

PROBLEMS OF DEVELOPMENT IN CEYLON ¹⁾

J. A. VAN BEUKERING

In the context of this series of lectures I have undertaken to give a talk on problems of development in Ceylon. "Problems of development" is a very broad, vague term to apply to underdeveloped countries, for the problems in this field are numerous and varied. And they relate to all sectors of social, economic and cultural life. This means that, although it is easy enough to give my talk its brief, succinct title, the range of the subject itself is wide and highly comprehensive. But it cannot be the intention, not would it be possible, for a single person, and within the compass of a single lecture, to deal with this topic in full. I shall therefore restrict myself to outlining a few selected problems arising in respect of Ceylon's economic development.

I have been prompted to give this lecture by a study which I carried out in Ceylon a short time ago as a member of an international mission organized jointly by the United Nations Technical Assistance Administration, the International Labour Office and the Food and Agriculture Organization. The task of this mission was to give advice and make proposals regarding means of developing small-scale industries in Ceylon; and we shall therefore first give further consideration to this problem, in order to connect it up later with the other most important sector of economic life in Ceylon, viz. agriculture.

The question which first arises when things are treated in this order is: what is actually meant by "small-scale industries"? It is obvious that "small-scale industries" occupy a position between home or "cottage" industries on the one hand and large industries on the other, and these three categories merge into each other without any sharp dividing lines. Under small scale industry, however, can be understood (and this definition also covers the forms recognized by the I.L.O.) that type of industrial undertaking:

which is no longer carried on at home but in rooms or buildings adapted for the purpose; and which, for the head of the business, not only represents his only profession, but also provides him with a full day's work;

which makes use of a small number of workers, for instance not less than five and not more than twenty-five, whom it also provides with a full day's work;

which does not require the investment of large sums of capital, but is largely based on manual labour.

This definition is a useful one: it gives a good picture of the character of small-scale industry. However, the mission I have mentioned thought it advisable not to adhere too strictly to the norms laid down in the definition, firstly because many small-scale industrial projects exhibit such a degree of mutual dependence as to necessitate the presence of a big industry as "parent industry" in the pattern of industrial development, and secondly because, as yet, it is hardly possible to talk of large-scale industry being present in Ceylon at all. The paramount problem in Ceylon is at the moment, and will continue

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to be for the time being, provision of opportunities of suitable employment for as many people as possible. A considerable "population pressure" prevails in Ceylon, which is such that, in rural areas, it gives rise to structural unemployment in agriculture. This finds expression in underemployment and disguised unemployment in rural districts, on top of which comes the normal seasonal unemployment, which occurs almost always in agriculture to a greater or lesser extent, and in connection with which *cottage* industry can provide a welcome source of supplementary employment. Accordingly, the crux of the matter is the provision of more employment, which can be effected, inter alia, via industrial development. In order to initiate such development, however, it will not be sufficient simply to establish physically a number of specific industries. For that purpose, first and foremost, an industrial "climate" will also have to be created, a climate that promotes the inclination to industrial development, stimulates the spirit of enterprise, and encourages investments. To achieve this, organizations geared to industrial development will be required, and research — market research not least — will have to be carried out; professional training and information will have to be given, and publicity made, while the requisite attention will also have to be devoted to the supply of credit, the cooperative system and the problem of raw materials. An explicit statement by the Ceylonese Government of its policy regarding industrial development will likewise be indispensable in connection with these activities. The mission has given attention to these matters. However, I cannot go into them further here, since all this has reached the stage of submission of a draft report to the United Nations and its subsidiary organizations. It would be an act of indiscretion towards these agencies to publicize the material now. But I should like to emphasize that — in view of the economic structure of the country, with its relative poverty in capital and surplus of labour — it would be best to follow the principle of giving priority to those industries which require not so much capital but a great deal of labour. This applies not only to the development of industry in general, but also to the specific industries in particular. For choice of production method is determined not only by technics but also by the costs of the production factors. If, for instance, a transport problem has to be worked out, a choice has to be made from a number of alternative possibilities, which vary from exclusive employment of manual labour to the most highly perfected conveyor belt. The more transport is mechanized the fewer will be the number of workers required. Accordingly, the costs of mechanization, which consist of running costs, interest and depreciation, are offset by savings in wages. The question as to which method of production will be the preferable one, economically speaking, depends only on the comparative relationship of marginal productivities and on the relative costs of the means of production employed. It is obvious that, in a country like Ceylon, where capital is relatively scarce and labour relatively abundant, more attention ought to be paid to selecting production methods which require much labour and little capital than in western countries, where these conditions are exactly reversed. In doing so, however, we should bear in mind that, under conditions of free exchange, the standard of wages in such a region as Ceylon will be low to very low, and so everything is to be said for artificially raising it.

— It would be possible to create a reasonable minimum standard of living by

prescribing a reasonable minimum wage level ; this does, in fact, happen in Ceylon, as a result of the ordinances of the "Minimum Wages Boards". One of the advantages of this artificial raising of wages is that it promotes a movement of labour towards the industry concerned. But it will then be necessary to invest proportionately rather more capital in that industry. Yet this, in my opinion, does not affect the fact that it will be necessary to adhere to the principle of working on a basis of little capital and much labour. In terms of practical industrial development it amounts to this : for instance, in building up the rice industry it will be advisable, at the present stage of development, to put one's faith not in one or two large, elaborately equipped rice-mills, which can be operated by a relatively small number of people, but in a larger number of smaller milling plants, of simpler construction but which nevertheless function efficiently. Another example suitable for quotation in this connection is the textile industry. It might be possible to develop this in the form of a few big, highly mechanized undertakings, but it can also be developed in the form of a large number of small, efficiently working units, equipped with simple, mechanized or non-mechanized looms and, if desired, dependent on larger units which see to the sizing of the threads and the finishing to standard of the woven material. So the above does not imply that the small industrial undertakings based more on use of labour than on use of capital need not necessarily be efficient. On the contrary, efficiency may even be said to be a primary requirement : these concerns, too, will have to be able to sell their wares at competitive prices, for otherwise the day will surely come when they will be forced off their markets, including the home market. Protection against this is conceivable, and practicable, and, in an initial period of establishment, also defensible ; but *permanent* protection of an industry causes it to ossify. For the proprietor of a concern which is rendered able to pay its way by protection no longer has the slightest stimulus to improve, or rationalize or intensivize, his business. Permanent protection would tend to create a more static than dynamic condition of things in the field of industrial development.

Ceylon does, in fact, suffer somewhat from this evil. The country's Industrial Products Act has the effect of buttressing, inter alia, an obsolete textile industry. Under the provisions of this Act every importer of woven goods, such as "sarongs", is obliged to purchase a quantity of Ceylonese sarongs of up to 10% of the quantity imported, at a price which is considerably higher than that of the imported articles. In this way an attempt is made to enable the home textile industry to make a decent living ; but on such a basis it is not possible to compete with the imported sarongs, which come chiefly from India. In order to do that it will be necessary for the country to rationalize its textile industry, and equip it better technically.

These, then, are some problems arising on the one hand with respect to the development of an industry ; on the other hand, the question arises of purchasing power to support the industry. As regards the home market, this purchasing power will have to come chiefly from the sector of agriculture. Ceylon is a country which is based on agriculture. Eighty per cent of the population is established on the land, and 53% of all workers practising a profession are immediately concerned with agriculture. At present only plantation agriculture is well developed, and only the agricultural plantation pro-

ducts make a really substantial contribution to the country's agrarian income, and also to the revenue of the state. By comparison, the contribution of native agriculture is negligible. Native agriculture consists chiefly in subsistence farming; the native farms are largely crofter farms and small holdings. The area covered by the plantations amounts to 1.300.000 acres, as compared with a total area of 1.850.000 acres covered by the small holdings. The statistics regarding landutilization are as follows:

	Number ¹⁾	Area
Plantations	11.288	1.300.000 acres
Crofter farms	394.282	900.000 „
Small holdings and mixed gardens ...	858.892	300.000 „
Small paddy-farms	771.908	600.000 „
Chena's (shifting cultivation)	91.996	50.000 „
	2.128.866	3.150.000 acres

¹⁾ It may be possible that some of the farms and holdings included in the "Number" column may have been counted twice.

Among the plantation crops tea occupies the most important place, with 496,000 acres; then come rubber, with 486,000 acres, and coconuts with 341,000 acres. The great majority of the estates are in the hands of foreign (British) companies; their labour force consists chiefly of Indians, about 450,000 of whom work on the plantations out of a total number of about 900,000. Native agriculture, on the other hand, is mainly geared to cultivation of food crops, while the small farms, in addition, frequently also grow tea, rubber and, in particular, coconuts on a small scale. Rice is the principal food crop; the population also cultivate maize and millet varieties; cassava; various kinds of tropical fruit, including citrus fruits and pineapple; tobacco; onions; cayenne; cocoa; kapok trees, etc.

Native agriculture is chiefly of the permanent type; shifting cultivation called "chenas" in Ceylon and "ladangs" in Indonesia, is encountered in the east and north-east of the island. The greatest concentration of native agriculture has taken place in the "wet zone" — in which, for that matter, plantation agriculture has also established itself. There, substantial cultivation of tea, rubber, coconuts and rice is carried on. This wet zone, which is characterized by a double rainy season of an equatorial nature, is the most highly developed agrarian area in Ceylon; it covers almost a quarter of the surface of the island and is devoted to agriculture almost in its entirety.

In sharp contrast to this is the "dry zone", which occupies all the rest of the country, apart from some transitional regions, and is characterized by the occurrence of a short wet season, lasting four or five months, followed by a long dry season. The term "dry zone" is really somewhat misleading. In actual fact a reasonable amount of rain does fall, on the average as much as 1,250 mm per year, rising to 1,800 mm. It is typical of this zone, however, that the rainy period there lasts a very short time, viz. from October to January, though it sometimes continues to a certain extent until March, and that practically

no rain falls in the dry months. The remarkable thing is that it is just in this dry zone that the ancient Sinhalese civilizations developed.

In the dry zone agriculture is generally carried on with the help of irrigation, both in flooded rice fields (sawahs) and on dry ground. Furthermore, a system of dry farming is applied over small areas, while "chena" cultivation also occurs. The important centres of agriculture in the dry zone are Jaffna — a district in which agriculture is pursued very intensively in the form of mixed farming, with irrigation in dry fields and dry farming in sawahs — and the district of Batticaloa, in which farming is carried on on a fairly considerable scale in sawahs, irrigation being applied in places. Elsewhere the agricultural acreage of the dry zone is distributed in a very piecemeal, scattered fashion. Irrigation is carried out by means of small reservoirs, or tanks, which are formed artificially by damming up large or small rivers. The water stored in this manner is used during the dry season. These tanks, greatly varying in size, are to be found in countless numbers. They are of very ancient date, many of them having been built far back in the dawn of history, even before the commencement of the Christian era in some cases, when the country, which was originally inhabited by tribes of Veddas, was peopled by conquest by Sinhalese population groups from India, and powerful principalities arose. It is especially in the matter of tank construction that the high level of civilization attained by the primeval Sinhalese princely houses is still made manifest. In those far-off times, down to the Middle Ages, the people attempted to dam up great rivers by means of earth dams with dam revetments and bank reinforcements made of piles of stones; and their achievements are remarkable by any standards. These works still compel the admiration of all, not least of civil engineers. The Parakkam Samudda (Lake of Parakrama), near Polonnaruwa, for instance, was a gigantic piece of tank and canal construction. And it is not the only one. Much of all this has been lost; many tanks and other engineering works have fallen into ruin, even in historic times — have become overgrown by the tropical jungle and frequently almost obliterated. We shall not consider the causes of this decline here. Suffice it to say that, with the decay of the ancient tank system, the old civilizations also decayed — civilizations which, in their day, embraced millions of people. Estimates of the size of the population of Ceylon in mediaeval times vary from 6 or 7½ to 17 million souls — that is to say, a total population not smaller than that of present-day Ceylon, which is about 8 million.

But let us now return briefly to the question of land use. It will be found that — excluding the plantations — agriculture is carried on on about 1,700,000 crofter farms covering a total cultivated area of 1,000,000 acres. In addition there are also 390,000 small holdings, which come into the 1–10 acres class. Their effective area is not very large either, being on an average only about 2¼ acres per farm, or not even one hectare. Strictly speaking, these farms should also be classed among the crofter farms. It is obvious that, in this condition of things, the family income from native agriculture, in which the majority of the population is engaged, cannot be other than small.

Ceylon's agrarian income is assessed at a good 2,500,000,000 rupees, half of which, at a rough estimate, is produced by the large estates, and the other half by native agriculture. Accordingly, the produce of about two million holdings values in all about 1,250,000,000 rupees, which is approximately 625 rupees per holding per year. These holdings are chiefly "subsistence" holdings. I have calculated that the money-income from a holding one acre

in size, on which paddy can be grown twice a year and which, in addition, is augmented by a mixed garden from which the diet of the farmer's family can be supplemented, may amount to 500 rupees per annum. All things considered, a scanty income.

And with this I come back to my point of departure — this small income from farming, which is the sole income of a large part of the population, will have to provide a substantial part of the purchasing power for a native industry awaiting development. The agricultural population will, admittedly, not be the only purchaser of industrial products; but nevertheless home industry will very largely have to depend on their purchasing power to enable it to make a living. In this way, the situation becomes a vicious circle. The agricultural sector of economy, suffering from structural unemployment on the one hand, will have to be able to spare labour for industry if it is to be able to develop itself, and, in addition, will have to provide the bulk of the raw materials, since these (setting on one side the possibility of importing them) are not otherwise available in abundance (limestone, clays and quartzose sand for ceramic purposes, graphite, iron ore, ilmenite, semi-precious stones, salt, etc.); on the other hand, purchasing power for the products of industry will also largely have to come from the agricultural sector. It is obvious that these two economic sectors will have to become, as it were, each other's customer and supplier, to make possible continuous, accelerating economic development, and it is no less obvious that, to this end, immediate development of agriculture is just as necessary as industrial development proper.

In establishing this we have come face to face with the problems relating to the development of agriculture itself. The government of Ceylon is paying a great deal of attention to these, as witness, for example, the two Six-Year Plans for which they have made provision since Independence Day: the period set for the first of the plans is due to terminate very soon, while the second plan is to be published shortly. In the first Six-Year Plan, the total budget for which was 1,359,000,000 rupees, 503,000,000 rupees (= 37%) were allocated to agriculture.

If we now ask ourselves what the problems of agrarian development are, we are first confronted by the question as to whether, and, if so, to what extent, further improvements and increases in production are possible under the prevailing conditions, that is, without making an alteration in the present type of holding. It seems to me that, in this connection, it must be considered perfectly feasible that many of the agricultural methods now being applied on the crofter farms and small holdings will be susceptible of improvement and rationalization without necessarily at once overtaxing the abilities and resources of the small cultivators concerned. It will be possible to improve the mixed-garden crops grown by the natives in their compounds, and it will also be possible considerably to intensify the planting of such compound gardens. Rejuvenation of the native coconut crop will also be possible, in fact necessary. A large number of the trees are already past their productive prime. In the acreage at present under coconuts only 62% of the trees are less than 30 years old; 29% are between 31 and 60 years old; and the remaining 9% are already more than 60 years old. Rejuvenation of rubber crops and introduction of highly productive clones are other measures from which favourable results are to be expected. A very great deal can also be done to improve paddy cultivation, which is so important to Ceylon. The sawah area covers between 620,000 and 650,000 acres, about 45% of which is irrigable and 55%

dependent on rainfall. The yields vary greatly with the irrigation condition of the fields, the nature of the soil, and the care given to the crop; but they are small as a rule, in any case. Sometimes a crop of little more than 3 quintals of paddy per acre is obtained; in other cases the yield amounts to 9 quintals per acre. In so far as it is possible to estimate the average from the data available, it is about 6 quintals per acre. Ceylon's total production of paddy is about 500,000 tons per year, which is equivalent to about 340,000 tons of rice. This quantity is far from sufficient to satisfy requirements of cereals and flour products. Annual imports of about 365,000 tons of rice, and 273,000 tons of wheat flour and other types of grain and flour, are therefore also necessary.

Paddy-cultivation on sawahs in Ceylon generally is rather extensive. The method applied essentially consists in broadcasting the paddy-seed, and preferably as densely as possible, after the land has been tilled. After this something is done in the way of irrigation, but less care is taken with regard to weedcontrol and the maintenance of the crop. The consideration of the native growers is that the crop — densely sowed as at is — will close itself quickly enough so as to bumper weedgrowth, with the consequence that weedcontrol becomes unnecessary, and the growers may bide their time until the harvest. If, however, improved methods of cultivation were to be adopted and the paddy were to be transplanted and weeded — if, in addition, the requisite attention were to be paid to selection, and some fertilizers were to be applied, substantial increases in yield would certainly be possible, increases which could be assessed, without exaggeration, at 25% of the present crops. These improved methods of cultivation are very well known in Ceylon, and the Department of Agriculture also does a great deal to advocate their application. They are known under the name of "Japanese methods", although they are far from being exclusively a Japanese invention.

Accordingly, rationalization and increase of labour productivity within the framework of the existing agricultural system certainly offer possibilities of obtaining increases in yield. But the results which can be achieved in this way will fall far short of what are required to substantially raise the standard of living, and all the more so because a considerable growth of the population must also be taken into account. Real development of agriculture will have to be of a structural nature, founded on a general increase in the size of the holdings. It is an absolute minimum requirement that the crofter farms and the smaller of the small holdings should disappear, making way for a healthy system of medium-sized farms. The question which at once presents itself in this connection is whether there will be enough land available for this. Stated more precisely, the question is as follows: to what extent can land which has hitherto remained unused, but which is nevertheless available and suitable for agriculture, be developed for agricultural purposes? To begin with, it is known that there is not much more land available in the wet zone. The potential agricultural acreage will have to be sought chiefly in the dry zone. Calculations of the amount of land still available and usable in this zone vary somewhat. As regards irrigable land, estimates range from 600,000 acres, as assessed by the International Bank for Reconstruction and Development, to 930,000 acres, which is the figure arrived at by the Committee on Utilisation of Crown Lands in its report of March, 1953. It is, however, not impossible that there should be even more irrigable land present, but this will have to be determined by a general land classification. The above-mentioned Committee also comes to the conclusion that, in all, a further 3,225,000 acres of land will be available for the future development of agriculture in Ceylon. If this could be brought under cultivation the agricultural acreage would be

doubled, and its use would increase the proportion of land used for agriculture in Ceylon to 40% of the total surface of the country. In that case – assuming that the land concerned were to be used entirely for the development of native agriculture, and that the agricultural sector of industry would not be required to assimilate the current increase in the population – room would be made for the creation of farms considerably larger than the present small holdings but which, as a rule, would not exceed about five acres in size, and, on the average, would be rather smaller than this. This to confine one's mind to the possibilities of future landutilisation.

The bringing under cultivation of this additional land, and the establishment of new farms, are fraught with great problems of a technical nature, to say nothing of the social and economic ones. The new land is chiefly situated in the dry zone. As regards the irrigable part of it, the technical difficulties are not so great as might be feared. Leaving the cost aside for a moment, land development here simply amounts to the repair of old tanks and the construction of new irrigation works. As regards the unirrigable land, however, the technical difficulty remains that it will be necessary to carry on agriculture in the unfavourable climate of the dry zone, i.e. under conditions characterized by a short rainy season and a long dry season. In these circumstances it is essential to keep the rainwater that becomes available as long as possible in the soil, to enable it to be drawn on gradually for the benefit of field crops. Dry farming is a method that is based on this principle. It consists essentially in endeavouring to limit evaporation to a minimum by applying cultivation measures the object of which is to keep the water stored in the soil available in maximum possible amounts to promote the growth of cultivated plants. Technically speaking, one way of doing this is to keep the soil permanently free from weeds, and at the same time to keep the soil-capillaries destroyed by a system of tillage frequently applied for that purpose. It is clear that such methods can only be employed successfully on deep soils with a well developed profile and a good water-capacity. In Ceylon, however, the soils are frequently shallow, the layer of bedrock often being encountered close beneath the surface. Such types of soil have no great capacity for storing water. Under these circumstances it is not to be expected that dry farming can meet with much success. In that case an alternative may perhaps be found in the application of ample quantities of farmyard manure; but this does not simplify the business. It is, in fact, no easy matter to bring new land into production in Ceylon. In passing it may be said that the problem of dry farming is at any rate being energetically tackled, inter alia by an expert made available for the purpose by the F.A.O. For the rest, the method is not unknown to traditional agriculture. As I have already said, it is applied in the district of Jaffna, in a sawah area, which, however, covers only 2,000 acres.

Irrigation and dry farming are two of the chief technical problems facing Ceylon in its endeavours to develop its agriculture. Meanwhile the Ceylonese government has adopted the policy of helping families as much as possible to settle on larger farms on new land. A short time ago it was reported that, in round figures, 12,000 families had been established on 84,000 acres of new land, which means that each family had obtained an average of 7 acres of farming land. In order to enable this policy of new settlement to be put into

operation a number of major and minor irrigation schemes have been, or are being, carried out as a preliminary. One of these development schemes is the wellknown Gal-Oya project, of which a brief outline will be given.

The Gal-Oya project concerns an area of about 200,000 acres, 124,000 of which are irrigable, situated on the east coast of the island. The project has been placed under the authority of a Development Board, which has been made responsible for execution of the relevant plans, subject to the limits of the powers vested in it by law. Its task, within the boundaries of the region over which it has authority, is to

promote the general agricultural and industrial development of the region ;
effect settlement on the land of as many families as possible, on the basis of a reasonable standard of living ; promote the economic and cultural development of the citizens thus established.

It is expected that the Board shall render the maximum amount of land irrigable. The original establishment principle envisaged only the setting-up of small farms – in the first place, of a projected size of 8 acres, divided into 5 acres of irrigable land and 3 acres of non-irrigable land. Subsequently, medium-sized farms 25 acres in size were also allocated, 52 of which have since been occupied, while a short time ago, as a result of the great population pressure prevailing in the rural areas of Ceylon, the size of the standard small farm was reduced to 5 acres, 3 of which were to be irrigable.

In the meantime, however, a big agricultural concern, the Gal-Oya Valley Food Production Company, also has been permitted to establish itself within the area of the Gal-Oya project, for the purpose of cultivating food crops. This grant of land, to the amount of 1,250 acres, resulted from the fact that, as part of the government's "Grow More Food" campaign, the plantation companies were obliged either to plant a certain acreage of land with food crops or pay a certain sum of money instead. The estates concerned have now jointly formed the Valley Food Production Company, which is to take over this obligation on their behalf and will consequently occupy itself with food production on a large scale. So it will be seen that this allocation of land marks a great departure from the principles on which the project was originally started.

The Gal-Oya Development Board also intends to establish a sugar factory, to which end it is to lay out a sugar-cane plantation, under its own administration, covering a gross area of about 13,000 acres.

In conclusion, it should also be mentioned that a number of small farmers were established in the Gal-Oya region long before there was any talk of a Gal-Oya project. These farmers, chiefly sawah cultivators, farmed an area covering 51,500 acres in all. They are to be assimilated into the project. This means that the entire plan will offer room for establishment of only 10,000 new small farms, 5 and 8 acres in size, of which 3 and 5 acres, respectively, will be irrigable. As regards the irrigable part of the area, the pattern of land use will therefore be as follows :

Already established farmers	51,500 acres
New settlements	34,000 „
Sugar cane cultivation	13,500 „
Other forms of settlement	25,000 „
	124,000 acres

The Gal-Oya Development Board is financed chiefly by the Government. In addition, it has other resources, e.g. revenues of its own, and from aid given it under the Colombo Plan.

The task facing the Board is immense. Under its auspices an American firm has built a large dam, together with the relevant power installations, at a point at which the Gal-Oya river breaks through rocks. Behind this dam a great reservoir has been formed, with a storage capacity of 770,000 acre – feet, which is about a thousand million cubic feet of water. The land downstream can be irrigated from this; a large number of canals, ditches, sluices, a.s.o. have already been constructed for the purpose. The Board's commitments likewise include the opening-up of the area by means of roads and paths, and construction of houses and workshops, recreation facilities and business and industrial premises. It has also built some residential centres (Amparai and Inginiyagala), and is likewise seeing to construction of village centres and small farmhouses. The village centres are the points at which social services and service facilities have been concentrated. There, recreation amenities, schools, clinics, a village hall, small shops, smithies, carpenters' workshops and buildings for co-operatives can be found. A great deal of attention is being paid to the introduction of agricultural co-operatives. A "general service co-operative society" is being established in every village, and membership of it has even been made compulsory for the settlers. These co-operatives are of the multi-purpose type. Their functions also include such things as provision of credit, and distribution of selected sowing and planting material, agricultural implements and cattle. The Board hands over the land to the tenant in cleared condition, and, in addition, makes two acres on every farm ready for sowing or planting a crop.

On first establishing himself the settler enjoys a modest cash allowance for three months, and also receives some payment for getting the rest of his land ready for sowing. The total amount he receives in the form of loans and payments is, however, not large; it is about 700 rupees. The Board's duties also include supervision of crop rotation programmes; furthermore, it carries on agricultural research, sees to the dissemination of agricultural information and advice, and runs a number of small model farms. The above are quoted as examples of activities in connection with this "community development project".

The Gal-Oya scheme is still too young – it dates only from 1949 – for judgment to be passed on its social and economic merits at this early stage. It is, however, striking that the Board, in its report for the financial year 1953/1954, was already in a position to state that the average settler's farm was yielding a gross income of 1,630 rupees per annum. An even more striking point is that the gross income of a farm in a settlement rather more than three years old already averaged 3,873 rupees as compared with 981 in a first-year settlement. Thus, purchasing powers are already beginning to develop here which can give substantial support to the industrial development of the country. On the other hand, however, the execution of projects such as the Gal-Oya Development Scheme is coupled with large capital investment and other expenses. It is not yet possible to say how much the scheme will ultimately cost. By the end of 1953 expenditure on it had amounted to a good 248,000,000 rupees, and by now it may already have reached the 400,000,000

mark, while the scheme is still far from being completed. Such figures clearly show what enormous sums of money are involved in land development on a large scale in this part of the world.

And with this observation I end my lecture. I said at the beginning that it would be quite impossible for me to deal exhaustively with the subject of "Problems of Development in Ceylon." I am well aware that, in this connection, I have done no more than skirt many problems, and that, in particular, I have hardly touched the human side of the problem of development, with its numerous aspects, such as the social organization and cultural growth of new communities, education, information, technical training, organization of the credit and co-operative systems, etc. But, as I have said, the nature of the subject is such as to enjoin restriction. And so I shall have to be content with the brief outline of it which I have given you.

SUMMARY OF A LECTURE ON THE PROBLEMS OF AGRICULTURAL DEVELOPMENT IN COLOMBIA ¹⁾

A. LUYTJES

Director of the Royal Institute for the Tropics, Amsterdam

Colombia is situated both on the Atlantic Ocean (Caribbean Sea) and the Pacific Ocean. It extends from the equator to lat. 10° N.; it is thirty-four times the size of the Netherlands, and has eleven to twelve million inhabitants. Its principal ports are Barranquilla and Cartagena on the Caribbean coast, and Buenaventura on the Pacific.

The country is divided from north to south by the Andes mountains, which split in the south into three chains, the Eastern, Central and Western Cordilleras, with snow-covered peaks some of which are nearly 5,500 m above sea level. These three chains are separated by the Rio Magdalena and Rio Cauca, which form deep valleys. The eastern half of Colombia is low-lying, and consists, in the south, of the densely forested Amazon region, and, in the north, of the almost treeless Orinoco region, the "llanos".

Owing to the great differences in altitude, great differences in climate are encountered. The mean annual temperature in the inhabited parts of the country ranges from 28° C in the lowlands to about 13° C in the inhabited highlands. The rainfall varies from 7,000 mm per year in the western coastal area to a few hundred millimetres in the north-eastern peninsula; the rainfall in the highlands is from 600 to 1,500 mm per year. There are two rainy seasons a year; but the intervening dry periods are, as a rule, not pronouncedly dry — there is a moderate rainfall even at those times.

Vegetation conditions vary strongly: primeval forest is encountered from the western slopes of the Western Cordillera to the sea, in the south-eastern Amazon region and in the middle reaches of the Magdalena river and its affluents. The high-mountainous area is almost entirely devoid of trees, like the llanos in the north-east. Severe erosion is encountered in places in the treeless high mountain region.

The ranges of mountains which cut through the country constitute formidable obstacles to communications, and endeavours are made to overcome this drawback, as far as is possible, by means of roads, railways, and a good air transport system. The problem of transport does indeed form one of the greatest difficulties in Colombia.

The population was originally Indian. In 1500 the country was conquered by the Spaniards, who settled chiefly on the high plateaux in the mountains, which, owing to

¹⁾ Paper presented at the Tropical Agricultural Days, 10 and 11 October, 1955 at Wageningen, Netherlands. See also: REVIEWS.