have been mentioned before. Looking at it in another way, most of the surplus which the development of the country's resources produced, and which might have been available for industrial investment in the manufacturing sector, was lost to the country because it accrued to the foreigner.

This account of the economic development of the country, and the role of agriculture in that process, is offered with a view to suggesting a reconsideration of some parts of widely accepted theories of economic development. At the conclusion of one and a half centuries of fairly close contact with the modern world, Burma has emerged as a typical 'under-developed' country, by all the usual indices of incomes, investment, and economic structure. But it is not so widely recognized that this has occurred at the end of a long period of intensive 'development' of the country's resources. Further, this development occurred primarily under the influence of international trade under conditions of the most highly recommended free-trade patterns. But perhaps, when a country is so developed under the influence of international trade, this very process leads to dual and plural economies, which have so often been diagnosed as the real cause of 'under-development'.

In the presently advanced countries there has always been a division of society into economic classes, and the conflicts of interest among these classes have doubtless played a considerable part in providing

the dynamics for economic progress. What, then, is the difference between these countries, and the presently under-developed countries, such as Burma? The main difference lies in the fact that one of the more powerful of the economic classes that emerged in the course of Burmese agricultural development was predominantly composed of foreigners, with close and continuing connexions with their homelands. This has been a critical factor in the subsequent course of Burmese development, for many economists who have stressed the priority of agricultural development as a precursor for industrialization have based one of their arguments on the fact that higher incomes arising out of agricultural development provide the basis of a rising demand for non-agricultural and manufactured products, a necessary condition for industrial development. In Burma the indigenous people obtained only a small share of the growing incomes in the agricultural sector and the larger share went to the foreigners. Out of their share the foreigners spent a greater part for consumption purposes in their own countries. The foreigners out of their high incomes were also in a position to undertake industrial investments, over and above the investments they undertook in the agricultural and other extractive export industries of the country. But in fact, they made most of their industrial investments in other countries. This weakness of the inducement to invest in Burma, as in under-developed countries generally, is attributable to many factors. One of the important factors, however, was the low purchasing power of the indigenous people and the leakages into consumption abroad of foreigners. These circumstances thus cut off an important channel by which agricultural development might have led to self-sustained economic growth in Burma. That is to say, if a larger share of the surplus produced in Burmese agriculture had accrued to the indigenous people of Burma, there would have been a larger consumption expenditure, so that effective demand for at least some manufactured consumer-goods industries might have reached the threshold level. Then, a few more industries might have been established and the chances for a take-off into self-sustained growth thereby greatly improved.

Another of the arguments which are usually advanced to stress the prior role of agricultural development in any country's progress from the under-developed stage has stressed the fact that food supply, and to a smaller extent agricultural raw materials, are often critical bottle-necks during any phase of industrial development, and hence that agricultural development has to precede any successful programme of industrialization. And this argument is reinforced by

historical evidence of considerable agricultural progress previous to all cases of successful industrialization. It cannot be denied that agricultural development which increases the supply of food at a faster rate than the demand for it is a necessary and indispensable pre-condition of industrial expansion and economic growth. We might, however, go on to consider to what extent agricultural development, apart from being a necessary condition, more positively promotes the chances of successful industrialization. In the 'older' long-settled countries, where all available resources have already been exploited quite intensively by a traditional method of agriculture, increased production can be achieved only by technological progress. This requires a large-scale transformation of society, affecting all aspects of the economy and involving, at least on the part of a group of people, new attitudes to risk-taking and technical innovations. Once this is achieved in one sector, the chances are great that it will spread to the other sectors. Further, if this is achieved in the agricultural sector, the spread to other sectors is even more facilitated by the concomitant increase of agricultural production. If agricultural development is to be more than a necessary condition of economic progress, it must be based on a new agricultural technology with an increase of agricultural productivity of land and labour. In contrast, we have seen in Burma that there was a great expansion of agricultural production with only minor improvements of technology. The Burmese agricultural development did not therefore provide any positive stimulus to development of the rest of the economy on the technological side or the economic side.

In the face of this lament, it might of course be argued that what happened in Burma was in fact the optimal tendency towards specialization along the lines of comparative advantage. But economic development of any self-sustaining character does not necessarily arise from optimal adjustment to existing factor resources, but from a growth of the economy by technical progress and capital formation. If, therefore, the pattern of international specialization were necessarily to lead to the growth of such plural societies and to impede the process of capital formation, then perhaps the oft-claimed advantages of free trade for economic development must be reconsidered.

In conclusion we may relate Burmese experience to the framework for the study of economic growth provided by W. W. Rostow.<sup>1</sup> Whatever may ultimately turn out to be its analytical significance, it does provide us with useful descriptive categories for the classification of stages of economic growth. But the Burmese experience, like

<sup>1</sup> W. W. Rostow, *Stages of Economic Growth*, Cambridge, 1960.

that of a number of other similar countries, fits awkwardly into those stages, as noted by Rostow himself. For in terms of rate of growth of national product and the emergence of adequate investable surpluses, Burma during this period had all the characteristics of a take-off into self-sustained growth. At the end of the period of our study Burma had capital formation at the rate of over 7 per cent. of the net national product, together with capital exports of the order of well over 10 per cent. of the net national product. To some of us interested in the processes of economic development, it does not seem particularly illuminating to argue that Burma in fact failed to take-off into self-sustained growth for lack of a political, social, and institutional framework which exploits the impulses to expansion in the modern sector. This is because Rostow does not provide us with any objective specification by which a political, social, and institutional framework is to be regarded as adequate or not *ex ante*.<sup>1</sup> To the British administrators in Burma, brought up on Adam Smith and Jeremy Bentham, it might well have seemed that they had introduced the best possible framework for continued economic expansion.

#### (4) UZBEK S.S.R.

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UZBEK S.S.R. is one of fifteen sovereign republics possessing equality of rights which form the U.S.S.R. Its territory consists of 409·4 thousand square kilometres, two-thirds of which is occupied by steppes and deserts. Its mineral wealth consists of coal, oil, natural gas, rare and non-ferrous metals, hydro-resources, and building materials. It is possible generally to cultivate crops on irrigated lands. As general sources of irrigation we may name the Syr-Daria, the Zaravshan, and the Amu-Daria rivers with their tributaries. Glaciers and snow feed these rivers which discharge most of their waters in summer. The discharge reaches about 150 milliard cubic metres during the vegetation period, but up to now only one-third of it is used.

<sup>1</sup> For a clear discussion along these lines, see Kenneth Berrill's paper 'The Problem of Economic "Take-off"' addressed to Round Table on Economic Development, Gamagori, Japan, 1960.

The agricultural land totals 27 million hectares of which 18 million are under pasture and grasslands and 3 million under crops, 2.6 million hectares being irrigated. Uzbek soils are serosemic with poor content of humus, but potential fertility is rather high. If irrigated, soils would give good crops of cotton, rice, leguminous plants, corn, vegetables, fruit, and grapes. The flat relief of the country is helpful for the development of irrigation. Melioration of soils with excessive mineral content, plus irrigation, is a necessary condition for agriculture.

In 1961 there are 8.7 million persons in Uzbekistan, of whom 5.4 million live in agricultural districts. Two-thirds of the total population are Uzbeks, 13.6 per cent. Russians, 5.5 per cent. Tartars, 4.16 per cent. Kasakhs, 3.8 per cent. Tadjics, 2.1 per cent. Karakalpacs, and 8.9 per cent. Kirgeses, Ukrainians, and Turks.

Before the Revolution Uzbekistan was a backward colonial outskirts of Russia, a supplier of raw materials and a receiver of industrial exports. There were a few industrial establishments using quite primitive methods, and railroad workshops. The cotton ginning and oil industries gave more than 85 per cent. of the total industrial production. Heavy industry plants were few and very primitive. They were very poorly equipped. Coal resources were not developed, and oil and electricity production were almost in the same position. Heavy industry accounted for only 2 per cent. of gross production.

At present Uzbekistan judged by the nature of its national economy is both agricultural and industrial. During the years of Soviet government up-to-date industry has developed. At present heavy industry plays a leading role, giving nearly half of all industrial production. By 1958 gross output had increased 16.6 times in comparison with 1913 and large-scale industry 26.8 times. The yearly increase in the rate of production in the first two years of the seven-year plan (1959-65) was about 10 per cent.

Where there was no metallurgy or machine making, now the Republic possesses both; agricultural and textile machine building are widely developed. The output consists of excavators, cotton pickers, cultivators, mowing-machines, hydro-pumps, ditchers (trench excavators), cranes, spinning machines, and many other machines and equipment. In 1960 coal output was 3.4 million tons, and oil 1.6 million tons. Under Soviet government electric power output has increased from 3.3 million kilowatts to 5 milliard 80 million. The mining of gas is increasing. Recently a large new source was found. A gas main is under construction which will supply the republic of Middle Asia and Ural. There are more than 800

large- and small-scale electro-stations producing 85 per cent. of the electricity. The Republic occupies fourth place in the U.S.S.R. by volume of electric power production, generating 2.5 times as much as in the whole of Tzarist Russia in 1913.

Many light industrial and food establishments have been organized; 237 million metres of cotton cloth were manufactured in 1960. Non-ferrous metallurgy is developing with increasing speed. Large-scale industrial establishments have been organized—Tashkent agricultural machine-building plant, Tashkent textile group, Chirchick electro-chemical group, Begovat metallurgy plant, and others.

In cotton-cloth manufacture Uzbekistan occupies second place, and mineral fertilizers third place, in the U.S.S.R. Plants and factories are suppliers of various machines, toxic chemicals, and cotton production and ginning equipment to other Soviet republics and even to foreign countries. In 1960 the industrial products of Uzbekistan were exported to forty-two eastern and western countries.

Agriculture also underwent basic changes. Industrialization made it possible to supply tractors and machines and to mechanize the processes of agricultural production. The value of Uzbekistan agriculture to the whole economy of U.S.S.R. is very great and gradually increasing. It is a main cotton base of U.S.S.R. and produces two-thirds of the gross output of the country's cotton production. At the same time it is specializing on production of silkworm cocoons, astrakhan pelts, dried fruits, bast crops—kenaf and jute—and rice.

Before the Revolution cotton growing could not be developed quickly on the small peasants' farms. The crop's agro-technique was primitive; no mineral fertilizers were used; seed breeding was only beginning; handwork was predominant. The main implements were wooden ploughs, harrows, and hoes. Oxen and horses were used as draught animals. There were no tractors. Artificial irrigation is a basic principle of cotton growing but it was not used on the necessary scale. In the whole territory there was only one small system with engineering equipment. This meant that a lot of work had to be done for inlet and discharge of water and for cleaning the channels from deposits. This could not give timely distribution of water. It resulted in flooding of populated places during the spring high waters and in leaving fields without enough water in the fall down period.

To secure a speedy development of cotton growing it was necessary to change to new methods by the organization of collective and State farms instead of 800,000 small private farms of poorer leaseholders. The cotton farms without land or with too little land were liquidated as a result of nationalization and realization of the land-

water reform of 1925-8. This put an end to the exploitation of the dehkans (peasants) and at the same time established postulates for general and rapid development of productive forces. It destroyed the very base of feudal and semi-feudal exploitation of the dehkans.

The following years were marked by progress in the development of the dehkans' collective farms. At present there are 170 large-scale State farms and 951 collective farms. State farms cultivate 30 per cent. of the whole cultivated acreage. The average State farm covers about 8,000 hectares of crop land. As a rule they were established on the virgin, less fertile lands which demand large capital investment and high skill for their cultivation. Collective farms are large-scale farms based on a principle of collective ownership of the means of production. The average collective farm covers about 2,000 hectares of crop land and 688 hectares of farmsteads.

Organization of large farms as collective and State farms was the decisive factor opening the way for progress in the agricultural development of the country by cultivating virgin lands and intensifying the whole agriculture. Intensification was brought about by using the latest achievements of science and technology, and by the mechanization of all agricultural processes; by using mineral fertilizers; and by developing irrigation.

The State capital investment from 1928 to 1958 was equal to 50 milliard roubles, not counting the savings of collective and State farms which are used for increasing production. Investment is increasing every year. In 1958 alone more than 5 milliard roubles were spent on agriculture.

Much attention has been paid to problems of irrigation—the main base of the Republic's agriculture. Large-scale works have been carried out. These have made possible not only the cultivation of new lands amounting to more than 1 million hectares but also a full reorganization of the old primitive system of irrigation. The irrigational network of the Republic runs to 160,000 kilometres with more than 9,000 hydro-technical works and a capacity of 7,000 cubic kilometres a second, against 1.5 thousand cubic kilometres in 1913. The area under crop then was 2.2 million hectares. By 1958 it had already reached 3 million hectares. The Republic has 6.5 to 7 million hectares of new irrigated lands. The increase of irrigation is going on especially in collective and State farms.

According to a government decision a new large centre of cotton growing is being developed in the Colodnaya steppe. The prospective acreage of future crop lands there is about 1 million hectares of which 230,000 have already been cultivated. Large-scale State and

collective farms with from 8,000 to 10,000 crop acreages are being organized on these lands. The money invested in Colodnaya steppe is earning a good return; 130 million roubles which the Government has spent on it during the last four years (in new currency) has been fully returned in the form of profit from cotton and other agricultural products.

Large-scale cultivation of virgin lands is being undertaken in the Central Fergana, Bukhara, Surkhan-Darya, Samarkand, Horezm regions and in Kara-Kalpakskaya A.S.S.R. On the completion of the seven years' plan (1959-65) in the whole of Uzbekistan there will be 700,000 hectares of new irrigated lands.

Construction of the Nurecksky hydro-electric station opened a new stage in the development of cotton growing in all the Republics of Middle Asia. Nurecksky hydro-electric station not only increased power production but allowed a further extension of irrigated lands.

The cheapest electric power along with reasonable cost of irrigation of the new lands per hectare allows cotton and other agricultural production to increase without much cost and labour expense.

New cultivated lands allow the cotton-lucerne-corn rotation to be introduced on the majority of farms. New and progressive methods of closed horizontal and vertical drainage are used on a large scale. The irrigation networks are fully equipped with engineering plant. Soon we shall reach automation and telemechanization of water distribution to irrigation channels. In several districts underground water will be used along with surface water.

Another feature characterizing the great qualitative change in the Republic's agriculture is the altered pattern of acres under crops. The share of cotton increased from 19.4 per cent. in 1913 to 44.2 per cent. in 1958. The total area under cotton increased from 411,000 to 1,347,600 hectares. At the same time the total area under grain crops decreased from 1,539,400 to 1,006,000 hectares. The Republic has developed the cultivation of other industrial crops that lagged behind or were not cultivated at all before the revolution. These are kenaf, jute, sesame and tobacco (58,000 hectares). A considerable share of the crop acreage is for forage crops, the total having reached 502,600 hectares in 1958 in contrast to 163,300 in 1913.

The general trend of cropping has been determined by intensification, in the first place by introducing cotton. This became possible owing to wide co-operation between Uzbekistan and other regions. Considering the natural environment, habits of work, and the century-old experience of Uzbekistan, it was quite reasonable and natural to concentrate efforts on the development and promotion of cotton

growing and to make up the shortage of grain from some northern regions. A great role in the development of such co-operation is played by the Trans-Siberian railway, constructed in the thirties, which made it possible to transport grain from Siberia and Kasachstan to Uzbekistan.

The extension of areas under cotton and other crops was combined with a comprehensive programme aimed at improving soil fertility. This had a distinct effect on the development of cotton. In 1959 the yield amounted to 22.8 centners per hectare. It should be noted that advanced farms and districts get 30 or 40 or more centners of seed cotton per hectare. Generalization about progressive methods of farming shows that we have every possibility of getting higher yields. The highest yield of seed cotton, in 1959, amounted to 3,163,000 tons in contrast to 518,000 tons in 1913—a six-fold increase.

The most important factor in improving farming methods and increasing yields has been mechanization of all branches of production and, primarily, of cotton growing. On the farms of the Republic there are over 70,000 tractors (in terms of 15 h.p. units), 840 excavators, 8,500 cotton harvesters, tens of thousands of cars, hundreds of thousands of various machines and cultivators, planters, combines, hay mowers, and others. The tractor fleet contributes 42.4 per cent. to the power capacities in agriculture while animal traction makes 3.3 per cent. These figures testify to a real technical revolution which ensures tremendous success in mechanizing the major processes. At present ploughing, planting, and row cultivation of cotton are completely mechanized. Production of grain and oil-bearing crops is mechanized all over the Republic, except in mountainous areas. Mechanization in production of jute, kenaf, potatoes, and vegetables is being extended.

More and more modern machines as well as progressive production techniques are being used in cotton growing. The introduction of check-row pocket planting with a required quantity of seed to a hill and application of cross-cultivation eliminates hand-hoeing during the growing period. The hand-hoe (ketmen) that used to be the main tool in the hands of a cotton grower is being driven out by the machine. With a view to easing the work, increasing labour productivity, and saving water we use sprinkling equipment, portable tubings, and siphons. In recent years Soviet constructors have developed a series of cotton pickers, strippers, and machines for removing guza-paya, which sharply increased economic efficiency of machine harvesting. In Uzbekistan cotton pickers harvested 330,000 tons in 1959 and 500,000 tons in 1960. Great importance is attached to

electrification. Annual electric power consumption in Uzbek agriculture will reach 1,350,000,000 kilowatt-hours in 1965. Average electric power consumption per worker will amount to 276 kilowatt-hours in 1965, in contrast to 54 kilowatt-hours in 1959, including 150 kilowatt-hours per worker in the fields and 340 kilowatt-hours per worker in livestock breeding, the 1959 figures being 39 and 260 respectively. Electric power consumption in housekeeping per man will amount to 120 kilowatt-hours in contrast to 38 kilowatt-hours in 1959.

Cotton-growing collective and State farms are getting more and more mineral fertilizers and pesticides as well as chemicals for cotton defoliation before harvesting. At present in Uzbekistan the average rates of mineral fertilizer application per hectare of cotton crops amount to 6 or 7 centners of nitrogen, 5 or 6 centners of phosphorus and 50 kilograms of potash. Extensive experiments are now being carried out on the usage of liquid nitrogen fertilizers; increasing the economic efficiency of fertilizers by improving the methods and times of their application; and usage of chemical-herbicides in weed control.

Extensive work in seed breeding is being conducted with a view of boosting yields and improving the quality of cotton. Breeders have developed outstandingly high-productive and disease-resistant varieties of long-staple and fine-staple cotton. These are 108-F, 137-F, 147-F, C-450, &c. In many varieties lint output amounts to 37 to 39 per cent., staple length being 32 to 34 millimetres. Breeders are working at developing higher yielding and earlier maturing varieties of cotton suitable for machine harvesting (the necessary features being a compact shape of the plant and strength of stem).

Payment for work in a complex brigade depends on the results of the work according to the principle: equal payment for equal amount of work done. The facts that tractors and many other machines and implements are attached to brigades and that machine operators are permanent members of brigades and are concerned in obtaining high yields at minimum man-hours, make for a better utilization of machines and an extensive mechanization of production processes. The advantages of co-operation and labour specialization are realized, indiscriminating evaluation of labour is eliminated, and material incentive for workers to boost production is provided for. In 1959 5,000 complex brigades were engaged in cotton growing in the Republic. These managed more than one-third of the cotton crops and obtained average yields of 25.7 centners per hectare, the labour requirement per centner of seed-cotton being 3.9 man-days.

The principal form of labour organization in agriculture based

on extensive use of machines is a production brigade. Experience has shown that the most progressive form in plant breeding is a brigade combining tractor operations with crop management (a complex brigade), where a certain group of workers is entrusted with a certain quota of machines and land for a period of at least one group rotation. In modern cotton production the most efficient size of complex brigades is considered to be one managing from 150 to 200 hectares of cotton. The allotment of a complex brigade acreage is aimed at making the greatest use of machines and implements. When allotting the acreage, consideration is given to the amount of work per row-crop tractor during the summer period of cotton management, the number of row-crop tractors being related to the bulk of work per plough tractor. In the best brigades, such as Tyubko's, N. Bekirov's, and D. Kuchiev's, labour requirement per centner of cotton was only 10.1, 12, and 12.8 man-hours, respectively. Cotton production per man in these brigades exceeded 20 tons.

The introduction of scientific farming which includes complex mechanization and efficient labour organization has made it possible to increase average labour productivity five times compared with 1913. Labour requirement per centner of seed-cotton had fallen to 28 or 30 man-days by 1958. Many advanced farms in our Republic now take 2 or 3 man-days per centner of seed-cotton (State-farms 'Malek', 'Savay', 'Hazarbag').

Horticulture and viticulture are of great importance. The total area under orchards, vineyards, and small-fruit amounts to more than 100,000 hectares. The fame of Uzbek grapes and fruit is world-wide. Uzbekistan is the main producer of currants (70-80 per cent.), large grapes, and apricots.

Cultivation of rice has greatly developed. About half the rice crops of the U.S.S.R. are concentrated on irrigated lands. Advanced collective farms obtain from 50 to 60 centners of paddy per hectare.

In recent years production of corn and sorghum, used mainly as feed, has been greatly developed.

Bast crops—kenaf and jute—occupy an important place. In 1960 the Republic produced 212,000 tons.

A very important branch of agriculture is livestock breeding, particularly karakul sheep which give extra high quality pelts. Karakul breeding is the only way so far of efficient utilization of immense desert pastures. Of the total 1958 production of 4,300,000 pelts in the Soviet Union 38 per cent. was produced in Uzbekistan. Collective farms and State farms are starting to turn karakul sheep breeding into a stable cultivated pasture enterprise. For this purpose

work is being carried out over a huge area on irrigation and improvement of pastures, roads are being constructed, large karakul-breeding enterprises organized on scientific principles are being established, being the base for economics and cultural centres. Scientists and specialists working in this branch of agriculture are trying to solve the problem of rapid increase in the production of grey karakul (and of various colours).

In 1960 cattle stock amounted to 2,228,000 head, the increase over 1913 being 886,000. Similarly, sheep stock increased from 3,821,000 to 8,691,000. Recently pig breeding and poultry farming are quickly developing. Main supplies for cattle-breeding enterprises are the production of forage in the rotation (lucerne, corn, joughara).

Extreme changes have been brought about in sericulture, one of the oldest branches of agriculture of Uzbekistan. Transition from pure-strain rearing to hybrid silkworm has been put into practice and rapid rearing has been developed. In 1958 the gross yield of cocoons reached 14.1 thousand tons, that is four times higher than in 1913.

In the very near future the national economy of the Republic will be further developed. From 4 to 4.5 milliard roubles of State means, or 2.4 times more than for the seven years from 1952 to 1958, will be put into the Uzbek national economy, the increase in capital investments being 1.8 times that in the whole U.S.S.R. over the same period. Taking into account the whole capital investment sum (opening up of Colodnaya steppe, railway construction and others, which are on Union budget) for seven years Uzbekistan will receive more than for the last forty years.

In the Republic, in the first place those branches of national economy will be developing for which there are most favourable natural and economic conditions. The production of cotton will reach 4 million tons in seven years. The increase will be reached by raising yields and expanding the acreage under crop on the new irrigated land; 700,000 hectares of new irrigated lands will be opened up. The construction work for water will cost more than 2 milliard roubles annually. Cotton growing, as other branches, will develop on the basis of technological progress and complex mechanization together with wide application of chemistry, automation of machine control, and more clear division of labour between agriculture and industry. This year square-cluster planting of cotton will be carried out on 1,050,000 hectares and on 250,000 hectares by precision drills. Cotton sowing will be cultivated in two directions on 1,260,000 hectares without using strong hoes on 1,060,000 hectares; 600,000 tons of seed-cotton will be picked by machine.

There will be subsequent development of mechanical engineering, in the first place for making farm machines which will provide collective farms and State farms with tractors, cotton pickers, sowing machines, cultivators, apparatus for pest control, excavators for irrigation and land reclamation work, diesel engines, pumps, and other equipment for pumping irrigation.

The production of mineral fertilizers will be increased on the basis of natural gas and other raw materials. The production of nitrogenous fertilizers will be increased 3.2 times by the end of the seven-year plan. This will allow the Republic to supply itself with nitrogen and to increase the amount of fertilizers for other cotton-growing republics. There will be subsequent development of power. A number of heat electric stations, working on natural gas, and gas-electric stations will be built. They have not only power but irrigational potential.

During the seven-year plan the material and cultural level of Uzbek people will increase. Industrial and professional workers will have a 6-hour work-day together with an increase of industrial and professional workers' wages and collective farmers' incomes (profits).

The mightiness and grandeur of the seven-year plan lies in the fact that it is a common plan of development of the national economy and culture for the whole Soviet Union. This represents a friendship of the Soviet peoples who are tightly connected by inviolable friendship, mutual support, and unity of purpose in fighting for a better life for the peoples of the world.

## (5) IRELAND

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THE Irish economy presents so many of the characteristics associated with the advanced economies of western Europe that at first glance it might well be regarded as one. Living is pleasant, services modern and efficient, costs reasonable. There is no large-scale slumdom or social unrest. The infrastructure is well developed. The great markets of western Europe are close by and there is free access to the British market on the preferential economic terms accorded to members of the Commonwealth.

Closer examination uncovers equally distinctive features belonging

<sup>1</sup> In Mr. Byrne's absence his paper was read by J. J. Scully.

primarily to under-developed areas and not infrequently associated with economic stagnation and decay. Population which shrank by half during the last century is 2.9 millions, or 109 per square mile, and slowly contracting. Net emigration rates are high, 13.4 per thousand during the latest intercensal period, 1951-6. National output has expanded very slowly. Approximately one-quarter of the working population is engaged in industry, but two-fifths in agriculture. The majority of holdings are small, three-quarters being of less than 50 acres and half of less than 30 acres. The system of farming is largely extensive, yielding an average gross output of £15 per acre, and the bulk of visible exports are agricultural.

A west European standard of living is, in short, superimposed on an under-developed pattern of production. The attendant social and economic strains are eased by emigration and drawing on external assets, and the immediate concern is to find a more satisfactory alternative. It is claimed that agriculture can provide this. The claim is not new, but has sharpened during recent decades in emphasis and definition and is compounded of a development potential that agriculture has long displayed and a failure thus far to unlock that potential to any appreciable extent. The significance of the failure may be judged against some of the economy's perennial problems, for example, low national output, balance of payments difficulties, unemployment and its counterpart, emigration.

Since 1948 gross agricultural output increased by about one-sixth, or somewhat less than 1.5 per cent. per annum. During the preceding four decades it remained approximately stationary and, by contrast, increased by 25-30 per cent. between 1861 and 1909. Production changes during this century have been marginal, representing the substitution of associated crops for one another in response to price changes, or the transfer of land to a specific use dictated by public policy. The basic pattern has not altered. Grassland still occupies some 85 per cent. of the fertile land, corn crops 10 per cent., root and green crops, flax and fruit 5 per cent. Three-quarters of total output consists of livestock and livestock products, and one-quarter of crops and turf; cattle and calves account for about one-quarter, milk and dairy produce for one-fifth. Post-war national output has risen by perhaps one-quarter, attributable in the main to industry, which now contributes about one-quarter of the national income, approximately the same proportion as agriculture. The industrial proportion, however, is low by west European standards, as is average income per head of population, variously estimated as being from one-third to one-half below that of Great Britain.

About one-third of agricultural output is exported, one-third sold on the home market, and one-third consumed on the farms. Thirty years ago exports absorbed half the total and somewhat less than 30 per cent. was consumed on farms. The decline in the proportion exported reflects rising consumption standards among the farming population and a combination of better living and higher employment in urban occupations. External trade, which because of the economy's small size necessarily bulks large in its economic affairs, presents particular problems. Four-fifths of visible exports go to the United Kingdom, but half the imports come from other countries. Three-quarters of visible exports are of agricultural origin and go almost entirely to the United Kingdom where agriculture is being actively developed. Total visible exports defray only three-fifths of imports. The result is a balance of payments that is normally precarious and frequently subject to great strain, as for example when sterling is inconvertible or consumer demand suddenly increases. There is rarely an export surplus, save in exceptional circumstances such as war-time, when imports but not exports are severely restricted. During the 1919-39 period there was some running down of external assets resulting from the First World War; those accumulated during the Second World War were liquidated by the deficits of 1947-56.

For more than a hundred years agriculture has been shedding labour. Between 1841 and 1861 rural population dropped from 5.5 to 3.5 millions. During the next forty years it decreased by nearly 1.2 millions, and since 1901 by approximately 0.6 million. While the rate of decline is less than during the last century, it is high by comparison with other countries, and is continuing. It is most severe on smallholdings and among relatives who assist on the farm and as members of the household traditionally do not receive regular wages. Paid agricultural employees, never a numerous class, have declined in numbers very considerably since the war. Total population is declining, but has a high rate of natural increase, 9.2 per 1,000 or 27,000 per annum in the period 1951-6. During the same interval the unemployed proportion of the insured non-agricultural population averaged 9.3 per cent. per annum and net yearly emigration 40,000. Working population decreased as the higher employment in industry and services was offset by reductions in agriculture. All this was a continuation of long-standing trends, noticeably accelerated, however, in the case of emigration and farm population decline.

Data such as these show that agriculture has made little impression on the economy's basic problems. Neither has it activated the

development possibilities that location, resources, and external associations so clearly indicate. The failure is a complex of many causes, among which farming pattern and public policy are of prime importance. Both date back to the nineteenth century when two issues dominated national thinking: independence and land tenure. Matters of purely economic or social significance were subordinated to and identified with the political and agrarian so that progress in the social and economic fields was not considered feasible without a settlement of the two main issues. By corollary, progress was expected to flow automatically from such settlement. In a general way it was expected that the land would support the bulk of the people and that surplus numbers would be absorbed by home industry. Whether the resulting structure of farm size would provide acceptable living standards for the farming community, whether it could withstand the pressure of outside economic change, whether major adjustments in social organizations were needed to preserve it, were not seriously examined. In the intense concentration on the two main problems other issues were resented as distractions. So it was that Horace Plunkett, trying to push through a new social concept of organized co-operation, found the going very rough and met opposition not only from the politicians but also from the very people he was most anxious to help, the smallholders. Meanwhile the free play of economic forces was fashioning a system of farming that boded little good for this same group.

In the nineteenth century free trade, cheap foreign corn, and rising consumption standards among the industrial proletariat helped to push British and Irish agriculture towards meat production. In this enterprise Ireland had natural advantages; she was particularly well favoured climatically for growing good grass. In the 1890's, owing to disease risk, Great Britain prohibited cattle imports from the European mainland and in the early 1900's refrigeration effectively ended live animal imports from the Americas, substituting frozen meat in their place. By the outbreak of the First World War Ireland was practically the sole exporter of live cattle to Great Britain, and this position was reinforced after 1919 when British agricultural policy emphasized domestic milk production. During the 1930's, policy was amended to include financial aid for home-produced beef and the subsidy was extended to imported Irish cattle that had been resident in Great Britain for a stipulated number of months. British demand for Irish cattle now concentrated almost exclusively on forward stores and Irish agriculture was geared still more closely to store cattle production, which in Irish conditions signified low

investment, low output, low income, low savings, and low employment per acre.

In the industrial field a different situation prevailed. Extending back to the eighteenth century, Irish thought on industrial development has been protectionist and domestic. During the nineteenth century the contrasting experiences of Ireland and England in matters of population growth and employment confirmed the view that a home market reserved by home government for the home producer would offset unfair international competition and provide a sound basis for home industry. Whether this was a sufficient basis for the non-farm employment the economy required and whether such a policy was self-limiting, did not arouse attention. Protection was accepted by each generation and taken as the basis of industrialization when independence was granted in 1922. Attempts to implement this policy in the 1920's were cautious. Protectionist proposals were individually assessed in terms of the probable consequences to the whole economy; multiplication of industrial establishments was not rapid. In the 1930's conservatism was dropped and effective protection—by tariff, quota, and licence—given to anyone prepared to take whatever risks remained in a guaranteed home market. The emphasis was on employment, and industry assumed prime importance in public policy.

The economic significance of agriculture altered in response to industry's position as prime job provider. Based on protection and faced into the home market, industry was organized to supply domestic needs, mainly consumer goods. Materials for manufactures other than food and drink, and capital equipment for all, had to be imported, and it was agriculture's responsibility to provide the foreign exchange. The export sections of agriculture became particularly precious and live cattle a main part of foreign trade. The implications for the economy were not altogether happy. The large numbers engaged in agriculture, coupled with their low incomes, cut down domestic demand and the scope for industrial expansion, as well as restricting savings and thereby hindering investment. Although agriculture retained a large proportion of the population the employment content of its prime enterprise, cattle production, was essentially low. Thus, a flood of rural labour, beyond new industry's capacity to absorb, continually flowed on the job market. Failure to expand exports exposed the balance of payments to strain each time there was a surge in industrial development or in home demand on which industry's development prospects so much depended.

Caught between the conflicting consequences of an agriculture shaped by external forces and an industry shaped by internal, the economy had little room for manœuvre. Economic problems became complicated by the political implications of their solutions and economic progress, denied the support of a vigorous agriculture, stumbled and halted at many points. Emigration acted as the major equilibrating agency, siphoning off labour surplus to prevailing rates of absorption, making the development problem in that sense more tractable but also less pressing. It offers little by way of a lead, however, to other under-developed countries because in its Irish context emigration effectively meant unrestricted access to the two greatest labour markets of the world, the United Kingdom and the U.S.A.

Recently, as a result of public policy, and notwithstanding the emphasis on agriculture, other trends have been appearing that may affect very deeply the shape and course of future progress. Since the war tourism and travel have been developed into a major export, contributing up to one-third of invisible earnings; the limits of expansion have not yet been reached. New departures in industrial policy have stressed the urgency of exports and have modified aids, reliefs, and inducements accordingly. There is now a growing awareness of the desirability and possibility of developing industrial exports, even on the basis of imported materials. There is a positive search for foreign skills, managerial abilities, and market connexions. As yet the results are only indicative but the possibilities to which they point suggest that the economy may be at the beginning of a stage where progress is not so firmly dependent on agricultural potential. Industry and services may find within themselves the means of financing their import requirements, leaving a surplus in the balance of payments and making a real impression on the joint problem of emigration and unemployment.

## (6) FEDERAL REPUBLIC OF GERMANY

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**T**HE role of agriculture during the 'take-off' until the First World War. Germany, in spite of losing two world wars, developed in one century from an agrarian society with a national *per caput* income of about \$160, measured in today's purchasing power, to a modern industrial society with a *per caput* income of nearly \$1000. Consider

the background. In the middle of last century (the early stages of Germany's 'take-off') the population density was seventy persons per square kilometre, i.e. 30 per cent. of today's. Two-thirds of the population lived by agriculture. Traditional modest peasant life with little market contact prevailed in the south-west, mostly feudal farming on a large scale—in some parts already commercially orientated—in the north-east. A number of commercial farmers were interested in grain export, therefore favouring free trade. Fifty years later the picture was quite different. Population had doubled, only one-fourth was employed in agriculture. National *per caput* income had risen to about \$400—mostly owing to industrialization. The growing non-agricultural purchasing power was a gain for agriculture and vice versa. The rapidly increasing demand of a growing non-agricultural population and the spread of new agricultural techniques led to higher yields, especially on the larger farms of progressive market-minded farmers. Production of food per hectare increased from 1881-5 to 1914 by approximately 70 per cent. However, internal production could no longer fill the rising demand. Germany became a net importer of agricultural products. Competition with oversea grain imports became stronger. Farmers demanded protection and compensation for the rising wages which resulted from industrialization. A system of protective duties replaced free trade. Since that time prices for farm products have been above world prices.

Agriculture's contribution to economic growth was not confined to increased supply of and demand for goods. Of great importance was the supply of man-power to industry. More people were compelled to find a living outside agriculture. The costs of educating the potential city population were financed by rural households which gave the migrating children a good start in their new lives. In addition, those who left the family received money and other aid from the family until they could support themselves. More important, they brought into their new urban surroundings a sense of thrift and responsibility which was typical of rural life at that time. The combination of rural traditions of consumption and the readiness to accept modern techniques was decisive for the success of industrialization. Old people could return to the farms; thus family care provided what today is done by expensive social security. Industries were often established in small-farming areas. The result was a profitable combination between an industrial main occupation and part-time agricultural work. Furthermore, agriculture helped to finance urban capital formation. Large landowners and also middle-size farmers invested in industries. All this helped capital formation outside

agriculture. Payments by the heirs of farms to migrating brothers and sisters also contributed.

It is difficult to measure the value of agriculture's contribution in monetary units. It formed an important basis for growth and is generally underestimated as it was rather invisible, not spectacular, and spread over a century. Little research has been done on the subject. The facts that some twenty million adults were transferred out of agriculture, and that there were the costs of raising and educating children up to 14 or 18 years, together with many other forms of assistance or investment, give an idea of the magnitude of the contribution.

*The role of agriculture in today's economic growth.* The Federal Republic consists of half the area of pre-war Germany. The population increase is about 0.5 per cent. per annum. Ten million expellees came from territories now under Polish and Russian administration, and until recently we have had a constant flow of refugees from the Soviet-occupied zone, amounting in total to  $2\frac{1}{2}$  or even 3 million people. The result has been an increasing concentration of population on a reduced area. Every fourth person in the Republic is an expellee or refugee. Three-quarters of Germany's pre-war population now live on half the land.

Only a few of the refugee farmers can find a living in farming. There is little land available for new settlements. Being a refugee farmer generally means changing to non-agricultural work. Providing work and housing for the additional millions of people has been a heavy burden. After the war unemployment was high, and enormous economic sacrifices had to be made. Farm prices, for instance, had to be kept low. Marshall Aid did much to assist reconstruction. Later, the influx of active people who came with nothing but skills and keenness to work proved to be an asset to further industrialization. Industry has become the dominant factor in the economy. It developed at an enormous speed. Normally it would have taken twenty years or more to reduce the agricultural population from 25 to 15 per cent. and less of the total population.

Agricultural development in the last decade bears the stamp of this change and of the dynamics of reconstruction and growth. The larger market with increasing *per caput* purchasing power has resulted in a surprising increase in agricultural production. This is supported by commodity prices which were raised after some years to a level some 30 or 50 per cent. above world prices. The medium and small family farms (the big farms were located mainly in the eastern part of Germany) have used the opportunity to increase production per

hectare and per animal. A growing number of farmers have been taught to use modern techniques by intensified and expanded training facilities and enlarged extension services. Application of nitrogen per hectare of twice the pre-war quantity is an indication of this development. Grain yields have increased by 25 per cent. compared with 1938, milk yields per cow by one-third. The average annual production is from 40 to 50 per cent. above pre-war and more than twice as high as during the first post-war years.

Secondly, industrial expansion, after providing employment for the refugees, also attracted and absorbed farm workers. This process still goes on, even though 1.5 million of the agricultural labour force (roughly 30 per cent. of the pre-war numbers) has left the farms. In addition, 400,000 workers from other European countries have been attracted to our industries. The demand for industrial workers is by no means saturated. The need to amnage with fewer workers has led to a wave of farm mechanization. The number of tractors is approaching 800,000, compared with 30,000 before the war. Migration from agriculture is also beginning to have its effect on the size of holdings. The number of holdings between 0.5 and 10 hectare has decreased during the last eleven years by 23 per cent., with a corresponding increase in the number and acreage of farms of between 10 and 100 hectare. Farms are still very small, with an average size of 8 hectare, though there has been an increase in average farm size of 16 per cent. The traditional structure is changing, but it takes time. There are still traditional peasant farms, organized for a pre-capitalistic way of life, side by side with commercial farms of different sizes.

All in all, the increased production for the big internal market, together with the decrease in farm labour, has resulted in a considerable increase in agricultural productivity. The value added by agriculture during the last decade rose by 76 per cent. from 8.1 to 14.3 billion DM (\$2.0 to 3.6 billion), which corresponds to an increase *per caput* of more than 100 per cent. (allowing for a rise in prices of about 25 or 30 per cent., based on 1950). The value added by other branches of the economy rose from a total of 66 to 200 billion DM (\$16.5 to 50 billion), roughly 300 per cent. or about 150 per cent. on a *per caput* basis. Agriculture's development, although strong, could not raise farm income to the level earned by non-farm people. Agriculture now employs approximately 10 per cent. of the total labour force, but its percentage of the G.N.P. amounts to 6.7 per cent. It is a matter of opinion whether this reflects reality. A substantial number of farmers receive income from pensions, social security, and part-

time work outside farming. Furthermore, figures about income disparity reflect an average. A number of farmers are getting along well. Nevertheless, the average income of the farming population is lower than that of other branches of the economy. Income disparity is one of our difficult problems. It cannot be solved by individual efforts. Therefore the Federal Government has established a comprehensive programme, the *Green Plan*. It consists of global subsidies for agriculture and special measures to improve agricultural productivity. Global subsidies, the chief demand of the farmers' union, mainly concerns prices. They are already substantially above world prices. The Green Plan—in addition to price protection by duties and market regulations—provides by subsidy for higher prices for some products and lower prices for several means of production. It is not easy to estimate the total value of transferred income received by farmers by different means. There are estimates based on world prices which say that agriculture is supported by income policies and the Green Plan by between 6 and 7 billion DM (\$1.5 to 1.75 billion). These estimates have to be regarded with caution, but the direct and indirect subsidies are substantial.

In addition, there is a programme to increase agricultural productivity by specific means. Farms which are too small, farm buildings and villages which are old-fashioned, land fragmentation, &c., are handicaps to productive, labour-saving farming, based on modern knowledge and equipment. A long-term programme for consolidation, amelioration, adaptation of old-fashioned villages to modern needs, enlargement of farm holdings, assistance to provide labour-saving implements, and so on, has been started. Thus, the transformation of farms into more economic units is government supported. The aim is the commercial family farm in the industrial society. We are convinced of the efficiency of well-equipped and equal-sized self-supporting peasant farms.

*Agriculture's role in the years ahead.* Nowadays the problem is no longer how agriculture can be a strong base for economic growth, but how can it keep pace with industrial development, i.e. with steadily increasing wages and incomes outside agriculture. The larger farmers may find it profitable to farm less intensively, reducing labour and output per hectare. But for our small family farms which cannot become larger in a few years, and cannot dispense with any more labour, because the supply is fixed by the number of family members, there remains only one way for better living—to produce more. Application of modern techniques, especially on backward farms, results in a reduction of the costs per unit. The production of

family farms is the main source of productivity which already provides 73 per cent. of the total food consumption despite 12.5 million more people. In view of decreasing income elasticities for food products and a small natural increase in population, we are approaching self-sufficiency for more and more products. We know from the experience of the U.S.A. what surplus problems can mean.

This leads to the price question. The negative impacts of a relatively high price level for farm products on the non-agricultural economy are sometimes overrated. There is only a moderate influence on urban living expenses within a consumption structure in which non-agricultural goods and services are of such outstanding importance as they are in Germany today. A dynamic industrial economy can afford to support the incomes of farmers, and progress in farming in Germany requires a combination of private initiative and governmental assistance to improve the agricultural structure. A reasonable price policy is indispensable for such a development. In contrast to many developing countries in which higher prices result in less production, the increase of production in industrially minded countries is connected with the level of prices for agricultural products. The higher the prices, the greater the production and the greater the stimulation of this sector of relatively low productivity in the use of capital and labour. I recognize the positive side of a price-support policy, but there is the danger that overall economic growth will be restrained rather than promoted when it is overdone.

It is not the regulation of agricultural market prices which is dangerous in principle. A positive or negative evaluation depends rather on the question whether it is used more for improving productivity or for conserving the existing situation. Economic growth would be served best if prices were fixed at such a level that a certain disparity remained which would stimulate efforts for higher productivity. This would be so, even though the country would be less self-supporting. We have industrial export surpluses and we can import agricultural products if the need arises. Times have passed when self-sufficiency was politically and economically reasonable or necessary. Whether or not, and how far, agriculture promotes or restrains total economic growth is no longer a question of the volume of agricultural production, but a question of how much of the achieved production results from better farming methods and how much is due to various supports from the outside. Nevertheless, under the prevailing conditions, even if our price level were lowered a little, a further increase in production would be expected. This may lead more and more to surpluses and restrictions. Sales allocations

generally mean protection of lower productivity and restraint of progress. We are indebted to William H. Cochrane for having suggested a combination of agricultural price regulations and negotiable sales certificates, so as to encourage production by the cheapest and not the most expensive producer. His idea deserves a great deal of attention by agricultural economists in our country and E.E.C. countries generally.

In conclusion let us have a look at the change of agriculture's role in general economic growth.

- (1) Agriculture is no longer the foundation of the economy as a whole. Most economic growth goes on outside agriculture. The average annual increase in the G.N.P. lately has been 20.5 billion DM (\$4.89 billion)—that is more than the annual agricultural contribution for the same period which was 17 billion DM (\$4.05 billion). Expenditure on agricultural goods and services was about the same amount. Agriculture is still an important but not a decisive producer and buyer within an economy with a G.N.P. of 275 billion DM (\$65.5 billion) and 40 billion DM in exports (\$9.52 billion). The future may even widen this gap.
- (2) A lack of foreign exchange does not require self-sufficiency in agricultural products. Surpluses will bring problems.
- (3) Even if another half-million or million of the population shift from agriculture to industrial work, there is no doubt that this migration (although it has been and still is an important contribution to industrialization) is losing importance and is coming to an end. Anyone who wants to shift from agriculture to another profession can find a job immediately.
- (4) Agriculture is no longer supporting non-agricultural capital formation. The opposite is true. Structural improvements in agriculture require important capital investments which cannot be provided by agriculture itself. The flow of capital and tax contributions for the growth of the non-agricultural economy which took place in the middle of last century have been converted into a stream of aid now flowing in the opposite direction.
- (5) The agricultural sector makes enormous government-supported efforts for increasing productivity in order to become adapted to a highly dynamic industrial environment in which it will soon have a population share of perhaps 7 or 8 per cent. The goal is that good farms of sufficient size and with good tech-

- nical equipment should achieve parity of income with non-agricultural occupations, but that takes time.
- (6) There is a change in the human attitude. The old peasant type is being transformed into a new type of entrepreneur—one who operates his farm primarily according to commercial considerations. The new generation loses many of the peasant traditions and values which formerly were highly valued.
  - (7) These changes do not make agriculture dispensable. It makes many indirect contributions to our social life which we need. But the differences between the role of agriculture in the nineteenth and in the second half of the twentieth century are deep. The adaptation of agriculture to the conditions of a highly industrialized economy is difficult, the more so in future as we shall not be living in an isolated national market but in the framework of a wide European economic community.

Finally we must not forget that agricultural policy is determined less by economic than by political considerations. If specific efforts aiming at higher productivity in agriculture, efforts which will occupy us for decades, are considered of less importance than global aids which try to preserve an outdated agricultural structure, then a corresponding restraint of total economic growth will result.

J. R. RAEBURN, *University of Aberdeen, Scotland*

Each of the six papers we have just heard can lead us on to worthwhile lessons. As agricultural economists, I am sure we are interested in real conditions, real endeavours, and real outcomes wherever they may have been experienced. But in trying, in one brief day, to extract our lessons from six countries' experiences we obviously face difficulties. If we try to put our trust in apparently simple aggregates, we find ourselves immediately amongst the difficulties that Professor Svernilson and others have emphasized. It is all very well for a sagacious old bird like Professor Kuznets to interpret statistical aggregates. But his type of sagacity is still scarce, very scarce. And anyway, the aggregate measures we have for the six countries, even when well mixed with discernment and 'imagination', are only good enough for the roughest of comparisons.

For instance, to take two simple examples from Nigeria, any estimate of the percentage of the labour force engaged in agriculture, as against the percentage engaged in food processing and retailing, needs much explanation if we are not to run risks of seriously misusing it. And as for measurements of capital accumulation or

depletion, in Western Nigeria's cocoa plots these are subject to a margin of error that is more than wide. Any open-minded visitor to the area, or anybody studying the various forecasts of cocoa production made from 1945 onwards, would quickly see that this is so. Indeed, I should doubt whether, even for a country such as Western Germany, our measurements of capital accumulation in the agricultural sector are anything like reliable.

About all we can say from comparisons of the six countries, looking at them from a macro-economic standpoint, and with the information we have, is something like this. All the countries have had to rely in the early stages of growth very largely on their own rural people and their own natural resources—soils, climates, water, forests, and minerals. It could not have been otherwise. In the early stages, except in Germany, these resources were used very largely to produce exports, to earn foreign exchange for the importation of equipment and skills, and in the case of Burma, of some labour also. In some countries only comparatively small importations had to be made, for example, to start cocoa production in Western Nigeria. In other countries the importations were larger and required confidence in future production possibilities, as for example in Burma and Uzbekistan. In either case it was important that other countries, or other parts of the same wider economies, supplied some or all of the skills and stood ready as markets for the produce. The local markets were not wide enough and they could not early have been made wide enough to absorb the produce. Also, by making use of advantages due to the natural endowments, productivity in agriculture could be raised well above what it would have been if heavy reliance had been placed only on ordinary crops for local consumption. Wide outside markets were very important to permit that rise of product in agriculture—product per *man-hour* as well as per *man-year*—that Professor Kuznets is so concerned about in the early stages of growth.

Whether or not as economists we call these early stages 'colonial' is a matter of group, or perhaps personal, preference. Whether or not we label some of the changes 'bumpy' in Ruth Cohen's sense, may also be considered. Personally, I should say that the Burmese rice, the Nigerian cocoa, at least in the western part of the cocoa belt, and the Uzbekistan developments, were all pretty bumpy.

Between the six countries, there have been differences in the pace at which more modern industrial activities drew on the labour reared in rural areas and on the flow of income arising from agriculture, and in the extent to which market relations between agricultural

activities and others were built up to modern complexity—including, eventually, income transfers to agriculture. Nigeria has not gone very far, though a useful distance, in building up communications and education. Brazil has gone further using, among other things, a different technique of taxing agriculture. Burma and Uzbekistan are similar in being parts of wider economies. But with different natural endowments and with the Soviet policy of dispersing industry, rapidly importing and developing skills, and overriding local, personal, and cultural obstacles, the Uzbek Soviet has gone further. Eire has been held back largely by locational disadvantages and lack of minerals. Her people have found their outlet elsewhere, including Boston and Washington. Western Germany has had the greatest drive and gone furthest under quite different political and economic organization.

We have a second type of difficulty if we are looking for lessons for the future and for the present. Not only are there wide differences in the natural endowments and location of these six countries, but each has had to face decisions affecting further stages of growth and development in its own unique circumstances of population density, population growth, disease, political security or lack of it, price movements, and so on. We should therefore draw no hasty conclusions about rates of growth and their causes without knowing pretty fully, and certainly not from the standpoint of political organization alone, the respective historical circumstances. I am quite sure Professor Kuznets agrees.

We may then go on from general 'macro' considerations to look for more particular lessons. But here time is a major difficulty, for we need much more information, and much of it is quite local. For example, to raise the net product per *man-hour* beyond a quite low point in farming in the savannah areas of the tropics where there are few irrigation possibilities and rather poor soils—Northern Nigeria, for instance—is a very difficult proposition. Anyone who has really got down to the details of it will agree. And assessing alternatives by forward budgets, charging unrealistic values for labour, and very low or no interest rates for capital will not help for very long. So we must assemble a whole host of farm management data; and this we can hardly achieve this afternoon. Nor can we assemble all the other types of data we need. We must limit ourselves to asking the readers of these papers about certain specially important experiences. They may well be these.

*Nigeria (a)* The disadvantages as well as the advantages of capital accumulation by the commodity tax—development board—partner-

ship with private firms method of which they now have some experience. (b) Could the comparative disadvantages of Nigeria at the present time be better reduced in other ways? This raises the question of how, in the circumstances of a country like Nigeria at the present time, skills and capital should be imported.

*Brazil.* (a) The extent to which general inflation, a liberal racial policy, and carefully worked out land-settlement schemes have fostered growth. (b) The disadvantages of a complex foreign exchange rate structure.

*Burma.* (a) The extent to which (i) different scales of value between races as affected by philosophies of life, and (ii) health problems, contributed to the unsatisfactory income and wealth distributions of the 1930's. (b) How far it may be judged that different taxation would have put these differences of distribution right. (c) Were better agricultural credit arrangements really possible in the middle 1920's? (d) Everything considered, including the enclave problems, was a slower rate of growth advisable?

*Uzbekistan.* (a) The development of ideas about the calculation of the costs of using machines and about criteria on which to judge the ratio between machine use and labour use, (i) in a particular development scheme, and (ii) in Uzbekistan as a whole. (b) Experience in developing incentives to work hard at various types of task in farming. (c) The results of growth and development so far, as regards the general level and the distribution of the incomes received by rural people in and outside the irrigation projects, and the ratio of average agricultural returns to average non-agricultural returns per man-year and per man-hour. (d) The development of the concept of returns to the government from capital invested in irrigation schemes and the measures used to give effect to this concept. (e) Whether the mobility of labour within and out of agriculture and herding has been as high or higher than was judged desirable by the planners at the time.

I appreciate the difficulties of our Soviet members but I sincerely hope that we shall be able to sort out the answers to these questions.

*Eire.* What are the really feasible incentives that have worked best in attracting skills and capital in the circumstances of an economy which is really a peripheral part of a wider economy?

*West Germany.* The incentives of various kinds that were experienced by farm families and rural craftsmen in the 1840's and 1850's.

Yet, when we know all this and more, there is another approach we should take. In suggesting it, I may be anticipating the educational, sociological, institutional, and health matters that we are to discuss next Tuesday. But this is perhaps the session in which to

recognize fully that growth and development are due to other things besides those which for convenience, lack of time, or perhaps even laziness, we call 'technical and managerial skills', 'natural endowments', 'capital', 'markets', 'unified democratic planning', &c. They are the results, I would suggest—and others have said this in other words—of decisions, human decisions. And we as economists who claim that ours is a science of human behaviour, have got to come to grips with virtually all that determines these human decisions. We have to see things as farmers, dealers, bureaucrats, politicians, and housewives, have seen them and see them now, or we shall make some very big mistakes. What are the decisions that growth and development have required and require for the future? What determines whether they are taken? What degree of flexibility in decision is necessary? What differences are there from country to country, from philosophy to philosophy?

Our old friend Confucius said: 'Truth does not depart from human nature.' Certainly true assessment of past experience of growth and development cannot so depart. Nor any worthwhile judgements for the future. And this is true, even though we may agree that scales of value are 'educable',—that is, capable of being remoulded.

V. MALINISCHI, *Academy of the Rumanian People's Republic, Bucharest, Rumania*

Before the foundation of the people's democratic régime, Rumania was an economically backward country, mainly agricultural.

Although Rumanian agriculture started to develop on capitalistic lines in the middle of the nineteenth century it still preserved powerful semi-feudal vestiges, the class of big estate owners being the main obstacle to social progress not only in agriculture but in the whole national economy. Because of this, in March 1945, shortly after coming into power, the first democratic government took in hand the reform of agriculture.

The agrarian reform of 1945, designed to benefit the working peasants, assumed the character of an agrarian revolution, being distinguished by the fact that it was brought about by the proletariat and the peasants, in the interest of the peasants as opposed to the bourgeoisie and the landowners. The profoundly revolutionary character of this reform is reflected in its vast effects—the liquidation of the big landowners as a class, the abolition of feudal vestiges in the agrarian structure, and the transference of property—without compensation to the original owners—to 918,000 poor peasants.

At the same time, Rumania has carried on the great task of socialist industrialization. In the short period of ten years, industry has increased production three and a half times, and has become the decisive factor of the whole economy. With construction and transport, it provides 57 per cent. of the national income.

The quick rhythm of increase in production is particularly characteristic of the development of industry in the people's democracy. But socialism cannot be confined to towns; it must become a general system of the whole national economy, and to achieve this was one of the main tasks in the period of transition from capitalism to socialism. Socialist transformation of agriculture thus constitutes an integral part of the socialist revolution.

The main problems arising out of the socialist transformation of agriculture were: (1) The creation, in the process of socialist industrialization, of the technico-material basis necessary for great agricultural production. (2) The acceleration of the process of formation of the cadres necessary for management of socialist agriculture. (3) The enlightenment of the peasants in order to explain to them the importance and the methods of agricultural co-operation and to persuade them to pass quickly to socialist forms of production, since free acceptance by the peasants is the fundamental principle of our policy in the villages. (4) The development of a broad net of rural co-operatives, mainly for supply and distribution, in order to facilitate the transition of labouring peasants from the simplest to the most advanced forms of co-operation, namely the collective agricultural enterprises.

In its agricultural policy, the popular democratic régime has also directed its special attention to the continuous development of State agricultural units and machine and tractor stations.

The agrarian policy of the new régime is based on a profound analysis of the part which the different economic levers have to play in the action undertaken by the State to ensure the socialist development of the whole national economy, including agriculture. In this connexion the conclusion has been reached that the main lever of the socialist transformation of agriculture is the socialist industrialization of the country, giving priority to development of heavy industry, hinged on the industry of mechanical construction which alone is able to provide agriculture with a modern technical basis characteristic of socialism.

Consequent on the modern technical equipment of agriculture, the relation of different sources of power has changed radically. While in 1938 power utilized in agriculture was 14.3 per cent.

mechanical, and 85.7 animal, in 1960 the proportion was reversed, becoming 76.5 per cent. mechanical and 23.5 per cent. animal.

Side by side with mechanization of agricultural activities, much attention has been paid to the use of chemicals in agriculture and to land drainage.

Great attention has also been paid to the formation of cadres necessary to socialist agriculture. As a result, while in 1938 Rumania had no more than 1,897 agronomists and veterinary surgeons, the number of such qualified specialists is now 16,400. We have 17,900 persons with secondary school certificates (agronomist, specialists in application of machinery, and zoological and veterinary technicians). We also have 53,000 tractor technicians and 24,500 management personnel for collective farms. In the next few years it is planned to add a further 12-13,000 graduates, 35-40,000 people with certificates, and over 60,000 tractor technicians.

But it is not enough merely to create the material conditions. Free acceptance by the agricultural labourers must come from certainty and concrete conviction that only the new system of communal agricultural production, on big areas worked by mechanical means, leads to more products, better quality, lower prices, and the welfare of workers. The superiority of mechanized labour has met with great interest among labourers, and has encouraged them to join together for work in common, using tractors and other machines.

The achievements of the socialist reconstruction of agriculture are reflected in the fact that socialization of agriculture had reached 84.8 per cent. of the arable area of the Republic in 1960.

The achievements of one decade in the fight for the socialist transformation of agriculture have economic, social, and political consequences of the greatest import for the whole advancement of the popular revolution. An ever more rational employment of the land has taken place; the structure of holdings and their territorial distribution have improved. Agricultural production has overtaken the pre-war level and grows steadily.

The increase of agricultural production of all categories of products—especially cattle and animal products—together with the increase in the agricultural sector, represents a characteristic feature of socialist organization in Rumania. This increased production is based on the measures taken by the Government in the material interests of the peasants, a decisive factor being the powerful support given to the peasants by the machine and tractor stations, &c.

The completion of the collectivization of agriculture [said the President of the State Council of the Rumanian Popular Republic, Gn. Gheorghiu-

Dej in a recent report on the problems of our agrarian policy] will change the whole life of the village and the organization of agriculture. It will give a powerful impetus to the forces of production in the countryside, leading to an increase in agricultural production, the continuous rising of the standard of life of workers, the strengthening of socialist economy. It will raise to a higher plane the alliance between the working class and the peasantry. This will be an event of decisive importance for the final building of socialism in our country.

The Rumanian people are dedicating all their energy towards the attainment of this end.

S. R. SEN, *Planning Commission, New Delhi, India*

I am glad that Professor Cairncross's paper and Professor Brandt's comments on it have been followed today by this symposium of experiences from various countries. These papers, especially the one on Burma, have helped to bring to light the utter inadequacy of the Cairncross-Brandt thesis. Professor Brandt in comparing the Cairncross thesis with that of Bauer, has commended it to the developing countries of today, expecting them to follow the same pattern of development as that of western Europe during the last two centuries. The thesis seems to be that, because a hundred years ago the old world travelled to the new by sailing ship, the travellers of today should do the same, rather than use the faster methods of transport which are available.

The case of Burma clearly shows that even when there is a large rate of increase in agricultural production, when there are considerable exports, when the population pressure remains relatively low, and when literacy is fairly high, much higher in fact than in most of the neighbouring countries, sustained economic growth backed by modern agricultural and industrial technology does not necessarily take place. The indigenous people do not automatically develop the capacity, or have the opportunity themselves to exploit the growth potentials of their country under the conditions of so-called *laissez-faire*. The experience of Burma and even of Brazil and Ireland prove the inadequacy of *laissez-faire* policies to trigger sustained economic development of those late-comers who suffer from special disabilities whether they are due to lack of an adequately developed infrastructure, to colonialism, or to the unequal competition of the early starters. This is true not only of under-developed countries, but also of the under-developed areas of relatively advanced countries, for example, southern Italy. Those who are obsessed by the idea that

pressure of population holds back the under-developed countries should consider why the rate of growth has been so low and uneven in such countries as Burma, Brazil, or Nigeria in the absence of such pressure. Those who recommend education as the main answer should try to understand why technical education of the right type did not spread in highly literate Burma. Those who suggest that entrepreneurial attitudes and skills would automatically develop under *laissez-faire* should analyse how competition from entrepreneurs from other nations which had the advantage of an earlier start and which, because of that early start, possessed special political economic power or opportunity, effectively stifled the growth of a local entrepreneurial class in Burma for a long time. Those who imagine that the mere extension of agricultural production, irrespective of what happens to the product is the ideal to be pursued, should study the economic history of Burma. They will then appreciate that the theories of economic development which have been put forward in this house yesterday and the day before are far from adequate. They are expressions of the speakers' own political and economic preferences rather than keen analyses of hard facts. The truth is that the paths taken by the early starters are not necessarily right for the late starters. These have to develop at a much faster rate even though it may make the journey more strenuous and more risky.

G. D. AGRAWAL, U.P.O. *Ramgarh Distt. Mizapur, India*

I wish only to supplement the report on Nigeria presented by Dr. Oluwasanmi. But before that, I would mention that Nigeria also falls in the group typified by Burma which Dr. Sen referred to. In many respects the problems are similar. The object of my observations is to help towards a better appreciation of the role of agriculture in the economic development of Nigeria.

Nigeria has vast natural agricultural resources yet untapped. In many areas, land can still be obtained free with the consent of the village chief. Professor Raeburn has pointed out the difficulties of the agricultural conditions in Northern Nigeria. As against this, we have very good facilities for agricultural development and reasonably good soil conditions in the Western and the Eastern regions. The climate favours lush growth and heavy production. In many areas, little or no irrigation is required to get good yields. The factors holding up progress (in addition to those already mentioned, particularly in relation to Burma) are low levels of technical skill and primitive tools. But more important than these are the

inadequate storage and marketing arrangements. In view of climatic conditions, production of varied farm products is not much of a problem, but a good portion of what is produced is lost through bad storage, inadequate marketing arrangements, and low internal demand. Local production is limited to a few products. The use of primitive tools, in particular hand-hoes, limits the area that a family can cultivate to three or four acres, with all its implications of depressed income, savings, and investment.

The bright feature is that the experience of the world in agricultural science and technology is at the door, and that the country is willing to make use of it. To cite an instance: after the initiation of farm settlement projects in one region, the country became self-sufficient in eggs within six months, although previously they had been imported in spite of the existence of local conditions which favoured egg production.

The development of agriculture in Nigeria and African countries emerging as free nations has great significance in respect of (1) making available the capital needed for the development of industries and social services (Dr. Oluwasanmi has already referred to the surplus funds from agriculture being invested in industrial development and the creation of social services by the produce marketing boards. With agricultural progress, the amount of capital available from agricultural surpluses will increase many times); (2) saving foreign exchange on livestock products and preserved foods; (3) stimulating local demand for industrial goods. The substantial increase in agricultural production in these countries is bound to be felt also in world markets. The representatives from New Zealand and Malaya have expressed concern over the Common European Market. They may like to take note of a similar development in Africa.

D. PAARLBERG, *University of Purdue, Lafayette, Indiana*

My comment is also on the paper on Burma on which Dr. Sen commented. I am afraid that my comment is not likely to endear me either to the British or to the Burmese.

I concur with the conclusion stated by Professor U Tha Hto to the effect that the Burmese economy has failed to demonstrate a satisfactory rate of economic growth. I believe that is a valid conclusion. I disagree with him, however, when he inferred that this failure was due to following the principles of classical economics. I shall read the last sentence from the paper: 'To the British administrators in Burma, brought up on Adam Smith and Jeremy Bentham, it might

well have seemed that they had introduced the best possible framework for continued economic expansion.'

Now if the British administrators so concluded, it appears to me that they read incorrectly the teachings of Adam Smith and Jeremy Bentham. The classical economists supported the principle of international specialization and exchange. They supported the principle of the open society. They opposed mercantilism, cartels, and the closed system. If the teachings of Smith had been followed, industry would have got started in Burma. The Burmese experience demonstrates, it seems to me, not the laissez-faire teaching of Adam Smith and Jeremy Bentham, but the mercantilist system which preceded Smith and to which he was very strongly opposed. I believe, Mr. Chairman, that the laissez-faire system has enough defending to do without also having to defend the errors of systems to which it is opposed.

O. SCHILLER, *University of Heidelberg, Germany*

Our topic is economic growth and the factors which affect it. Mr. Djalilov has given us many interesting and useful pieces of information but the problems involved have hardly been described. As a result it is difficult to judge what are the factors which have caused economic growth in Uzbekistan. I have the impression that Mr. Djalilov attributes first importance to the country's economic system itself. I think this is unsatisfactory.

In my opinion there are at least three factors which cause economic growth. Of these, the first is the natural resources of a country. After travelling in Uzbekistan four years ago, I would agree that the natural resources of this country are very great.

The second factor which must always be taken into account is the fact that the great achievements of modern techniques—quite independently of the existing economic system—have opened up unexpected possibilities. The third factor is the existing economic system. So far as this last is concerned a comparison between large-scale and small-scale farming is almost impossible in Uzbekistan because the whole of the country consists of large-scale farms. In Germany we can make such comparisons because there both types of farm exist in the same country: the family farm in the German Federal Republic and the collective farm on the same pattern as in Uzbekistan in the other part of Germany. In Germany one could make such a comparison to isolate the factor 'economic system' and clarify its influence on economic growth. This comparison does not lead to a favourable result for the collective farm.

In connexion with our discussion tomorrow, I should like to point to some data given by Mr. Djalilov and to put two concrete questions to him. He mentioned in his paper that the average size of a kolkhoz farm in his country is approximately 2,000 hectares of sown area. He mentioned, furthermore, that the average size of what he called a complex production brigade is 150 to 200 hectares. This means that a kolkhoz farm with an average of 700 families consists on average of between ten and fifteen brigades each with an average of sixty families.

My point is this: has the question been discussed in Uzbekistan at least theoretically whether it would not be advisable to transform into independent farms the production brigades, which are complex brigades, working the same fields for a whole crop rotation, i.e. perhaps for seven years. If I were given the choice whether to be a manager on a farm of 2,000 hectares with 700 families or on a farm of 200 hectares with sixty families, I would give preference to the 200-hectare farm. According to German experience, the 200-hectare farm is large enough to provide all the advantages of large-scale farming. I should like to ask whether this question has been discussed in Uzbekistan and if so, where to find the relevant literature.

My second point is this. In former days in the Soviet Union the production brigades were subdivided into links called *sweno*. Later on, these links were abolished and the smallest unit was then the production brigade. When I was in the Soviet Union four years ago I observed that on some farms the links had been re-introduced, especially in vegetable cultivation and, I think, sometimes in cotton cultivation. My question is: why were the links abolished and, if they have been introduced again, what are the reasons for their re-introduction?

A. B. LEWIS, *The Council on Economic and Cultural Affairs, New York, U.S.A.*

This brief comment refers particularly to the contribution of the professors from Burma, but there are many other countries whose members could tell essentially the same story. Also this is practically an amen, or perhaps a hallelujah, to the concluding remarks of Professor Raeburn.

Economic development is essentially a consequence of the unfolding of the capabilities of the people to extract from their environment the satisfactions which they seek. In the recorded and even in the unrecorded history of man there have been no changes made in the physical environment that did not result from some increased

capability of people, and the use of an improved physical environment requires the use of a like increase in human capabilities. In fact, it is the usual or normal course of events that an increased capability of using an environmental improvement comes first and is the reason why the improvement is made. Further, since man as an organism has changed but little, one might say that economic development, resulting in the better satisfaction of the human wants of the general population, results from an unfolding of the resources of the human spirit as time goes on.

If we can accept this as a premiss, then we may suppose that efforts expended for the economic development of a nation should be directed towards the unfolding of the human spirit of the people. It is assumed sometimes that this may be accomplished through formal education or schooling entirely but, while schooling is certainly essential and the principle element where it exists, we must also admit, if we judge nations comparatively, that the quality and kind of schooling as well as the amount or length of it is very important. Moreover, the philosophical assets of a nation which determine the relationships between people, including the form and functions of government, are equally effective in governing the economic capabilities of a people and in determining whether an economically useful education is actually obtainable for the common people or not. If the common people of a nation are not free to assume the responsibilities which people of advanced nations have been assuming during these past 400 years, it is not because of lack of railroads and harbours, probably, but because of unfavourable characteristics of the national philosophy. If these things are true, as I believe they are, this may explain why vast investments in the physical environment, leaving untouched the minds and spirits of the people, have been generally so disappointing as means of national economic advancement.

W. O. OMANO, *Department of Agriculture, Nairobi, Kenya*

I should like to emphasize the fact that agriculture has helped Kenya very much to develop in recent years, and I should like to do this by being realistic.

We all know that Kenya is a colony, a British colony. We also know that Kenya started late on the road of economic development. The people of Kenya realized that unless we went in for high quality agricultural products, we never would be able to catch up. We therefore went in for an export type of agriculture. We emphasized

the cultivation of export crops like coffee and tea. We did that knowing that other countries were in the market. But those of you who have tasted the good Kenya coffee know that we are not far behind. Indeed, the international coffee liquorers in Europe now maintain that Kenya coffee is the best in the world. This is because we emphasize quality. It has helped us to develop rapidly in recent years. Those of you who have been to Kenya would agree that it is very beautiful. It attracts many tourists mostly because our agricultural industry has helped us to build schools, roads, &c.

I should like to emphasize one more point. The farmers of Kenya have to change their attitudes because of the changing times. There is what is called the wind of change in Africa today and it is welcomed by the people. If we agriculturists and farmers of Kenya can adjust to this change, if the people engaged in farming will invest more and more in agriculture, and if we can build confidence in Kenya, then Kenya agriculture will continue to give the country the necessary stimulus and the required push that will enable the economy to take off.

G. R. ALLEN, *Agricultural Economics Research Institute, University of Oxford, England*

In view of their content my remarks should be prefaced by a special statement. I am conscious that at various times the rich countries have perpetrated economic policies which should sit heavily on their consciences. For example, American, British, German, and French sugar-beet policies over the last forty or fifty years have certainly depressed the standards of living of people in Cuba and in other Caribbean countries.

Having said that, however, I regret the apparent tendency in much of the earlier discussion to descend into over-simplified doctrines. To begin with, Dr. Sen says that the experience of Burma *clearly* shows that the classical remedies do not work. Mr. Chairman, the Burmese experience clearly shows nothing, for the simple reason we do not know what it would have been under different policies.

Dr. Raeburn raised some extremely pertinent points concerning sociological and psychological factors in economic development, which must be taken into account in order to obtain a complete and clear picture. Other speakers have argued the same point. There are religious beliefs and philosophies of life which affect or have affected the attitude to risk bearing and leisure preference. Traditionally, the Protestant ethic is considered to have been greatly different in its

economic effects from the Catholic ethic. Again the economic attitudes of a Parsee are apparently markedly different from those of many other social groups in India. Such considerations can be extremely important in particular instances. We should take them into account in interpreting past experiences and we should not castigate one system of economic planning (the classical one) on the basis of an analysis which completely ignores these considerations.

We have heard a great deal of economic dualism today. There is a too ready inclination to assume that economic dualism is a sign that economic development is being unnecessarily held back.

Of course, it is possible to have a society without any dualism—namely a primitive and backward tribal society. That would be completely undualistic in the economic sense. Everyone would have more or less the same income; there would be no economic progress.

The first country which had a seriously dualistic economy was the United Kingdom. For more than 100 years, in the later decades of the eighteenth century and during most of the nineteenth century, real wages in the agricultural south were some 30–40 per cent. lower than those being obtained on the average by agricultural workers and unskilled urban workers in the industrial north. This was the *consequence* of economic progress.

Italy has been mentioned. In the process the basis of the argument has been shifted away from efficiency to equity. There is economic dualism in Italy. But the south is being developed more for reasons of equity than for those of economic growth. The highest returns can still, generally speaking, be obtained in the north. There are few countries as rich as Italy and able to afford the luxury of sacrificing growth for equity.

Clearly there are cases where dualism has arisen because of economic exploitation, but probably it is more often an unavoidable by-product of rapid growth.

My general points can be illustrated by considering the paper on Brazil. There it was mentioned that two very important income streams from exports were obtained in the decades shortly after Brazil became independent, the first from sugar and the second from gold. I would guess that these income flows per head of population were as large as that which Sweden obtained when its timber market was enlarged by the British removal of protection on home-grown wood in the 1820's. Why was it that Sweden used its income flow for development and why was it that Brazil apparently did not? I suggest the *élite* of the one country was prepared for development at that time, and the *élite* of the other was not. This proposition has nothing

to do with dualistic economies or with so-called colonial products or with free trade, protection, and things of that sort; it is much more important.

Jumping many stages in my argument, we need to be much less doctrinaire. In some cases a free enterprise system will be the most appropriate for stimulating development. In others a Yugoslavian-type system, for example, will be appropriate. Some economies will benefit from balanced growth and others will find unbalanced growth more appropriate. Can we not follow the suggestions of Dr. Raeburn and not dogmatize—at least until we have introduced *all* the relevant factors?

H. DE FARCY, *Vanves, France*

I should like to go back a moment to historical laws in economic development. I suggest that Dr. Cairncross has not sufficiently emphasized the long history of economic development in European countries. It is said that this development has brought a great deal of injustice. This is true, and we must devote our efforts to seeing that it is not renewed. It must also be said, however, that this development was hard, and required considerable sacrifices. Everybody knows how much work was put in by the working and peasant classes, but the contractors and capitalists also provided an important share of work and, above all, of savings.

The need for these efforts is even greater if we reflect on the very meaning of economic development. On the surface, it seems to amount to no more than an increase in material riches. But in reality it is much deeper. We can repeat, with slight changes, the old distinction by Dürkheim in *La Division du travail et les classes sociales* between mechanical society and organic society, between a primitive society of juxtaposed economic elements and a society whose members are bound together by a complex economic activity. Today five minutes may be enough to make a car, but we still need twenty years to make a human being. I think that in every country the transition from a thoroughly dispersed and atomized society to a more organized society requires as much time as is required to make a biological body. This implies that each economically active agent should willingly work with others and renounce his individualism.

Should we not bear in mind that the politicians who have responsibilities in developing countries have very great responsibilities in this very field? They will be able to promote the true economic development of their countries only in so far as they feel a deep solidarity between themselves and their countrymen.

M. SHAFI NIAZ, *Government Planning Commission, Karachi, Pakistan*

Dr. Wilbrandt mentioned a number of measures by which agricultural production can be enhanced, one such measure being the enlargement of holdings. He also stated that for the small farmer whose land is limited and who cannot dispose of any more labour (because labour supply is fixed by his family's capacity for work) there remains only one way for better living, that is to produce more. Can these two statements be reconciled? He stated also that support for agriculture is determined less by economic than by political considerations. I wonder if he would elaborate this point, because if it is true it means that the resources of a country are not being utilized to the best advantage. Can such a situation continue for long?

H. A. OLUWASANMI (*in reply*)

I should like to answer Professor Raeburn's question concerning the disadvantages and advantages of the produce marketing board. In my paper I listed some of the advantages, but I did not mention the disadvantages which in the last six years or so have generated much controversy.

One of these is the disincentive effect of the operation of produce marketing boards on the farmers themselves. It has been alleged that it discourages them from increasing the acreage of their farms, from investing in new implements, and so forth. This is a matter of judgement. There are no empirical data to show that the farmers, by not being paid the full value of their produce, are refusing to improve or enlarge their farms. In fact, the evidence is to the contrary. Anyone who has observed the output of cocoa in the last ten years can see that there has been a rise in output.

Professor Raeburn asked also whether a new or different type of system could not have done the same thing. Every critic of the marketing boards so far has failed to suggest what other system would be more efficient. One other means of achieving the same result would be through the tax system. That is, by taxation you can divert some of the resources of the farmers to further development. But in an under-developed country, and even in developed countries such as France, for example, one of the most difficult things to manage is the introduction of a new tax system. You have to find new skills if it is to be efficient. And this is one of the arguments against using one. In our case, we should have to find new skills, and after the war it would have been very difficult to train sufficient manpower to run it.

R. M. PAIVA (*in reply*)

Some questions have been raised about Brazil; one of them on inflation. In fact, our inflation is very serious. According to the statistics, if I am not mistaken, the increase in the cost of living last year, for instance, was around 22 or 23 per cent.

Seen from outside, this seems to be very bad for development, but from inside it seems that inflation after all is not so bad. It brings opportunities for everyone, especially for new businesses; there is rapid development and the national product is always increasing. The G.N.P. between the years 1948 and 1959 grew at an annual rate of between 5·8 and 3·3 per cent. *per caput*. It may sound queer to say that we grow with inflation, but this is the fact.

Another question was about land reform or colonization. Brazil, so far, has not done much on that for the reason that we still have new land to be occupied. I will give you an example of this. In the last five or ten years we have developed a region called North Parana. It was a forest region with very good land where the people have started new coffee farms. Already the production of coffee in this region, which is small considering the size of Brazil, amounts to more than 22,000,000 bags. And I may remind you that Brazil exports only 17,000,000 bags a year. As I said, the fact that we still have more of this new land waiting to be occupied is one of the factors delaying the adoption of active measures of agrarian reform. However, the country and even the government are now prepared for reform. They have organized a committee which will begin by studying and then put into practice some changes in the land-tax system so as to improve the subdivision of the land.

Another of our serious problems at the moment is concerned with our balance of payments. It is very difficult to keep our payments in equilibrium. We have constantly to depreciate our exchange rate. One of the reasons for this could probably be found in the exchange control system adopted whereby part of the value of the agricultural produce exported is confiscated. This probably weighs too heavily on several commodities. As a result, we have exported less in recent years. A peculiarity about it is that, even though it is coffee that has suffered most confiscation, we still increase our production and now have a large unsaleable stock which constitutes a heavy burden on our economy.

U THA HTO (*in reply*)

I am very glad to have heard the comments on our Burmese experience. When my friends prepared this paper they were fully

upheld by facts. They were not writing it as a fairy story. The paper is well supported by many documents left by the British administrators. It follows that our experiences which we have presented today can be of some use to the Conference. I am sure that the authors of this paper have no intention of creating disagreement, and in order to avoid it, such words as 'exploitation' or 'colonialism' are not used. But they stated the truth that the British administration in Burma with its free enterprise system (although it was done with some good intentions) led to the development of a plural economy of which the largest share of the national income was received by foreigners.

We do not blame the British administration because we know for sure that if we had been in their position and if we had been under the influence of classical economists, we might well have done the same. That is why no critical account of the policy of the British administration was made in the paper.

Today, we feel that the classical system is outmoded. If it were good we might have stuck to it, but since 1948 we have thought it wiser to depart from free enterprise which did not fit in with our situation. We felt that if we still wanted to have an economic order based on the *laissez-faire* policy of the classical economists, it would look like a man who wants to live on a rainbow and never to come down to earth to face realities.

K. M. DJALILOV (*in reply*)

On the question of the relationship between production on irrigated regions and on non-irrigated regions, we consider that an irrigated area should produce 60 per cent. more per man year than a non-irrigated area. For this reason we would like to transfer people from non-irrigated dry land to irrigated land.

With regard to the distribution of agricultural population we have 65 per cent. of the population in rural and 35 per cent. in town areas. We should now like to transfer many more people to town areas to use them in industry. To increase production in rural areas we would like close attention to be paid to farm organization.

Professor Schiller asked about the size of our farms and also about changes in their internal organization. Previously there were more than 6,000 collective farms in Uzbekistan, mostly rather small ones. But now they are fewer and the average size of a collective farm is 2,000 hectares of irrigated land. You will see, therefore, that we consider this to be the optimum size and the most economic unit.

The internal organization of the farms has been greatly changed. Earlier on there were 70 or 80 hectares of land per brigade; now these are from 200 to 250 hectares. In small units the size was 7.5 and now 40 or 50. This change is due to mechanization, which gives us many opportunities and makes increases in the size of units necessary.

JOHN J. SCULLY (*in reply*)

I intend to confine my remarks entirely to replying to Professor Raeburn's question as to what are the really feasible incentives which work best in attracting skills and capitals in Ireland.

I have no doubt that many members will have come to the conclusion, on reading Dr. Byrne's paper, that one of the main drawbacks to Irish industrial development has been the protectionist policy which has been followed by successive native governments since 1922. Protection has meant a lack of effective competition. Few industrial products were produced for export. The provision of work in industry for the surplus rural population was the all-important goal towards which industrial policy was orientated. In these circumstances, feasible incentives for attracting skills and capital were never seriously considered until a few years ago.

During the period 1958-9, however, two important developments were initiated which, I feel, will have far-reaching effects on the future economic growth of Ireland. The first was the initiation of a free-trade zone in the region of the Shannon International Airport. Under the scheme, foreign industrialists have established light industries in the region of the airport. As an incentive to investors, the government has allowed a 25-year tax exemption on products produced within this area. The initial success of the scheme may be ascertained from the fact that there are already between fifteen and twenty industries either in the process of being installed or already in operation in the area. Initially employment is being provided for about 1,000 local residents who would otherwise have to emigrate. So great has been the initial development of this new area, that it may well prove to be a major stepping stone in Irish industrial development.

The second important development has been in agriculture. Not until 1959 was the farmer able to obtain adequate working credit at feasible rates of interest. Until then, commercial banks were very wary of investment in agriculture. Partly as a result of governmental encouragement, and partly because past experiences in protected

industries were not very fruitful, the banks had second thoughts. As a result the Irish farmer can now, on small security, obtain adequate credit at favourable rates from his local bank. One binding condition is that he must consult with his agricultural adviser and thus ensure that the finance, so obtained, will be invested in the most profitable enterprises. Coincident with the provision of comparatively cheap credit, artificial fertilizers were subsidized for the first time in 1958. Prior to that the prices of fertilizers to the Irish farmer were among the highest in western Europe. It is significant that in 1959-60, the first year following the initiation of the fertilizer subsidy, the sales of superphosphate, the first of the fertilizers to come under the subsidy, increased by almost 50 per cent.

The aim of these incentives is to increase dairy cattle numbers by 50 per cent. over a five-year period with smaller increases in other types of livestock. The emphasis has been on livestock rather than on crops because at present the farmer can profitably increase his sales of store cattle on the British market. The same scope is not available for a profitable increase in cash crops.

The aim of these new policies is to increase appreciably the rate of growth of the economy which fluctuated recently around 1 per cent. per annum. The fact that it stood at more than 4 per cent. in 1959-60 speaks well for the ultimate success of the new programmes.

H. WILBRANDT (*in reply*)

The paper on Burma was especially interesting, and I only regret that the development since 1941 was not also described. Interesting conclusions could have been drawn from it on the problems of incentives for development mentioned by Professor Raeburn. The increase in agricultural production in Burma, based less on an increase in productivity, i.e. productivity per man and hectare, than on reclamation of marshland and infertile deltas, is very impressive. This is even more so as, besides producing enough food for self-sufficiency, substantial quantities could be exported. Thus a dynamic economic development was initiated owing to increased production in excess of self-sufficiency.

The problem referred to by Professor Raeburn of incentives or stimuli to develop a primitive economy to higher stages, i.e. the question of the take-off, is rather complex. The situation and the methods which can be adopted are different in every country. Because of my simplifying retrospection of the German development during last century, one might think that the farmer saw it as his task to

work for the expansion of industry. This is not so. The farmers' contribution was not planned, they did not know where the development was leading to. The idea of saving money or accumulating capital in order to facilitate the growth of industry was quite alien to most of them. The large landowners, however, may have invested their accumulated capital consciously in industries. Those who migrated from rural areas and took up urban jobs did not feel the social impetus at first. There were only limited possibilities for the growing population to seek a living as farmers or agricultural workers as their fathers had done. New means of livelihood had to be found for the younger children of farmers and agricultural workers. They went to town and became workers in non-agricultural occupations which were offered first on a smaller, later on a larger scale. This new existence was regarded in many cases by the rural population as part of a socially lower class, and thus as an emergency solution. The relations between families in town and their relatives in the country remained close. Rural families tried to help their sons or brothers in town. They supplied them with bread, butter, eggs, and other food, as well as with clothes and money, and thus helped them to build up their new existence. It was rare for the incentive to take up a new non-agricultural occupation to come from the rural population because people wanted to live in town. They were forced to do so.

It would take too much time if I were to deal in detail with all the factors which contributed to the take-off, to industrialization, and to an economy characterized by a division of labour. Besides population growth and the limited possibilities of finding a living in the rural sector of the economy, many historical, cultural, and religious factors would have to be mentioned. The only really important thing is that agriculture has contributed immensely to this development, consciously or unconsciously, willingly or unwillingly, with enthusiasm or because of need—but, in any event fulfilling one of its historic tasks.

In this connexion I am grateful for Mr. Allen's views. In Germany—as in all countries at the beginning of their economic development, whether they proceeded from capitalist or communist ideas, whether their development took place under a colonial power or independently—the early stages of development were full of hardship for the mass of the population. I do not know whether any economic systems in last century until now have been able to overcome these difficulties without having imposed enormous sacrifices upon the majority of the population.

Dr. Niaz feels that there is a contradiction in the enlargement of agricultural holdings on the one hand, and the unsatisfied demand for land on the other. The situation is as follows. In the Federal Republic we have almost no additional cultivable land which could be profitably utilized agriculturally. But historically we have a great number of medium-sized, small, and very small farms. The possibility of increasing the income of these farms, which are often very difficult to modernize, are limited. On the other hand, incomes of the non-agricultural workers in a dynamically developing industrial society are rising from year to year owing to a continuous improvement of productivity. In an industrial society which already offers a living to more than 80 per cent. of the working population, the rate of increase in income of the majority of the population becomes more and more the standard for all people working in the economy. This is also true for the farm population—for the farmer just as for the farm worker. Increased productivity is therefore a goal to be aimed at. This largely means an increase in the *per caput* production of those working on the farms, hand in hand with an increase in the production per hectare. But once these possibilities are either exhausted or insufficient, then there is only one way left, to enlarge the farm size. We would have faced the greatest difficulties in marketing the increased agricultural production which would have resulted if, after the war, we had had enough land to enable the refugee farmers to establish new farms in the west. It is the same in all rich countries—the increase in the demand for food is limited, and with the introduction of modern production techniques there is a tendency towards over-production. However, we did not face this problem. The situation today, within our dynamic and growing industrial economy, forces us to enlarge farms by reducing the farm population and the number of agricultural holdings to an extent that those farmers remaining in agriculture will be able to arrive at a standard of living which finally brings further migration to an end. I have mentioned earlier that the average size of the agricultural holdings today in the Federal Republic is about eight hectares. Maybe in twenty or thirty years—depending on the rate of increase of incomes in the Federal Republic and in the European Economic Community—we shall come to an average size of thirty or forty hectares or still larger. In any event, we cannot impede the process towards developing farms better adapted to an industrial economy. In this process, many a farmer who is not making enough progress may well combine his farm with his neighbour's. Other farmers will have to look for jobs outside agriculture. Many a farmer having a job in the city can be

expected to give up his small piece of land, either leasing it or selling it. All these developments are unavoidable in an industrialized country and are reasonable so long as they serve the aim of increasing productivity and enabling the farm population to share in the general increase in incomes. Public funds assist in this improvement. The goal is to find ways in which the farm population can exist in an industrial economy. Increasing the farm size in the face of a demand for more land does not mean any contradiction in an industrial country with a progressive, dynamic income development. There are fundamental differences between the problems of advanced industrial societies and those of agricultural countries which are only beginning to develop. Nothing, or very little, of what seems useful and indispensable to economically advanced countries can be adapted straight away to countries in earlier stages of development.

A last word on the problems concerning the deep gap between practical agrarian policies of governments and the developments recommended by agricultural economists. This gap exists in nearly every country. Professional organizations wish to protect their members from unwelcome structural changes. They appeal to the government and to the public for aid against undesired developments. This is quite understandable. The scientist, on his part, has the task of analysing the economic, over-all, and general requirements of a future development. He has to indicate the future course which meets the interests of the total population. The elaboration of these courses requires the utilization of all available knowledge at the disposal of science. The scientist has to indicate dangers, costs, and misuse of forces which may occur if all data are not sufficiently taken into consideration. The consequences drawn and the proposals made by him must not be guided by what seems desirable or undesirable to the members of one or other social or professional class. Sometimes he has to touch a sore spot which conservative methods cannot cure. He must not abstain from indicating structural changes even if they are not welcome to everybody.

The knowledge, the desires, and apprehensions of those concerned, and the political powers which can be mobilized are the factors which determine the further development. The more intensively the farmers' organizations co-operate in showing ways of adapting agriculture to the requirements of an industrial society, the better will agriculture perform its task in an industrial society and the more productively will all supports and financial aids be utilized.

# DEVELOPMENTS IN PATTERNS OF FARM UNITS

## (1) NEW LANDS AND NEW SETTLEMENTS

M. E. ANDAL

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THERE is still settlement of new land in many countries, but the primary concern in most countries in recent years appears to have been with the reorganization and resettlement of existing farms.

There is little doubt that these settlement activities will continue. The world population is expected to nearly double, that is increase to about 5 billion, by the year 2000.<sup>1</sup> This pressure of food and the inability of farms in vast areas to take advantage of technological advances will encourage new land development and the reorganization of existing farm land on a more productive basis. Adding impetus are the prevailing 'winds of change' calling for improvements in income and in working and living conditions of millions now at subsistence level.

Major land uses and estimates of potential changes (Table 1) are provided also by Schickele.<sup>2</sup> These suggest that it is technologically possible to double the land under cultivation.

### *Recent Settlement Activities*

In recent years irrigation assumed importance in bringing new lands under cultivation and it will continue to do so. India brought 18.5 million acres under irrigation between 1950 and 1960.<sup>3</sup> Between 1945 and 1955 the irrigated acreage increased by 1.2 million acres in the Near East and 3.5 million acres in Latin America.<sup>4</sup> Irrigation acreage expanded substantially in the United States, but much of it

<sup>1</sup> Rainer Schickele, 'The Role of Land and Water Development in World Food and Agricultural Progress', reprint from *1958 Annual Report*, International Institute for Land Reclamation and Improvement, Wageningen, the Netherlands, p. 8.

<sup>2</sup> *Ibid.*, p. 10. There are variations in estimates, for example see J. Russell Whitaker, 'World Land Resources for Agriculture', *World Population and Future Resources*, Proceedings of the Second Centennial Academic Conference of Northwestern University, Mar. 1951, and Robert M. Salter, 'Bring New Lands into Cultivation', *Chronica Botanica*, vol. xi, 4 (1947-8).

<sup>3</sup> *Third Five Year Plan*, Government of India, 1960, p. 18.

<sup>4</sup> Rainer Schickele, *op. cit.*, p. 13.