

# **POVERTY, UNEMPLOYMENT AND DEVELOPMENT POLICY**

**A CASE STUDY OF SELECTED ISSUES  
WITH REFERENCE TO KERALA**



**UNITED  
NATIONS**

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**UNITED NATIONS**  
New York, 1975

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## FOREWORD

In designating the period 1971-1980 as the Second United Nations Development Decade, the General Assembly of the United Nations adopted in October 1970 an International Development Strategy for the Decade<sup>1</sup> and made arrangements for a biennial over-all review and appraisal of progress in the implementation of the Strategy. The General Assembly decided that such a review and appraisal would be made by the Assembly itself, through the Economic and Social Council, on the basis of—among other things—the comments and recommendations of the Committee for Development Planning.

The Committee for Development Planning was established by the Economic and Social Council in 1966 as an advisory body of experts, appointed in their personal capacity, to make their experience in development planning and projections available to the United Nations for its activities geared to development problems and policies. During the first four years of its existence, 1966-1970, the Committee concentrated its attention on an examination of problems and policies relating to implementation of development plans in each of the three developing continents—Africa, Asia and Latin America—and also assisted the General Assembly and the Economic and Social Council in formulating the International Development Strategy for the Second United Nations Development Decade.

In accepting the additional responsibility for the preparation of comments and recommendations regarding the biennial over-all review and appraisal of progress in the implementation of the International Development Strategy, the Committee for Development Planning initiated in 1971 certain modifications in its methods of work. In particular, it placed emphasis on intensification of work on major development problems, including the commissioning from time to time of studies and papers from outside institutions and scholars which could shed light on subjects of concern to the international community and pave the way for policy recommendations by the appropriate intergovernmental bodies of the United Nations.<sup>2</sup> These proposals of the Committee were approved by the Economic and Social Council in resolution 1625 (LI) of 30 July 1971.

Thus, the present study, prepared by the Centre for Development Studies at Trivandrum, Kerala, India, forms part of the research work commissioned by the United Nations Secretariat from outside institutions on behalf of the Committee for Development Planning. It is not a coincidence that the subject-matter dealt with in the study has its lineage in the theme of

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<sup>1</sup>General Assembly resolution 2626 (XXV) of 24 October 1970, para. 83.

<sup>2</sup>Report of the Committee for Development Planning on its seventh session. *Official Records of the Economic and Social Council, Fifty-first Session, Supplement No. 7 (E/4990)*, paras. 35-40.



mass poverty and unemployment which the Committee discussed at some length in 1972.<sup>3</sup> The urgency of finding solutions to the stubborn problems of mass poverty in much of the developing world has been in the forefront of the Committee's thinking since then and has, indeed, also figured prominently in the deliberations of many intergovernmental bodies of the United Nations system. In this respect, drawing upon the work carried out by the Committee for Development Planning, the Economic and Social Council laid down a series of recommendations in resolution 1727 (LIII) of 28 July 1972, addressed to Governments of both developing and developed countries and to international organizations, with the objective of eliminating mass poverty and unemployment in the developing countries. The Council invited the Committee to continue its work on this matter with a view to recommending further measures. The present study, along with the recommendations put forward by the Committee in its more recent reports,<sup>4</sup> is intended to be a part of its response to that invitation.

The study is an exercise in viewing the process of development as a complex whole. It does not draw any boundaries between the so-called economic and social factors. The framework of the study, it may be said, is succinctly described in paragraph 18 of the *International Development Strategy* itself, in the following words:

"As the ultimate purpose of development is to provide increasing opportunities to all people for a better life, it is essential to bring about a more equitable distribution of income and wealth for promoting both social justice and efficiency of production, to raise substantially the level of employment, to achieve a greater degree of income security, to expand and improve facilities for education, health, nutrition, housing and social welfare, and to safeguard the environment. Thus, qualitative and structural changes in the society must go hand in hand with rapid economic growth, and existing disparities—regional, sectoral and social—should be substantially reduced. These objectives are both determining factors and end-results of development; they should therefore be viewed as integrated parts of the same dynamic process... ."

The experience of Kerala, one of the southern states of India, is particularly helpful in throwing light on some of the underlying development issues. With an area of 38.9 thousand square kilometres and a population, at the time of the census taken in 1971, of 21.3 million, Kerala is one of the most densely populated regions in the developing world. Its *per capita* income is low (about one seventh lower than the average for India as a whole), but its rate of literacy is high (twice the rate for India as a whole), and it has also had a long tradition of providing in sizable volume such services as education and health to the general public. Although outranked in area by 16 other states of India and in population by 11 states, Kerala is

<sup>3</sup>See *Attack on Mass Poverty and Unemployment* (United Nations publication, Sales No. E.72.II.A.11).

<sup>4</sup>*Renewing the Development Priority: Industrialization for New Development Needs; Continuity and Change: Development at Mid-decade* (United Nations publications, Sales Nos. E.73.II.A.7, E.74.II.A.4, E.75.II.A.6).

economically larger than many of the developing countries that are Members of the United Nations.

The fact that a region within a country rather than that country as a whole is the focus of attention in the present study has helped to demonstrate that national averages can often be as misleading as averages for large groups of countries. Time and again the study shows that a generalization valid for India as a whole does not hold for one of its constituent units—in this particular case, Kerala. This feature is by no means unique to a geographically large country like India. Indeed, its occurrence is widespread throughout the world. Herein lies the rationale for devising regional or subnational policies for development that are in consonance with the prevailing circumstances.

The development policies that can help to make a meaningful attack on mass poverty and unemployment call for coherent action on a wide front. A mere glance at the table of contents of the present study would show that the needed policies range from measures designed to increase production and intake of food to land reform, better education and improved health. Many developing countries have been experimenting with a wide variety of measures in this regard, but it is often not clear what impact those measures have had. It is important that from time to time socio-economic surveys be made to pinpoint the effects of the measures adopted, to analyse both the achievements and shortcomings of those measures, and to pave the way for remedial steps whenever they are needed. The diet survey and the survey of the educated unemployed carried out by the Centre for Development Studies for the purposes of the present study indicate what can be done with comparatively little financial outlay through the co-operation of the academic faculties and the energy of their student communities.

Indeed, there is an urgent need for socio-economic surveys in the developing countries. Such surveys provide a valuable tool for designing and implementing policies to resolve acute problems of mass poverty and unemployment in the context of circumstances which are prone to differ from country to country and often from region to region within a country. In this respect, the present study is intended to be a catalytic agent. If it helps to stimulate interest in conducting careful examinations of the dimensions of poverty, of its attendant ills and of ways and means to cope with the underlying problems, it will have served a useful purpose.

It should be noted that, while the United Nations Secretariat sponsored this study in line with the work programme of the Committee for Development Planning, responsibility for the analysis and the views expressed in the study rests solely with the Centre for Development Studies at Trivandrum in India. It is hoped, however, that the study will be of interest to a wide audience of development planners and policy makers and will help to stimulate thinking and policy action both within the developing countries and in favour of those countries by the world community.



## CONTENTS

|  | <i>Page</i> |
|--|-------------|
| Explanatory notes . . . . .  | viii        |
| Preface by the author institute . . . . .  | ix          |
| Introduction and summary . . . . .   | 1           |
| <br><i>Chapter</i>   |             |
| I. Poverty and food intake . . . . .   | 7           |
| II. Trends in the availability of food . . . . .   | 21          |
| III. Nutritional norms and magnitude of under-nutrition . . . . .  | 31          |
| IV. Public distribution of food . . . . .  | 41          |
| V. Land reforms and their effect on distribution of income<br>from land . . . . .                        | 53          |
| VI. Population growth and unemployment . . . . .   | 73          |
| VII. Trends in wage rates . . . . .  | 87          |
| VIII. Public works programmes . . . . .  | 97          |
| IX. Structure of education and the market for the educated . . .   | 121         |
| X. Health indicators and demographic trends . . . . .  | 133         |
| XI. Conclusions . . . . .  | 147         |
| <br><i>Annexes</i>   |             |
| I. Food balance-sheets (Kerala) . . . . .  | 157         |
| II. A calorie norm for Kerala . . . . .  | 182         |
| III. Results of a diet survey . . . . .  | 185         |
| IV. The One Lakh Houses Scheme . . . . .   | 196         |
| V. Alternative building technology for low-cost housing . . .  | 201         |
| VI. Guidelines to financing of the schemes under the pro-<br>posed Labour-cum-Development Bank . . . . . | 217         |
| VII. A survey of the educated unemployed . . . . .   | 220         |

### **Explanatory notes**

The following symbols have been used in the tables throughout the study:

Three dots (...) indicate that data are not available or are not separately reported;

A dash — indicates that the amount is nil or negligible;

A blank in a table indicates that the item is not applicable;

A minus sign (-) indicates a deficit or decrease, except as indicated;

A stroke (/) indicates a crop year or financial year, e.g., 1970/71.

Use of a hyphen (-) between dates, e.g., 1969-1971, signifies the full period involved, including the beginning and end years.

Reference to "tons" indicates metric tons, and to "rupees" (Rs) Indian rupees.

The term "billion" has been used to signify a thousand million.

One lakh equals 100,000.

Details and percentages in tables do not necessarily add to totals, because of rounding.

## PREFACE BY THE AUTHOR INSTITUTE

The International Development Strategy formulated in the context of the Second United Nations Development Decade was based largely on explicit recognition of the fact that growth in terms of the *per capita* gross product of developing countries would, in the absence of redistributive measures, prove inadequate to provide opportunities for a better life to the bulk of the population of these countries. Elimination of the mass poverty and social injustice widely prevalent in developing countries, including inequities due to disparities between regions and between different strata of society, were accordingly identified as the main elements of the Strategy. Some of the policies considered consistent with this Strategy were: public works programmes for raising productivity and creating additional employment, public distribution of available food supplies, and more direct measures such as redistributive land reforms. These policies have been experimented with in different countries with varying degrees of success.

In the context of the above-mentioned Strategy, Professor Jan Tinbergen, the then Chairman of the Committee for Development Planning, suggested to the other members of the Committee in 1971 that it might be useful to undertake studies in their respective areas on issues that would throw light on some of the policies suggested as part of the Strategy. In particular, it was felt that there was a need to understand the various implications of policies for promoting distributive justice along with development. Professor K. N. Raj, a member of the Committee, agreed to initiate a study of this nature with reference to the experience of the state of Kerala, India, provided it could be undertaken in collaboration with his colleagues at the Centre for Development Studies at Trivandrum and with the help of other consultants having the required expertise. The Centre for Development Planning, Projections and Policies of the Department of Economic and Social Affairs of the United Nations Secretariat agreed to this proposal.

Consequently, the Centre for Development Studies undertook to prepare a study for the Committee for Development Planning entitled "Economic evaluation of selected measures against poverty and unemployment and their implications for development policies in densely populated regions: a case study of methodological, organizational and policy questions with reference to Kerala". The United Nations made available a sum of \$15,000 to defray the costs associated with the study.

The objectives of the study were: to analyse the effect of (a) public work programmes designed to raise the productivity of land and other assets and to create additional employment; (b) food aid and related nutrition programmes; and (c) changes in the educational system of the problems of unemployment, income distribution and patterns of consumption in densely populated developing economies.

With these objectives, the Centre for Development Studies (hereinafter referred to as the Centre) undertook: (a) to analyse a selected public works programme designed to determine the kind of programme that would help to generate "continuing" employment adequate to absorb a high proportion of the unemployed in a given area; (b) to study measures through which a portion of social and private benefits generated by public works projects may be utilized by public authorities to augment the resources for further development; (c) to institute a case study of the construction industry in Kerala state in order to assess the volume of employment that can be created through construction activity in general;<sup>1</sup> (d) to undertake a quantitative assessment of the problem of malnutrition in Kerala and for that purpose (i) construct food balance-sheets and (ii) analyse nutrition programmes being undertaken in the state; and (e) to undertake a sample study of the unemployed registered with employment exchanges in Kerala state in order to assess the following: (i) the level of education of the unemployed, (ii) the duration of unemployment, and (iii) the socio-economic characteristics of the unemployed.

The Centre initiated work on all these aspects of the study during 1972. As the work progressed it was realized that the study should encompass a number of additional factors which would reflect the reality of Kerala's development experience in a more comprehensive manner. An example that could be cited in this context was the role played by the growth of production of tapioca (i.e., cassava, an inferior cereal substitute) not only in raising the levels of food availability but also in bringing about greater equality in consumption levels. This development was the result of policies initiated during the Second World War, reinforced later by recognition of the persistently low levels of availability of rice and perhaps also by the stimulus given to its cultivation in small holdings following land reforms undertaken in the state. Another example was the observation that Kerala had apparently succeeded in lowering mortality rates and raising life expectancy to the same levels as in the developed countries and, more recently, in lowering birth-rates at a faster rate than elsewhere in India.

The study in its final form does not, however, view the development process in its entirety; in particular, questions relating to saving, investment and patterns of industrial growth are not examined; the emphasis is on factors that have, or are likely to have, influenced disparities in income and consumption.

The study is the outcome of intensive interaction among those who contributed to it and is thus truly the fruit of a collaborative effort. Responsibility for the conclusions is shared by all those entrusted with the writing of the report. The drafting of the report was done by the following (with indications of the chapters in parentheses): K. N. Raj (Introduction and

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<sup>1</sup>The case study of the construction industry was: (a) to examine the distinction between construction activity associated with building construction and other types of construction; (b) to examine the relative importance of "traditional" and modern techniques in building; and (c) to investigate the scope for creating more employment and reducing social costs by adopting techniques based to a greater degree on the use of "traditional" materials and local labour.

summary, V, VI, VIII and XI), N. Krishnaji (I, III and IX), T. N. Krishnan (I and X), I. S. Gulati (IV), P. G. K. Panikar (II), A. V. Jose (VII) and P. R. Gopinathan Nair (IX). The annexes were written by: P. G. K. Panikar and N. Shanta (I), N. Krishnaji (II), P. G. K. Panikar and N. Krishnaji (III), M. D. Nalapat (IV), R. J. S. Spence (V), T. N. Krishnan, K. N. Raj and N. Krishnaji (VI) and N. Krishnaji and K. P. Kannan (VII). Statistical and research assistance for the chapters indicated was provided by: Chandan Mukherji (I), N. Shanta (I, II and X), A. V. Jose (IV, V, VI and X), M. K. Sukumaran Nair (I and X), P. Sivanandan (VIII) and M. Purushothaman Nair (II and V). Chandan Mukherji and M. Purushothaman Nair programmed all the computations.

The Centre undertook two field studies. The surveys and the personnel associated with them were:

*Diet survey:* Organization and supervision: P. G. K. Panikar; compilation of data: N. Shanta, P. Sivanandan and V. P. Lakshmi; tabulation: N. Krishnaji and Chandan Mukherji;

*Survey on the educated unemployed:* Organization and supervision: N. Krishnaji and T. N. Krishnan; assistance at the planning stage, work relating to the pilot study, selection of samples and compilation of data: Mridul Eapen, P. R. Gopinathan Nair, A. V. Jose, M. K. Sukumaran Nair, V. P. Lakshmi, N. Shanta, K. Pushpangadan and P. Sivanandan; revision in compilation: Mridul Eapen and N. Shanta; tabulation: N. Krishnaji and Chandan Mukherji.

The Centre is grateful to the Departments of Economics at the University of Kerala and the Guruvayoorappan College, Calicut—and in particular—to Professor P. K. M. Raja of the latter Department for allowing and encouraging their students to participate in the field work associated with the unemployment survey. To the students themselves we are grateful for the hard and dedicated work done by them in collecting data. We would like to place on record our appreciation of the co-operation of the authorities at the employment exchange at Trivandrum and of K. M. Abraham and N. M. Hasan and others of the employment exchange at Calicut.

The field work associated with the Labour-cum-Development Bank was done mainly by P. Sivanandan.

We owe a special debt of gratitude to Aleyamma George of the Department of Statistics, Kerala University, for organizing the tabulation of data in the Department and to the Indian Space Research Organization for making available their computational facilities.

We are also deeply indebted to P. V. Sukhatme for advice on the conduct of the diet survey and to N. Gopalakrishnan Nair for allowing us free access to data available in the Bureau of Economics and Statistics (of the government of Kerala) and for giving helpful advice throughout concerning these data.

L. W. Baker, an architect and an Associate Fellow at the Centre, considerably influenced our thinking on various aspects of building technology, particularly in relation to low-cost housing. R. J. S. Spence, a



structural engineer associated with the Intermediate Technology Development Group, United Kingdom, who is now a Visiting Fellow at the Centre, agreed, in spite of many other demands on his time, to contribute an analysis on alternatives of building technology. To both of them we are extremely grateful. Krishna Kumar and Arun Kumar of the Indian Administrative Service have also given us valuable help in connection with our study relating to the Labour-cum-Development Bank in the Ernakulam district.

We are also grateful to Pranab Bardhan, Nirmal Chandra and Ashok Mitra for critical comments on an earlier version of chapter I.

This study would not have seen the light of the day but for the unstinted support and help of the staff of the administrative wing and of the library in the Centre. The leaders of this co-operative enterprise were C. G. Devarajan and G. Ravindran Nair. Others who contributed to it were: P. Thankappan, T. A. Varghese, K. Muraleedharan, R. K. Rajasekharan Nair, Joseph Kurien, C. K. Sankaran, G. Sasikumar, C. Chandrika Amma, E. Sujana Bai, R. Mohandas, G. Chandran and M. Achuthan Nair. All of them went far beyond the call of duty in responding to the demands made on their time and energy under extremely trying conditions.

31 March 1975

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India

## INTRODUCTION AND SUMMARY

Recent literature on mass poverty has induced rethinking on development policies appropriate to those countries affected by it. The outcome, as reflected in the literature on development planning, has been essentially to give greater attention than before to ways and means of providing the minimum essentials of life. A variety of measures has been suggested: systems of public distribution (particularly of food grains), special nutritional programmes (especially for children), and low-cost housing. In order to provide greater employment and income-earning opportunities to the poor a number of other measures have also been suggested: redistributive land reforms, free school education and public works programmes (particularly for raising agricultural production). Since the state of Kerala has been ranked among the areas of most acute and massive poverty, and has adopted almost all the above measures in varying degree, a case study of its experience is attempted here in order to assess the scope and limitations of what can be achieved thereby.

The study begins with an analysis of food consumption in the state (chap. I). Available data on consumer expenditure show that *per capita* consumption of food-grains, and of food in general, is lower in Kerala than in any other state in India; mass poverty has also been found to be greater in Kerala than elsewhere in terms of this criterion of food intake and nutritional levels. Analysis of interstate variations shows however that *per capita* consumption of food does not depend on *per capita* income alone; that it is higher the higher the *per capita* output of food-grains within each state, and lower the greater the inequality in the distribution of land holdings. This analysis has far-reaching implications. In particular, it follows that raising levels of food intake requires not only increasing the output of food in each state and region but reducing inequalities in the distribution of land.

Chapter II examines trends in availability of food. Food balance-sheets show that consumer expenditure surveys have under-estimated the intake of certain items of food and thereby average food consumption *per capita* in the early 1960s. *Per capita* intake of food in Kerala is therefore likely to have been much higher than appears from the expenditure surveys. Moreover, though *per capita* availability of food-grains in Kerala has been declining (or has remained nearly constant) over the past decade, rapid growth in the output of tapioca (i.e., cassava) from the mid-1960s has helped in raising the availability of food *per capita*. Annex I gives the food balance-sheet for Kerala for the years 1960/61 to 1970/71.

Nutritional norms depend on a variety of considerations, and there can be differences of opinion about them. But, if the norms laid down by the Indian Council of Medical Research are accepted, average *per capita* availability of food in Kerala (after allowing for underestimation in the expendi-

ture surveys and the increase in output over the 1960s) was barely adequate for satisfying these norms, but only provided there was no inequality in its distribution. Applying the estimates of inequality in distribution (derived from expenditure surveys) to the availability of food *per capita* in the early 1960s, and allowing for changes due to growth in output of tapioca, the intake of not less than one third of the population must have fallen short of the minimum requirements. A diet survey undertaken on a very small scale in the early 1970s brings out some of the socio-economic characteristics of the population affected by undernourishment.

No data are available for estimating inequality in food consumption in the early 1970s, but several measures adopted during the 1960s (extension of the public distribution system to cover the entire population, redistributive land reforms etc.) could have had the effect of reducing such inequality. On the other hand, there were other trends in the economy (rapid growth in the number of agricultural labour households, growth of unemployment, etc.) which could have had an opposite effect. It is therefore difficult to judge whether and how far there has been improvement in the levels of nutrition, though the weight of the available evidence suggests that there could have been some improvement. Chapter III and annexes II and III deal with these aspects of the study.

The analysis of factors that could have affected inequality in income begins with an examination of the system of public distribution of food in Kerala. Since the mid-1960s public distribution through rationing has helped to make available for consumption about 40 per cent of the total available supplies of rice. Such supplies contribute only a small proportion of the estimated total calorie intake, however. The problem in enlarging the amounts made available through the public distribution system has been the securing of necessary supplies. Procurement of rice within the state has contributed only about 10 per cent of the publicly distributed supplies, and not much more can perhaps be secured even through a progressively graded levy on producers, given the scale of output within the state and the size-distribution of holdings growing rice. At the same time, the open market price of rice within the state, as well as the off-take from the public distribution system, appears to be sensitive to relatively small changes in total availability.

In addition to food supplied through the ration shops, there has been a system of free lunches for children going to primary schools, thus providing supplementary nutritional support to low-income groups. But, again, the weakness of this system is that it has been dependent on supplies from sources that cannot always be relied upon.

Another factor that could have helped to raise food intake among lower-income groups is land reform. Analysis of the earlier land tenure system and available data on the pattern of holdings suggest that land reform since 1956 must have reduced inequality in the distribution of land and in income accruing from land. However, this could not by itself have made a significant difference to levels of nutrition among agrarian households because (a) land reform benefited only tenants in the main and its impact is

likely to have been confined largely to the northern part of the state, and (b) since the burden of rent had been gradually reduced earlier, the virtual elimination of rental incomes through land reform might have made only a marginal difference to their incomes. The much more tangible effect of land reform on food intake is likely to have been through the stimulus it gave to the production of tapioca in small holdings. Chapter V gives a broad outline of the history of land reforms in Kerala and attempts an evaluation of its impact on distribution of income from land.

Chapter VI continues the discussion on factors that are likely to have influenced income disparities. Growth of population in Kerala has been accompanied by significant shifts in the distribution of the working force from the primary to the secondary sectors so that, unlike in the rest of India (and other underdeveloped countries), the product per worker in agriculture is not much lower than in the other two sectors and lack of intersectoral mobility is not a factor accentuating inequality. Such mobility has however led to only about one third of the labour force being dependent on self-employment and the remainder becoming dependent on contractual employment. The quantum and terms of contractual employment are therefore important factors governing inequality in income distribution. The quantum of wage employment is high even in small holdings, and hence the distribution of the income from agriculture is likely to be less unequal than appears from the distribution of land holdings. Available evidence (rapid growth in the number of agricultural labour households, the high share of "labourers not included elsewhere" among those engaged in the tertiary sector, withdrawal of females from the labour force, and prolongation of the period of education) suggests however that such contractual employment has not kept pace with the demand for it. This could have increased inequality in income distribution and neutralized the impact of land reform and other redistributive measures, unless there was compensating increase in the wage rates.

In the above context, questions relating to the wage rate and quantum of employment assume great importance. The daily wage rate of agricultural labour has been higher in Kerala than in most other states of India partly reflecting the higher price of food-grains and partly perhaps due to supplementary income from other sources (small holdings of land, petty trade etc.) raising its reserve price. Kerala is also one of the few states in which the real wage rate appears to have risen; this has been attributed to unionization of agricultural labour and collective bargaining, but there is some evidence to suggest that other factors helping to raise the reserve price of labour (e.g., land reforms giving fixity of tenure on small holdings) could have been equally important. Whatever the explanation, the ability to maintain the real wage rate must have helped to arrest the downward pressure on consumption levels in the face of inadequate increase in the quantum of wage employment. This summarizes the content of chapter VII.

Chapter VIII is devoted to an evaluation of public works programmes. Such programmes have been recommended in the context of large-scale unemployment of unskilled labour and the inability of normal investment and production activity to absorb such labour. To counter the inflationary

effects that might be generated by the expenditure involved, and to make these programmes self-sustaining, it is obviously essential that they help to increase food production, have some built-in device for promoting saving, and also have some means for recoupment of capital costs from those who secure thereby the benefit of some permanent assets. If these conditions are satisfied, even construction of houses can be made part of such public works programmes, particularly since there is a wide range of choice in building technology and housing is a very essential need. Experience in Kerala shows however that (a) the emphasis tends to be on immediate gains (employment alone, houses for a few) and not much attention has been paid until recently to the conditions to be fulfilled for making the programmes self-sustaining; (b) though it is possible to devise institutional arrangements by which the schemes selected are productive, and to introduce provisions for deferred saving and recoupment of the capital costs from the beneficiaries, divergences of interest among land-owners can restrict the range of choice of schemes for increasing agricultural production; and (c) without progress in raising agricultural production and incomes in general the scope for making housing a significant part of public works programmes is likely to be limited.

In this context, an interesting experiment recently undertaken in Kerala which involved the setting up of a Labour-cum-Development Bank is examined in some detail. Annex IV evaluates the One Lakh Houses Scheme which, though not a public works programme in the strict sense, is of some relevance to the questions discussed in chapter VIII. Annex V discusses some alternatives in building technology with special reference to low-cost housing. Some of the issues concerning the selection and financing of schemes by the Labour-cum-Development Bank, particularly the criteria to be adopted and the appropriate methods of extending financial support to the Bank, are discussed in Annex VI.

Education has a broad base in Kerala and the drop-out rates are significantly lower than in the rest of India; this has widened the scope for vertical mobility. Free schooling and inadequate growth of employment opportunities have, however, led to prolongation of the period of education with no significant gains in the labour market for those concerned (since the waiting period for placement is long, and the incomes are not much higher than for unskilled labour with less education); the lower social strata are also at a greater disadvantage as the waiting periods are longer in their case. Only a small proportion of those who complete schooling go on to higher education, and the share of the lower social strata in this process is much smaller since higher education is not free. Those with higher education have shorter waiting periods before finding work but, if the period spent in education is included as part of the waiting period, and if the incomes at which they are hired are taken into account, the differential advantage gained appears to be more social than economic. Chapter IX accordingly concludes with the recognition of the limited role that education can play in reducing social and economic inequalities. The results of the survey concerning the educated unemployed are examined in annex VII.

Chapter X examines the evidence on demographic trends and health indicators. Improvement in the availability of food *per capita* over the 1960s and the possible improvement in food consumption among the lower-income groups could have helped to lower mortality rates. But the achievement of Kerala in lowering mortality rates and raising life expectation to almost the levels of more developed countries must be attributed largely to the widespread network of health services and the scale on which they are used. More recently there has been evidence of a sharp decline in birth-rates, but it is not clear to what extent this is the result of the extension of family planning through the health services, to what extent due to other sociological factors (such as increase in the age of marriage), and how far they have both been affected by the spread of education (particularly among women).

The concluding chapter notes the positive achievements of policies for redistribution of the kind adopted in Kerala and regards them as an immense gain from the point of view both of equity and of balanced social and economic development. However, it is also evident from the preceding analysis that, given the magnitude of unemployment in Kerala and the rate at which the labour force is growing, these gains can be easily lost unless opportunities for productive employment can be created on a large scale. The scope for the creation of such additional employment is limited in agriculture, though there are still several ways in which productivity can be increased so as to raise the incomes of those already dependent on this sector. There is some scope for creating more employment through public works and in the construction industry in general, but the larger part of the additional employment required will have to come through rapid industrialization, depending mainly on industries in which the region has a comparative advantage (electronics, fishing and printing). With care in the selection of industries which are sufficiently skill-intensive (to provide high enough incomes for the educated labour force in the state) and which at the same time do not require large amounts of capital for the additional employment generated, such a programme of industrialization can now be set moving. However, the issues raised by a programme of this kind, and the question of how they can be resolved, need deeper examination. No attempt is made to go into them in this study.



## Chapter I

### POVERTY AND FOOD INTAKE

There are two broad concepts of poverty: relative poverty and absolute poverty. While relative poverty is measured in terms of inequality in the distribution of income, absolute poverty is reckoned in terms of some kind of notion of subsistence considered appropriate to the circumstances of the country (or groups of countries) concerned. In developing countries where incomes are low, absolute poverty is generally reflected mainly in inadequacy of food intake and the consequent undernourishment on a mass scale, though the definition of subsistence appropriate to such countries might (in fact should) also include other essential minimum needs such as clothing, housing, education and health.

#### Levels of calorie intake in relation to income and production

For this reason, the present study on poverty in Kerala begins with an analysis of the food intake in the state and the reasons it differs from other states in India. Kerala has been identified as the state with the lowest food intake and, by this criterion, as the one with the highest incidence of poverty in the entire country. The statistical basis for this finding has been provided by the National Sample Survey through data collected on consumer expenditure and on the quantum of food intake in 1961/62.<sup>1</sup> The data on food intake indicate that the daily *per capita* calorie intake—hereinafter referred to as calorie intake—varies widely between states in India, and is only 1,620 for Kerala. Taking into account inequalities in consumer expenditure on food, it has been estimated that, if the minimum *per capita* calorie requirement is taken as 2,250, 91 per cent of the rural population and 89 per cent of the urban dwellers in Kerala were undernourished in 1961/62.<sup>2</sup> Consequently, the scale of mass poverty in Kerala has appeared to be not only higher than in other states in India but among the highest in the world.

Even though a careful examination of the data on Kerala (see chap. II) leads to a fairly significant upward revision of the estimate of calorie intake for 1961/62, calorie intake is still low compared with that of some other states at about the same levels of *per capita* income. For instance, some states such as Rajasthan and Uttar Pradesh, whose *per capita* income was lower than that of Kerala, appear to have had a much higher calorie intake.

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<sup>1</sup>Indian Statistical Institute, "Tables with notes on consumer expenditure 1961-62", part II, National Sample Survey Report No. 200 (draft) (Calcutta, March 1969).

Data on quantities consumed are available only for 1961/62. Data on consumer expenditure, collected by the same agency, are available for later years but they are unsuitable for estimating calorie intake.

<sup>2</sup>N. M. Dandekar and N. Rath, *Poverty in India* (Indian School of Political Economy, 1971), tables I.5 and I.6.



On the other hand, states such as Maharashtra, Gujarat and West Bengal with relatively high levels of *per capita* income had lower calorie intake than Rajasthan and Uttar Pradesh. These facts suggest that calorie intake is unlikely to have been determined only (or even mainly) by levels of income.

The estimates of *per capita* income relate of course to income originating in different states and not to income accruing. This is likely to make some difference, particularly in states such as West Bengal and Maharashtra which have large metropolitan areas from which incomes derived are likely to be transferred to other states in various ways. Since estimates of income accruing are not available, it is assumed for the present that the ranking of the states according to *per capita* income is not significantly altered.

An analysis of the composition of food consumption in 1961/62 shows that, in all the states in India, over 70 per cent of the calories were supplied by cereals and cereal substitutes. Energy supplied by animal food formed a negligible proportion of the total. Large interstate variations in *per capita* calorie intake must therefore reflect differences in *per capita* availability of cereals and cereal substitutes. The question to consider then is whether such variations are due to differences in *per capita* income (which, for reasons stated above, appears improbable) or to other reasons. Even a casual glance at the states' estimates of *per capita* production of cereals and cereal substitutes suggests that differences in them are perhaps an important factor responsible for the differences in *per capita* consumption.

An examination of the data on calorie intake for a number of other developing countries suggests that the differences mentioned above are not peculiar to the Indian situation. That calorie intake is closely related to the level of *per capita* food-grain production appears to be generally true in the case of several countries. For instance, the calorie intake among the Asian countries varies from 1,760 for Indonesia to 2,416 in Japan.<sup>3</sup> The variation in *per capita* income is from less than \$100 for Burma to over \$1,400 for Japan. The *per capita* income of India, Pakistan and the Philippines is higher than that of Burma, but the calorie intake is larger in Burma. Similarly, the *per capita* income of Japan differs significantly from that of Cambodia, Sri Lanka and Thailand but not its calorie intake. Japan is indeed an outstanding example of a country whose total calorie intake remained low and stable over long periods of economic growth when *per capita* income continued to rise—a feature for which satisfactory explanation is lacking. It is also believed that the *per capita* availability of rice in Japan remained more or less constant during the period 1878-1882 to 1918-1922.<sup>4</sup> Constancy of calorie intake might therefore well be explained by the level of *per capita* rice production. The *per capita* rice production in Cambodia and Thailand is above the average for Asia as a whole, and these countries are also exporters of significant quantities of rice.

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<sup>3</sup>Food and Agriculture Organization of the United Nations, *Production Yearbook*, 1970 (Rome), vol. 24, p. 822.

<sup>4</sup>Hiromitsu Kaneda, "Long-term changes in food consumption patterns in Japan", in *Agriculture and Economic Growth: Japan's Experience*, edited by K. Ohkawa, B. F. Johnston and H. Kaneda (Princeton, New Jersey, Princeton University Press, 1970), p. 400, table 1.

The relation between *per capita* income, *per capita* production of food in general, and calorie intake is not confined to Asian countries alone, but is apparently equally valid for other regions of the world. According to Lamartine Yates,

“The physical environment . . . largely determine what farmers grow and hence what the people eat, since in spite of modern transportation and foreign trade European diets are still composed mainly of locally produced foodstuffs”.<sup>5</sup>

A recent study of differences in national food consumption of 14 West European countries also shows that these differences are poorly explained by differences in national product.<sup>6</sup>

### **Inadequacy of food-grain transfers**

At the International level, one might attribute these relationships to the failure of the foreign trade mechanism to transfer food from producing countries to consuming countries. Trade restrictions on both sides, i.e., by exporters as well as by importers, the paucity of foreign exchange in food deficit countries, and the price at which food-grains might be had are all factors that contribute to the failure.

However, the factors inhibiting interstate transfer of food-grains within India cannot be those restricting international trade in food-grains. Movement of food-grains was restricted by zonal arrangements after 1957, but the restrictions were removed during 1961/62, the year to which the above data relate. The wide disparities in food intake as between states in 1961/62 cannot therefore be attributed to such artificial barriers and restrictions. Apparently the free market mechanism was unable to reduce these disparities. This could have happened because, if the price differentials did not provide enough margin to cover all the costs of distribution to urban and rural areas and leave adequate profit, the movement of food-grains would not have taken place to the extent warranted by interstate disparities in income and production.

### **Policy implications**

The phenomenon referred to above—namely, wide disparities in food intake within the country reflecting limited movement of supplies—has important policy implications for the strategy of regional development. It would follow, for instance, that developmental policies oriented towards income growth in regions where *per capita* availability of food is relatively low may not make as much of an impact on intake of food as one might be tempted to assume from observed elasticities of demand for food for the country as a whole, unless special attention is given to programmes for raising food production in these regions. The present strategy for expanding

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<sup>5</sup>Paul Lamartine Yates, *Food, Land and Manpower in Western Europe* (London, Macmillan, 1960), p. 22.

<sup>6</sup>The correlation was only 0.12. See H. C. Farnsworth, “National food consumption of fourteen western European countries and factors responsible for their differences”, *Food Research Institute Studies*, vol. XII, No. 1 (Stanford, California, 1974), p. 93.

food production in countries such as India favours, on the other hand, concentrated effort and the application of scarce inputs in areas where conditions for growing food are favourable and where therefore *per capita* availability is generally very high. Thus, the Intensive Area Development approach in India was aimed at expanding food-grain production by concentrating modern inputs, such as fertilizer, in irrigated areas where yield and output were in general already high. Though such an approach might show quick and impressive results in terms of increases in the national *per capita* output of food-grains, failure of the interregional transfer mechanism to distribute adequately the gains in production to deficit regions could lead to further aggravation of interregional inequalities in calorie intake.

If this hypothesis is correct, a solution to the problem of undernourishment with mass poverty will call for two types of policies. In the short run, public distribution of food-grains will need to replace the inadequate market mechanism. The analysis that follows will make it clear that such public distribution will necessarily have to cover the rural population also. In addition, the long-term solution might require achieving near self-sufficiency in food-grains within each state or region (except of course to the extent that interstate movements through the market mechanism or through the public distribution agencies prove adequate). In view of these important policy implications of interstate disparities in calorie intake, and which are highlighted by the relatively low level of the intake in Kerala, the factors responsible for these variations may now be examined in some depth.

### Interstate differences in calorie intake

The data for 1961/62 show that the average daily calorie intake *per capita* for India as a whole was 2,445. As will be evident from table 1, the range of variation between different states was very wide: from 1,620 in Kerala to 3,037 in Rajasthan. It was indicated earlier that, with respect to *per capita* production of food-grains also, Kerala ranks the lowest among the states. At the other extreme, states such as Rajasthan, Madhya Pradesh and Punjab have high levels of both calorie intake and *per capita* production of food-grains. The data given in table 1 show also that cereals constitute the most important item in diets in all the states (col. 6). All these facts are in conformity with the hypothesis of a close relationship between calorie intake and *per capita* production of food-grains.

It is obvious that consumption of food-grains in a state will be determined by the level of production only if the net inflow of food-grains into the state is negligible or marginal in relation to domestic production. For India as a whole, except during 1966 and 1967 which were years of severe drought, imports from the rest of the world in recent times have never constituted more than 10 per cent of the net availability of food-grains. In 1961 and 1962 the percentages were only 4.6 and 4.8, respectively.<sup>7</sup> Within

<sup>7</sup>Government of India, Ministry of Finance, *Economic Survey, 1971-72*, p. 87, table 1.8.

These percentages are in relation to net availability. The proportion in relation to gross production will be even smaller.

TABLE 1. INDIAN STATES: CALORIE INTAKE, STATE DOMESTIC PRODUCT, FOOD-GRAIN PRODUCTION AND PERCENTAGE OF POPULATION BELOW THE POVERTY LINE, 1961/62

| State<br>(1)                   | State<br>domestic<br>product<br>per capita<br>(rupees)<br>1959/60-<br>1961/62<br>(2) | Per capita<br>food-grain<br>production<br>(kg) |                | Total<br>calorie<br>intake<br>per<br>capita<br>(5) | Calories<br>per capita<br>derived<br>from ce-<br>reals and<br>cereal<br>substi-<br>tutes<br>(6) | Percentage of<br>population<br>below the<br>poverty line |              |
|--------------------------------|--|--|----------------|--|---|--|--------------|
|                                |  | Annual<br>average<br>for the<br>3 years<br>(3) | 1961/62<br>(4) |  |   | Rural<br>(7)   | Urban<br>(8) |
| Andhra Pradesh . . . . .       | 287  | 185.4  | 211.4          | 2,151  | 1,842   | 62.14  | 58.11        |
| Assam . . . . .                | 333  | 145.5  | 153.0          | 2,338  | 1,921   | 47.67  | 23.37        |
| Bihar . . . . .                | 221  | 153.8  | 159.9          | 2,523  | 2,091   | 37.38  | 41.28        |
| Gujarat . . . . .              | 393  | 99.9   | 75.9           | 2,403  | 1,659   | 19.09  | 50.50        |
| Jammu and<br>Kashmir . . . . . | 289  | 168.6  | 173.3          | 2,922  | 2,477   | 13.69  | 42.30        |
| Kerala . . . . .               | 315  | 63.0   | 61.1           | 1,620  | 1,383   | 90.75  | 88.89        |
| Madhya<br>Pradesh . . . . .    | 285  | 295.5  | 287.7          | 2,803  | 2,275   | 25.79  | 51.62        |
| Maharashtra . . . . .          | 468  | 167.2  | 163.3          | 2,177  | 1,680   | 61.04  | 58.18        |
| Mysore . . . . .               | 305  | 167.7  | 174.4          | 2,599  | 2,109   | 26.92  | 57.39        |
| Orissa . . . . .               | 276  | 229.5  | 229.9          | 2,366  | 2,077   | 43.88  | 55.57        |
| Punjab . . . . .               | 451  | 299.3  | 310.4          | 2,891  | 1,964   | 13.98  | 52.09        |
| Rajasthan . . . . .            | 267  | 246.3  | 277.1          | 3,037  | 2,434   | 13.29  | 21.84        |
| Tamil Nadu . . . . .           | 334  | 160.0  | 169.2          | 2,090  | 1,729   | 55.19  | 70.78        |
| Uttar Pradesh . . . . .        | 297  | 190.0  | 190.0          | 2,765  | 2,061   | 18.13  | 37.65        |
| West Bengal . . . . .          | 465  | 151.6  | 150.4          | 2,412  | 1,733   | 44.09  | 48.53        |

SOURCES: Col. (2) Government of India, National Council of Applied Economic Research, *Distribution of National Income by States, 1960-61*.

Col. (3) V. S. Vyas, "Regional imbalances in foodgrains production in the last decade", *Economic and Political Weekly*, vol. VIII, 29 December 1973.

Col. (4) Government of India, Ministry of Food, Directorate of Economics and Statistics, *Bulletin on Food Statistics*.

Cols. (5) and (6) Indian Statistical Institute, *op. cit.*

Cols. (7) and (8) V. M. Dandekar and N. Rath, *Poverty in India*, tables 1.1 and 1.3.

the country the total volume involved in the transfer of food-grains between different states amounted to less than 5 million tons in both 1961/62 and 1962/63. These transfers include grains distributed through ports and hence include imports amounting to roughly 3.5 million tons in each of the years;<sup>8</sup> on the other hand, these data cover only movements by rail and river and do not include grain transported by road. Domestic procurement was negligible in these two years and interstate transfers through governmental agencies must, therefore, have been minimal. In any case, since the all-India production of food-grains was about 80 million tons in each of these years, interstate transfers of domestically produced food-grains could not have altered very significantly the levels of food-grain consumption in the different states. Once again, it must be emphasized that during 1961/62 there were no administrative restrictions on interstate movements of food-grain.

<sup>8</sup> Government of India, Ministry of Food, Directorate of Economics and Statistics, *Bulletin on Food Statistics, 1964*.

## Relationships between *per capita* income, *per capita* production and calorie intake

The small magnitude of interstate transfers and of imports obviously account for the close relationship between calorie intake and *per capita* production. But what about the relationship between calorie intake and *per capita* income? Rajasthan was near the bottom of the list with respect to income but had the highest calorie intake in 1961/62; but the reverse was true in Maharashtra, which was among the lowest in respect of *per capita* calorie intake though it had the highest level of *per capita* income (i.e., state domestic product *per capita*). A simple way of looking at these relationships is to classify states into broad groups according to levels of *per capita* income and *per capita* production of food-grains and to observe how average calorie intake varies between different groups (see table 2).

TABLE 2. INDIAN STATES: PRODUCTION OF FOOD-GRAINS, STATE DOMESTIC PRODUCT AND AVERAGE CALORIE INTAKE

|  |                                 | States where <i>per capita</i> state domestic product is |                             |
|--|---------------------------------|--|-----------------------------|
|  |                                 | Below all-India average (1)                              | Above all-India average (2) |
| States where <i>per capita</i> production of food-grains is: |                                 |  |                             |
| Below all-India average (A) . . . . .                        |                                 |  |                             |
|  | Production (kilograms)          | 146.13   | 146.80                      |
|  | State domestic product (rupees) | 286.63   | 450.80                      |
|  | Intake (calories)               | 2,311  | 2,213                       |
| Above all-India average (B) . . . . .                        |                                 |  |                             |
|  | Production (kilograms)          | 218.24   | 299.34                      |
|  | State domestic product (rupees) | 287.70   | 451.31                      |
|  | Intake (calories)               | 2,640  | 2,871                       |

Note: The subgroups of states are:

(A)(1) Assam, Bihar, Jammu and Kashmir, Kerala, Karnataka and Tamil Nadu;

(A)(2) Gujarat, Maharashtra and West Bengal;

(B)(1) Madhya Pradesh, Andhra Pradesh, Orissa, Rajasthan and Uttar Pradesh;

(B)(2) Punjab (including Haryana).

Eleven of the 15 states have levels of *per capita* income below that of all-India. For the sake of simplicity we shall call them low-income states. These are subdivided into two groups: states where *per capita* production is below that of all-India (low-production states) and the other states (high-production states).

Within the group of these 11 low-income states the two subgroups of states hardly differ in respect of average *per capita* income. But the average *per capita* production is significantly different between the two subgroups: 146.13 kilograms and 218.24 kilograms for the low- and high-production states, respectively. The corresponding averages of calorie intake are also

widely different: 2,311 in the case of the low-production subgroup and 2,640 for the other subgroup. This difference must be attributed to differences in levels of production in the two subgroups since average incomes are almost the same.

Much the same conclusion emerges when the high-income states are considered: the two subgroups do not differ significantly with respect to income, but levels of *per capita* production are different as are levels of average calorie intake.

Thus, within both the low-income and high-income groups of states, differences in calorie intake are associated positively with differences in levels of *per capita* production of food-grains.

On the other hand, if all the low-production states are considered as a group, the low- and high-income subgroups within it differ widely with respect to average income but not with respect to either production or calorie intake. Thus, income differences have no effect on calorie intake when production levels are low. The comparison between low- and high-income states belonging to the high-production category does not yield a clear-cut inference, because the subgroups differ not only with respect to income but also with respect to average *per capita* production itself; thus it is difficult to attribute the observed differences in the average calorie intake unambiguously to differences in either income or production.

These data are, however, consistent with the hypothesis that observed differences in calorie intake are explained by differences in levels of production of food-grains but not by differences in levels of income.

### Regression results

The inference concerning the relationship between calorie intake and level of food-grain production may be questioned on the following grounds: (a) the observed differences may be the result of averaging over a number of states within each category, and the inference may not hold at a disaggregated level; and (b) the observed positive association between levels of food-grain production and calorie intake may well have been brought about by the price factor (prices being low where levels of production are high, this being the explanation for the observed correlation between food-grain production and intake).

To test whether differences in *per capita* production can explain differences in calorie intake independently of price variation, regression equations have been estimated using interstate data, and they yield the following results:

$$CI = 325.1024 - 0.0587 \text{ (SPD)} - 2.4566 P + 0.2881 A_1 \quad R^2 = 0.64$$

$$(74.1236) \quad (0.0942) \quad (1.2969) \quad (0.1265)$$

$$CI = 332.9522 - 0.0149 \text{ (SDP)} - 2.6432 P + 0.2552 A_2 \quad R^2 = 0.64$$

$$(72.8613) \quad (0.0947) \quad (1.2710) \quad (0.1147)$$

In these equations CI stands for calorie intake, SDP for *per capita* state domestic product, P for average price of food-grains,<sup>9</sup> and A<sub>1</sub> and A<sub>2</sub> for

<sup>9</sup>The price data have been computed on the basis of total expenditure on food-grains and total quantities consumed obtained from the consumer expenditure enquiry for 1961/62.

annual average *per capita* production of food-grains during 1959/60-1961/62 and 1961/62, respectively.

These regressions establish that income differences do not explain variations in calorie intake. But what is more interesting is that the coefficient of the level of production of food-grains is positive and significant (in both the equations), supporting the hypothesis that the level of food-grain production influences the level of calorie intake independently of income and price levels. Since the difference between *per capita* production and *per capita* consumption within a state depends only on the magnitude of imports into the state (ignoring variations in stocks)—from all sources—the conclusion naturally follows that such imports, and more particularly interstate flows, do not take place to the extent required by income differences.

The extent to which deficits are left uncovered—and surpluses remain—would depend, of course, on the prices prevailing in the different states. It should also perhaps be added that, since only over-all availability of food in a state is affected by the interstate flows, the observed lack of correlation between calorie intake and *per capita* income does not necessarily contradict the other observed fact that calorie intake generally rises with income at the household level within a state.

### Rural-urban differences

Table 3 gives data on rural-urban differences in calorie intake. It can be seen that, without exception, calorie intake in all the states is higher in rural areas notwithstanding the fact that incomes are generally far lower than in urban areas. No data are available on rural and urban incomes. But the margin of difference between *per capita* agricultural and non-agricultural incomes given in table 3 indicate that rural-urban differences with respect to *per capita* income must be substantial. Of course, prices of food-grains are also lower in rural areas, as can be seen from the same table, but this also is a reflection of smaller *per capita* availability of food-grains in urban areas.

### Interstate disparities in the urban sector

It is seen from table 3 that total calorie intake *per capita* in urban areas varies from 1,554 in Kerala to 2,469 in Rajasthan. Similarly, calorie intake *per capita* from cereals and cereal substitutes ranges from 1,222 in Gujarat to 1,758 in Rajasthan. For analysing the relationships between calorie intake and *per capita* income and food-grain production, the states have been classified into different groups according to the levels of non-agricultural income *per capita* and food-grain production *per capita*.<sup>10</sup> The *per capita* daily total calorie intake and calories derived from cereals and cereal substitutes for groups of states classified in this way are given in table 4.

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<sup>10</sup>This will not be the same as *per capita* urban income because a part of the rural income is earned from non-agricultural activities and some part of the agricultural income may accrue to the urban sector.

TABLE 3. INDIAN STATES: RURAL-URBAN DIFFERENCES IN PER CAPITA CALORIE INTAKE, INCOMES AND PRICES OF FOOD-GRAINS, 1961/62

| State<br>(1)                | Calorie intake<br>per capita per day |              | Agricultural income per capita<br>(rupees)<br>(4) | Non-agricultural income per capita<br>(rupees)<br>(5) | Price of cereals<br>(rupees per seer) <sup>a</sup> |              |
|-----------------------------|--------------------------------------|--------------|---|---|--|--------------|
|                             | Rural<br>(2)                         | Urban<br>(3) |   |   | Rural<br>(6)                                       | Urban<br>(7) |
| Andhra Pradesh . . . . .    | 2,184                                | 1,997        | 198   | 707   | 0.51   | 0.56         |
| Assam . . . . .             | 2,354                                | 2,140        | 210   | 1,818   | 0.52   | 0.59         |
| Bihar . . . . .             | 2,541                                | 2,330        | 136   | 1,137   | 0.49   | 0.56         |
| Gujarat . . . . .           | 2,503                                | 2,115        | 238   | 841   | 0.44   | 0.56         |
| Jammu and Kashmir . . . . . | 3,033                                | 2,361        | 222   | 628   | 0.39   | 0.36         |
| Kerala . . . . .            | 1,631                                | 1,554        | 204   | 937   | 0.46   | 0.57         |
| Madhya Pradesh . . . . .    | 2,910                                | 2,162        | 198   | 811   | 0.39   | 0.45         |
| Maharashtra . . . . .       | 2,280                                | 1,916        | 230   | 681   | 0.42   | 0.61         |
| Mysore . . . . .            | 2,758                                | 2,046        | 222   | 1,076   | 0.44   | 0.54         |
| Orissa . . . . .            | 2,375                                | 2,233        | 201   | 593   | 0.42   | 0.54         |
| Punjab . . . . .            | 3,076                                | 2,156        | 313   | 1,395   | 0.40   | 0.50         |
| Rajasthan . . . . .         | 3,147                                | 2,469        | 203   | 999   | 0.34   | 0.47         |
| Tamil Nadu . . . . .        | 2,147                                | 1,934        | 208   | 601   | 0.52   | 0.61         |
| Uttar Pradesh . . . . .     | 2,854                                | 2,162        | 233   | 736   | 0.40   | 0.45         |
| West Bengal . . . . .       | 2,175                                | 2,040        | 229   | 1,193   | 0.58   | 0.61         |

SOURCES: Cols. (2), (3), (6), (7) *National Sample Survey, Draft Report No. 200.*

Cols. (4) and (5) Government of India, National Council of Applied Economic Research, *Distribution of National Income by States, 1960-61.*

<sup>a</sup> Measure of weight equal to 1 kilogram.

TABLE 4. INDIAN STATES: PER CAPITA CALORIES FROM CEREALS AND CEREAL SUBSTITUTES AND TOTAL CALORIE INTAKE, URBAN SECTOR, 1961/62  
(Averages of states, by levels of income and production of food-grains)

|   | Per capita urban income        |                                |
|---|--------------------------------|--------------------------------|
|   | Below all-India average<br>(1) | Above all-India average<br>(2) |
| <i>Per capita production of food-grains</i> |                                |                                |
| Below all-India average (A)                 |                                |                                |
| Cereals . . . . .                           | 1,337                          | 1,478                          |
| Total . . . . .                             | 1,975                          | 2,040                          |
| Above all-India average (B)                 |                                |                                |
| Cereals . . . . .                           | 1,515                          | 1,563                          |
| Total . . . . .                             | 2,118                          | 2,297                          |

Note: The subgroups of states are:

(A)(1) Gujarat, Jammu and Kashmir, Maharashtra and Tamil Nadu.

(A)(2) Assam, Bihar, Kerala, Karnataka and West Bengal.

(B)(1) Andhra Pradesh, Madhya Pradesh, Orissa and Uttar Pradesh.

(B)(2) Punjab (including Haryana) and Rajasthan.



It can be seen that, as in the earlier case dealing with a state as a whole, calorie intake derived from all food items as well as from cereals and cereal substitutes in the urban sector are positively related to *per capita* level of food-grain production. At the same time, unlike in the previous analysis, the relationship between calorie intake and *per capita* income also appears to be positive. Calories derived from cereals as well as from all food items is high in the states where the level of *per capita* income is also high; this is true among both groups of states, where the level of food-grain production is low as well as where it is high. Thus, both *per capita* income and *per capita* food-grain production are important factors determining the level of calorie intake in the urban sector. This naturally raises the question: why is the relationship between income and consumption in the urban sector different from that for the state as a whole?

The answer is based mainly on the fact that rural-urban price and income differentials are large (see table 3). Even if the *per capita* income of a state as a whole is high, rural income—particularly of those who buy food-grains, such as landless labourers and small peasants—may be very low. Consequently interstate flows, whatever be their magnitude, take place mainly if not wholly in favour of urban areas. While such flows may depend on interstate price differentials rather than on interstate differences in urban incomes, the rural-urban movement within a given state would depend on price and income differentials between the rural and urban sectors. As a result, the supply constraint may not operate in urban areas as strongly as it does in rural areas where incomes are generally low. This not only explains why urban calorie intakes and incomes are positively related but also suggests that the uncovered deficits—and surpluses that do not move out—are perhaps responsible for the differences in rural food intake being what they are.

It thus becomes necessary to examine these relationships separately for the rural areas; this is done in the next section.

### Interstate disparities in the rural sector

Since calorie intake in the urban sector is positively correlated both to *per capita* income and to *per capita* food-grain production, the urban calorie intake will be higher the larger the *per capita* income. The fact that calorie intake levels are not explained well by *per capita* state domestic product is essentially due to the lack of a similar relationship between calorie intake and *per capita* income in the rural sector. It has already been suggested that this could be attributed to the very low incomes of rural buyers of food-grains and the consequent tendency for deficits and surpluses in rural areas to remain uncleared.

The population of the rural sector may be divided into two groups: producers of food-grains who possess land and non-producers who depend on the market for their consumption. Producers themselves are also consumers, and therefore a part of their output will be consumed by them. The remaining output will be marketable surplus. While it is true that even small farmers have to market a fair proportion of their output, they are also

purchasers of food-grains; if one considers the net marketed surplus, it can be expected to increase with the size of the holding. Since the bulk of the marketed surplus is contributed by large farmers it implies that the greater the concentration of land in large holdings the greater would be the proportion of output marketed. Also, the higher the *per capita* output of food-grains, the larger will be the volume of the marketed surplus. These relationships imply that (a) the greater the inequality in the distribution of land, the lower will be the average calorie intake of the producers; and (b) the lower the *per capita* output, the smaller will be the volume of marketed surplus.

The marketed surplus in a state and the net inflow of food-grains will determine the *per capita* availability of food-grains to the urban sector; and the availability to the non-cultivating rural population will be determined by the share of the marketed surplus that remains within the rural sector. As pointed out earlier, urban incomes and prices being higher, the marketed surplus has a greater tendency to move to the urban sector. However, since the urban population constitutes only less than one fourth of the total population of a state, the magnitude of the rural-urban movement will be somewhat restricted by the price factor; the larger the movement the lower the urban price, and hence the lower the price received by farmers.

Thus it is possible for larger volumes of the marketed surplus to remain within the rural sector in surplus states. This reinforces the effect of the tardiness of interstate movements. This explains why the market may fail to mop up surpluses; in much the same way deficits may be left uncovered. To the extent that such factors influence the rural market, the rural prices in surplus states tend to be low and to favour higher calorie intake even among the non-landowning population in such areas, while in deficit states prices tend to be high and consumption low. It may be concluded that in the rural sector income becomes a relevant factor for the determination of the calorie intake only in respect of the non-landowning population. However, if the share of the marketed surplus remaining in the rural sector is small, so will be the level of consumption of rural buyers. If these hypotheses are correct, then the following relationships should be true:

(1) Calorie intake will be negatively correlated to the degree of inequality in the distribution of land; this is due to the fact that calories from cereals constitute the lion's share in the total and the latter is negatively related to the degree of inequality in the distribution of land;

(2) Calorie intake will be positively related to *per capita* output of food-grains.

That these relationships are indeed true can be seen from table 5.

In table 5 the states have been classified according to the level of *per capita* production and the degree of inequality in the distribution of land, as measured by the coefficient of variation. First, it indicates that, in general, calorie intake is high in the states where *per capita* output of food-grains is also high. Secondly, it will be seen that for a given group of states having similar levels of *per capita* food-grain output, the calorie intake is inversely related to the degree of inequality in the distribution of land. Consider, for

TABLE 5. *PER CAPITA* TOTAL CALORIE INTAKE IN RURAL AREAS OF DIFFERENT STATES, BY LEVEL OF PRODUCTION OF FOOD-GRAINS AND INEQUALITY IN THE DISTRIBUTION OF LAND

| Per capita<br>production<br>of food-<br>grains<br>1961/62<br>(kilograms<br>per year) | Coefficient of variation in the distribution of land |  |                                   |                         |
|--|--|--|-----------------------------------|-------------------------|
|  | Less than 1.5  | 1.5-1.6                                    | 1.6-2.0                           | 2.0 and above           |
| Less than  |  |  |                                   |                         |
| 150 . . . Gujarat  | 2,503  |  |                                   | Kerala 1,630            |
| 150-200 . . . Assam  | 2,354  | West Bengal 2,175                          | Bihar 2,541                       |                         |
| 200-250 . . . Jammu and<br>Kashmir   | 3,033  | Uttar<br>Pradesh 2,854<br>Mysore 2,758     | Maharashtra 2,280<br>Orissa 2,375 | Tamil<br>Nadu 2,147     |
| More than  |  |  |                                   |                         |
| 250 . . . .  |  | Rajasthan 3,147<br>Madhya<br>Pradesh 2,910 | Punjab 3,076                      | Andhra<br>Pradesh 2,184 |

instance, the states of Rajasthan and Andhra Pradesh. Both have high levels of *per capita* production of food-grains. However, inequality in the distribution of land is much smaller in Rajasthan than in Andhra Pradesh and consequently the calorie intake is higher. To confirm the various hypotheses advanced to explain the levels of food consumption in the rural sector, some regressions were made. The results of these regressions are given in table 6.

TABLE 6. SOME REGRESSION RESULTS FOR THE RURAL SECTOR

| Equa-<br>tion<br>No. | Dependent<br>variable                                | Constant<br>of the<br>equation | Least square coefficient of          |  |                     |  | R <sup>2</sup> |
|----------------------|--|--------------------------------|--------------------------------------|--|---------------------|--|----------------|
|                      |  |                                | Per capita<br>agricultural<br>income | Coefficient of<br>variation in land<br>dis-<br>tribution | Price of<br>cereals | Production<br>of food-<br>grains per<br>capita |                |
| 1.                   | Cereal intake<br>per capita . . . . .                | 3,867.69<br>(412.22)           | -3.54<br>(1.03)                      | -481.10<br>(100.62)                                      | -14.87<br>(6.77)    | 2.07<br>(0.48)                                 | 0.88           |
| 2.                   | Cereal intake<br>per capita . . . . .                | 2,406.32<br>(279.02)           |                                      | -479.48<br>(131.46)                                      |                     | 2.64<br>(0.68)                                 | 0.73           |
| 3.                   | Non-cereal<br>calorie intake<br>per capita . . . . . | -337.31<br>(247.99)            | 3.73<br>(1.13)                       |  |                     |  | 0.46           |
| 4.                   | Total calorie<br>intake per capita . .               | 4,216.44<br>(616.07)           | -0.61<br>(1.53)                      | -580.09<br>(150.37)                                      | -23.96<br>(9.23)    | 2.37<br>(0.72)                                 | 0.86           |
| 5.                   | Total calorie<br>intake per capita . .               | 3,110.41<br>(549.79)           |                                      | -680.83<br>(179.21)                                      |                     | 3.11<br>(0.81)                                 | 0.76           |

Note: Figures in parentheses are standard errors.

About 88 per cent of the interstate variation in calories derived from cereals and cereal substitutes in the rural sector is explained by *per capita* income, the price of cereals, *per capita* food-grain production and inequality in land distribution. It is also noteworthy that all the coefficients are significant in most of the equations. A negative relationship between *per capita* income and cereal consumption is clearly established. Similarly, the parameter relating to the inequality in the distribution of land is highly significant and negative. These results strengthen the inferences drawn from earlier simple tabulations: even after allowance is made for interstate differences in incomes and prices, the level of production of food-grains and the inequality in the distribution of land have a significant impact on cereal consumption as well as on total calorie intake. It is interesting to note that about 73 per cent of variation in cereal consumption is explained by the two factors, *per capita* production of food-grains and the inequality in the distribution of land (see equation 2, table 6); similarly these two variables account for 76 per cent of the interstate variation in the total calorie intake in rural areas.

### Conclusions

From the foregoing analysis it is obvious that raising the level of calorie intake in order to reduce the scale of undernourishment (and of poverty measured by this norm) depends on both raising the level of production and reducing the degree of inequality in the distribution of land. The market mechanism cannot be relied upon to bring about a greater evenness in the regional distribution of calorie intake since there is a tendency for interstate movement to be tardy. This implies that policy must be oriented towards greater growth of food-grain output in areas where *per capita* production is low, apart of course from measures for promoting interstate movement through public distribution agencies.

The analysis also shows that raising the levels of income in rural areas through public works programmes is by itself unlikely to bring about a significant reduction in poverty (measured by norms of food intake) in the absence both of growth of production and of reduction in inequalities in rural areas. Increase in rural demand for food-grains may merely bring about a rise in the price of the available supplies in rural areas, and consequently the real incomes (in terms of the quantity of food-grains that can be bought) of the landless labourers and small peasants may remain the same and, under certain circumstances (such as when expectations of price rise lead to speculative holdings), even decline. Thus public works programmes may succeed only in providing increases in nominal money income but not in real purchasing power.

More rapid growth of production of food-grains and redistribution of land cannot usually be achieved at short notice and would depend on long-term policies. Therefore, the public distribution system will need to be depended upon to provide food-grains at reasonable prices not only to the low-income sections of the urban areas but also to the rural poor.<sup>11</sup>

Present policies, however, appear to be working in the opposite direction. As noted earlier, the reliance on modern inputs (such as chemical fertilizer) tends to favour the concentration of output in the more intensively irrigated parts of the country. Such concentration may well lead only to an accentuation of regional disparities on account of the inadequacies of the market mechanism; this can be prevented only if the increased output in regions of already high *per capita* availability is redistributed over other regions more equitably through a system of procurement and public distribution. The public distribution system, except in Kerala, hardly functions in the rural areas. Reduction of poverty, not to speak of its eradication, would involve a radical reversal of these policies. The policies adopted in China<sup>12</sup> to promote regional self-sufficiency in the production of food-grains (and which economists have generally been disposed to regard as contrary to the requirements of efficient resource use) assume considerable significance in the light of the foregoing analysis since they seem to be more appropriate to programmes designed to reduce undernourishment and mass poverty.

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<sup>11</sup>Since these conclusions depend on our analysis of interstate disparities, the question of the reliability of the data used assumes great importance. The following chapters examine this question and show in particular that the *per capita* calorie intake in Kerala, as given in this chapter, is seriously underestimated. But this does not invalidate the conclusions arrived at in this chapter. The analysis here relates calorie intake to production of food-grains, which does not include tubers and such other cereal substitutes. Tapioca, which is a tuber and a cereal substitute in Kerala, is a very important item in Kerala, but similar cereal substitutes are unimportant for other states. Hence, even after revising the calorie intake for Kerala, the relationships derived above will be valid. It is, however, difficult to say to what extent biases in the data relating to other states vitiate our analysis.

<sup>12</sup>See Audrey Donithorne, "China's cellular economy: some economic trends since the cultural revolution", *The China Quarterly*, October/December, 1972 (p. 609):

"Self-sufficiency is applied not only to manufactures, but also to agricultural products. In the province of Hupeh, an important grain and cotton producing region, sugar was reported to be successfully trial produced for the first time in 1970. After one or two years' further development ... the province will probably be self-sufficient in sugar."

## Chapter II

### TRENDS IN THE AVAILABILITY OF FOOD

#### Introduction

In chapter I the factors underlying interstate disparities in food consumption were discussed and it was shown that the level of *per capita* production of food-grains was an important determinant of the average caloric intake. In the present chapter, an analysis is made of trends in Kerala concerning the availability of food in general and the production of cereals and cereal-substitutes in particular. This is designed to draw inferences on trends in the levels of nutrition in the state.

It has already been seen in the previous chapter that National Sample Survey (NSS) data for 1961/62 yielded an average of 1,631 calories *per capita* per day in rural families and 1,554 calories in urban families of Kerala and that these were the lowest among all the states in the Indian Union. Reference has also been made to a study<sup>1</sup> according to which 90 per cent of the population in the state—90.25 per cent in rural areas and 88.89 per cent in urban areas—did not get the requisite minimum of calories, namely, 2,250 per day. The estimates of food intake based on the diet surveys sponsored by the Indian Council of Medical Research and consumer expenditure surveys conducted by NSS give the impression of appalling under-nutrition in Kerala. The *per capita* intake of calories, according to a report of nutrition work done in states issued by the Government of India, came to 1,688 per day in 1965, 2,167 in 1966 and 1,833 in 1967. Judged from the data on mortality and morbidity rates, which are discussed in chapter X, these estimates of the magnitude of under-nutrition appear to be exaggerated. Of particular significance is the fact that there is not much evidence of severe undernourishment and malnourishment as manifested in the incidence of deficiency diseases such as kwashiorkor, marasmus etc. It is, therefore, likely that the *mentioned* surveys have under-reported some items of food consumed in this region.

#### The nature of consumer expenditure survey data

Instances of discrepancy between estimates of consumption based on expenditure surveys and those based on production data have been observed elsewhere. Thus, for India as a whole, estimates of food consumption based on consumer expenditure surveys vary considerably from estimates of availability based on production. In particular, estimates of total consumption of cereals derived from consumer expenditure survey data have consistently

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<sup>1</sup> Dandekar and Rath, *op. cit.*

exceeded the official estimates of production. A comparison made for the period 1952-1964 shows that there is a very wide margin between the two sets of estimates, NSS estimates of cereal consumption being consistently higher than those based on official production data.<sup>2</sup> For example, the estimates of cereals consumed in the country as a whole during the early 1960s were, according to NSS data, in the neighbourhood of 90 million tons, while estimates derived from production figures vary around 65 million tons. Presumably there is over-reporting of consumption in the sample households surveyed.

If there is over-reporting in the consumption of cereals, as is evidently the case, under-reporting of certain other items of food is equally possible, especially in consumer expenditure surveys, in contrast to diet surveys which use a *weighment* technique. Memory lapses and other causes of under-reporting are more likely in the case of the intake of home-produced and subsidiary food items. Alternative sources of data thrown up by a diet survey conducted by the Centre for Development Studies in selected rural and urban households in and around Trivandrum, and the food balance-sheets prepared in the course of this study, have confirmed the existence of such under-reporting by NSS of certain important items of food consumed by the people of this region. As in the remainder of India, the consumption of food-grains, particularly rice, wheat and pulses reported for Kerala by NSS, exceeds the official estimates of availability. The degree of discrepancy here, however, is relatively small. As against these, estimates of aggregate consumption of tapioca and bananas, two major staple food items peculiar to this region, are far below the estimates of production: estimates of the consumption of coconut oil, the edible oil most commonly consumed by the local population, and of milk also fall below the estimated availability on the basis of the food balance-sheet. It is important to note that the above items, in whose case NSS has evidently under-reported, account for a sizable proportion of the total calorie intake of the people of Kerala. Further, NSS has completely left out of tabulation certain important items of food. The coconut kernel is the most important omission. The calorific value of all pulses and nuts consumed in most households in the state as reported by NSS comes to 51 calories *per capita per day*. Coconut fills an important place in the dietary of all sections of the local population. Taking figures of production, and after allowing for nuts either converted into "copra" to be processed into oil or exported in the form of coconut (kernel), it is estimated that in 1961/62 about 245 calories *per capita per day* would be available from the consumption of coconut kernels alone. In the light of the above, it may be seen that consumer expenditure surveys and diet surveys generally fail to take into account all items of food consumed, and a more comprehensive picture of the availability of food can be obtained

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<sup>2</sup>Government of India, Planning Commission, Perspective Planning Division, "Trends in private consumer expenditure in India, 1954-55 to 1968-69", unpublished paper by P. N. Radhakrishnan (New Delhi).

from the food balance-sheet of a country or region.<sup>3</sup> It should be mentioned that the food balance-sheet, while representing the estimates of total and *per capita* availability of different food items, is incomplete in regard to actual consumption by different socio-economic groups. The food balance-sheets may not be free from statistical errors either, for they are, after all, built on estimates of production which may contain large margins of error. However, for Kerala at least, greater reliance must be placed on food balance-sheet data because of the gross under-estimation of the consumption of tapioca and coconuts in NSS data. Therefore, estimates of food intake have been made with the help of food balance-sheets to redress the bias in the results of food consumption surveys. Food balance-sheets have been constructed for Kerala covering the period from 1961/62 to 1970/71.<sup>4</sup> A brief summary of the estimates of availability of food based on food balance-sheets is presented next.

Taking the 1960s as a whole, the available supplies of different food items, on the basis of the food balance-sheets covering the period, would yield on average about 2,339 calories *per capita* per day. *Per capita* availability of different items classified into broad groups and their nutrient values are summarized in table 7. The basis of estimation and other details are given in the tables in annex I at the end of this study.

It may be mentioned that there are still certain omissions in the estimates of food availability. No data are available on the production within the state of vegetables and many varieties of fruits such as jack-fruit, papaya etc. In recent years imports of certain fruits such as apples, grapes and oranges have perceptibly increased, but no estimation of their imports has been attempted. Kerala depends to a large extent on the rest of India for the supply of various pulses, grains, oil-seeds and certain categories of cooking oil, sugar and jaggery,<sup>5</sup> but no reliable estimates of their imports through private trade channels are readily available. In brief, there are significant omissions in the food balance-sheets and the estimate of *per capita* intake of calories at 2,339 per day is, if anything, likely to be on the low side.

<sup>3</sup>A summary of the important differences between NSS data and the food balance-sheet is given below:

KERALA: PER CAPITA CALORIE INTAKE PER DAY, 1961/62

|                                | NSS data | Food balance-sheet |
|--------------------------------|----------|--------------------|
| Rice . . . . .                 | 1,133    | 1,059              |
| Tapioca . . . . .              | 240      | 575                |
| Coconut . . . . .              | 0        | 245                |
| All other food items . . . . . | 246      | 459                |
| ALL FOOD ITEMS                 | 1,619    | 2,337              |

<sup>4</sup>See Annex I for sources of data and estimation procedures.

<sup>5</sup>Coarse, dark brown sugar made by evaporation from the sap of various kinds of palm.



TABLE 7. KERALA: AVAILABILITY OF FOOD PER CAPITA PER DAY AVERAGE 1961/62-1970/71  
(Grams, except as otherwise indicated)

| Food items                          | Quantity | Protein       |            | Fat   | Calories      |            |
|-------------------------------------|----------|---------------|------------|-------|---------------|------------|
|                                     |          | Actual number | Percentage |       | Actual number | Percentage |
| Rice . . . . .                      | 265.95   | 17.02         | 45.52      | 1.06  | 290.19        | 39.35      |
| Wheat . . . . .                     | 23.42    | 2.76          | 7.38       | 0.35  | 81.03         | 3.46       |
| Other cereals and millets . . . . . | 1.48     | 0.12          | 0.32       | 0.02  | 4.88          | 0.21       |
| SUB TOTAL                           | 290.85   | 19.90         | 53.22      | 1.43  | 1006.10       | 43.02      |
| Tapioca . . . . .                   | 399.86   | 2.80          | 7.49       | 0.80  | 627.78        | 26.84      |
| Sweet potatoes . . . . .            | 5.70     | 0.07          | 0.19       | 0.02  | 6.84          | 0.29       |
| Potatoes . . . . .                  | ...      | ...           | ...        | ...   | ...           | ...        |
| SUB TOTAL                           | 405.56   | 2.87          | 7.68       | 0.82  | 634.62        | 27.13      |
| Coconut . . . . .                   | 57.12    | 2.57          | 6.87       | 23.76 | 253.61        | 10.84      |
| Pulses . . . . .                    | 5.21     | 1.30          | 3.48       | 0.17  | 18.17         | 0.78       |
| Other oil-seeds . . . . .           | 2.60     | 0.66          | 1.77       | 1.04  | 14.74         | 0.63       |
| SUB TOTAL                           | 64.93    | 4.53          | 12.12      | 24.97 | 286.52        | 12.25      |
| Vegetables . . . . .                | ...      | ...           | ...        | ...   | ...           | ...        |
| Fruits . . . . .                    | 87.43    | 0.75          | 2.01       | 0.10  | 70.27         | 3.60       |
| Fish . . . . .                      | 34.58    | 7.02          | 18.77      | 0.91  | 39.30         | 1.68       |
| Milk . . . . .                      | 29.61    | 0.99          | 2.65       | 1.41  | 21.96         | 0.94       |
| Meat . . . . .                      | 4.85     | 1.06          | 2.83       | 0.14  | 5.56          | 0.24       |
| Eggs . . . . .                      | 1.78     | 0.24          | 0.64       | 0.24  | 3.09          | 0.13       |
| Oils and fats . . . . .             | 19.09    | ...           | ...        | 19.09 | 171.81        | 7.35       |
| Sugar . . . . .                     | 25.00    | 0.03          | 0.08       | —     | 99.50         | 4.25       |
| GRAND TOTAL                         |          | 37.39         | 100.0      | 49.11 | 2,338.73      | 100.00     |

SOURCES: See annex I.

The average intake of calories in Kerala does not seem to be lower than the national average. According to the Food and Agriculture Organization of the United Nations (FAO) estimates, the *per capita* supply for the country as a whole comes to 2,220 calories for the period 1960-1963 and 1,964 calories for the period 1964-1966. Estimates for Kerala for the corresponding periods are higher. As in the case of the food balance-sheets for Kerala, there are possibilities of omission in the FAO food balance-sheets for India also and, therefore, the average intake for the country as a whole could be somewhat higher. However, the important point to note is that the *per capita* availability of calories in Kerala is not less than either the national average or the estimated requirements for the state's population (see chapter III for a fuller discussion on the requirements).

The *per capita* supply of proteins comes to about 37 grams per day. This is less than the national average which, during the 1960s, would come to about 50 grams. The lower figure for Kerala appears to be due to the lower level of intake of cereals and pulses, food items which constitute the main sources of protein in the low-income countries of Asia. However, it should be noted that the lower quantity of protein available in Kerala is likely to be compensated to some extent by the better quality of protein, since the share of animal protein in Kerala would come to be more than one quarter of the total protein available in the state.

### The composition of the food basket in Kerala

The composition of the food basket in Kerala differs from that for the country as a whole. In the first place, cereals account for a smaller proportion of calories in this region than in the remainder of India. All cereals together constitute 42.17 per cent of the calorie intake in Kerala as against 67.44 per cent for the country as a whole. Incidentally, the national average is very close to the average for the Far East, namely, 66.96 per cent. Secondly, in Kerala rice dominates the cereal group, accounting for 920 calories out of a total of 1,006 calories from all cereals; in other parts of the country, a large variety of cereals and millets are obtained, such as wheat, jowar<sup>6</sup>, maize, bajra<sup>6</sup>, ragi, barley etc. Thirdly, pulses is relatively insignificant in Kerala, contributing about 19 calories *per capita* per day, while for the country as a whole the contribution of the group would be twice as much. Fourthly, root crops, particularly tapioca (cassava), play a far more important part in the dietary of the people of Kerala. For the 1960s on the average tapioca provided 628 calories *per capita* per day or about 27 per cent of the total calorie intake; for the country as a whole the *per capita* availability of potatoes and all other tubers together would amount to less than 30 calories.<sup>7</sup> Fifthly, the *per capita* availability of coconut kernel in Kerala works out to a little over 57 grams per day, yielding about 254 calories, or 11 per cent of the total calorie intake; this is several times larger than the share of all oil-seeds taken together for the country as a whole. In sum, the distinguishing features of the diet of the people of Kerala are: (a) the relatively lower share of cereals, and (b) the substantially higher share of tapioca and coconuts. A comparison of the major components of the food basket in Kerala and in India as a whole is attempted in table 8.

The above features of the dietary pattern merely reflect the cropping pattern of Kerala as determined largely by its climatic and topographical peculiarities. A large proportion of the cultivated area is devoted to cash crops produced for export. Thus, coconut, areca-nut, cashew-nut, tea, coffee, rubber, spices etc. cover a sizable proportion of the total cropped area. As against this, rice, the staple diet of the local population, is cultivated in about 30 per cent of the total sown area. Further, unlike in the remainder of India, Kerala does not produce other cereals, millets and pulses in any significant amounts. Hence, Kerala depended heavily on imports from outside the state for the supply of a considerable proportion of its food-grain requirements, especially rice.

The outbreak of the Second World War, followed by national independence, altered the situation considerably. Regulatory measures which formed a part of the national food policy in independent India imposed

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<sup>6</sup>Types of grain.

<sup>7</sup>In no other part of Asia, not excluding Indonesia, do root crops contribute such a high proportion of calories; the only other comparable part of the world where cassava dominates the food scene as much as in Kerala is a group of African countries—Angola, Burundi, the Central African Republic, the Congo, the United Republic of Cameroon etc.—though for the continent of Africa as a whole, the dependence on cassava and other tubers in the 1960s comes to an average of about 23 per cent of the calorie supply.

TABLE 8. INDIA AND KERALA: AVAILABILITY OF FOOD PER CAPITA PER DAY  
(Grams, except as otherwise indicated)

| Food items                      | India, 1960-1963 |               |            |      |               |            | Kerala, 1961-62 |               |            |       |               |            |
|---------------------------------|------------------|---------------|------------|------|---------------|------------|-----------------|---------------|------------|-------|---------------|------------|
|                                 | Quantity         | Protein       |            | Fat  | Calories      |            | Quantity        | Protein       |            | Fat   | Calories      |            |
|                                 |                  | Actual number | Percentage |      | Actual number | Percentage |                 | Actual number | Percentage |       | Actual number | Percentage |
| Rice . . . . .                  | 194.7            | 12.9          | 25.05      | 1.4  | 701.00        | 34.76      | 305.97          | 19.58         | 51.84      | 1.22  | 1,058.66      | 45.29      |
| Wheat . . . . .                 | 72.9             | 7.2           | 13.98      | 0.9  | 255.00        | 12.64      | 2.77            | 0.33          | 0.87       | 0.04  | 9.58          | 0.41       |
| Other cereals and millets . . . | 114.3            | 10.9          | 21.16      | 3.0  | 390.00        | 19.34      | 1.76            | 0.15          | 0.40       | 0.32  | 5.79          | 0.25       |
| SUB TOTAL                       | 381.9            | 31.0          | 60.19      | 5.3  | 1,346.00      | 66.74      | 310.50          | 20.06         | 53.11      | 1.29  | 1,074.03      | 45.95      |
| Tapioca . . . . .               | 11.9             | 0.1           | 0.19       | ...  | 11.0          | 0.54       | 365.97          | 2.56          | 6.78       | 0.73  | 574.57        | 24.58      |
| Sweet potatoes . . . . .        | 6.0              | 0.1           | 0.19       | ...  | 7.00          | 0.35       | 6.21            | 0.07          | 0.19       | 0.02  | 7.45          | 0.32       |
| Potatoes . . . . .              | 11.4             | 0.2           | 0.39       | ...  | 8.00          | 0.40       | ...             | ...           | ...        | ...   | ...           | ...        |
| SUB TOTAL                       | 28.8             | 0.4           | 0.77       | ...  | 26.00         | 1.29       | 372.18          | 2.63          | 6.97       | 0.75  | 582.02        | 24.90      |
| Coconut . . . . .               | 10.0             | 0.1           | 0.19       | 0.5  | 6.00          | 0.30       | 55.19           | 2.48          | 6.57       | 22.96 | 245.04        | 10.48      |
| Pulses and other oil-seeds . .  | ...              | 13.1          | 25.43      | 2.3  | 210.00        | 10.41      | 8.38            | 2.09          | 5.53       | 0.97  | 33.35         | 1.43       |
| SUB TOTAL                       | ...              | 13.2          | 25.62      | 2.8  | 216.00        | 10.91      | 63.57           | 4.57          | 12.10      | 23.93 | 278.38        | 11.91      |
| Vegetables . . . . .            | 7.8              | 0.1           | 0.19       | ...  | 2.00          | 0.10       | ...             | ...           | ...        | ...   | ...           | ...        |
| Fruits . . . . .                | 47.8             | 0.3           | 0.58       | 0.1  | 27.00         | 1.34       | 97.80           | 0.81          | 2.14       | 0.10  | 75.48         | 2.32       |
| Fish . . . . .                  | 5.5              | 0.5           | 0.97       | 0.1  | 3.00          | 0.15       | 36.30           | 7.37          | 19.51      | 0.95  | 41.25         | 1.76       |
| Milk . . . . .                  | ...              | 4.8           | 9.32       | 7.3  | 108.00        | 5.36       | 30.63           | 1.03          | 2.73       | 1.47  | 22.84         | 0.98       |
| Meat . . . . .                  | 3.9              | 0.6           | 1.17       | 0.2  | 6.00          | 0.30       | 4.70            | 1.03          | 2.73       | 0.15  | 5.45          | 0.23       |
| Eggs . . . . .                  | 0.6              | 0.1           | 0.19       | 0.1  | 1.00          | 0.05       | 1.81            | 0.24          | 0.64       | 0.24  | 3.15          | 0.13       |
| Oil and fats . . . . .          | 10.5             | ...           | ...        | 10.5 | 93.00         | 4.61       | 17.26           | ...           | ...        | 17.26 | 155.36        | 6.65       |
| Sugar . . . . .                 | 53.6             | 0.5           | 0.97       | ...  | 188.00        | 9.33       | 25.00           | 0.03          | 0.08       | ...   | 99.50         | 4.26       |
| GRAND TOTAL                     |                  | 51.5          | 100.00     | 26.4 | 2,016.00      | 100.00     |                 | 37.77         | 100.00     | 46.14 | 2,337.47      | 100.00     |

SOURCE: Food balance-sheets for India for 1960-1963, prepared by the Food and Agriculture Organization of the United Nations.

restrictions on interstate movements of food-grains such as wheat and rice. These new developments blocked the traditional channels of rice imports and introduced an era of acute shortage of rice in Kerala, driving up its price to unprecedented levels.

These developments led to redoubled efforts to step up rice production in Kerala; self-sufficiency in rice is stressed as a primary objective in the successive five-year plans of the state. During the past two decades, 1951/52 to 1970/71, rice production went up from 0.712 million tons to 1.298 million tons. This works out to an annual compound growth rate of 2.88 per cent. However, this rate of increase hardly kept up with the growth of population. Moreover, during the 1960s, the rate of growth of production and productivity of rice in Kerala have tended to decline compared with the 1950s. *Per capita* availability of rice from internal production in the latter part of the 1960s was at the same level as in the beginning of that decade. Imports from other states became more precarious; total availability of rice *per capita* during the 1960s, including imports, actually registered a decline, though this was moderate. Furthermore, the acute shortage and steep rise in the price of rice in the 1960s made the commodity prohibitively expensive and turned this food into a luxury item for the middle classes and low-income families. Tapioca has, in consequence, emerged as a major substitute for rice.

Tapioca compares favourably with rice or other food crops in many respects. Tapioca gives some yield, however low, even from marginal lands; it is highly adaptive to a wide range of climatic conditions; it is comparatively free from attacks of pests and diseases; and it is a less demanding crop in terms of inputs such as labour, fertilizer and agronomic practices.

Tapioca is a comparatively cheap source of calories. True, weight for weight, rice gives more calories than tapioca: 100 grams of rice yield 345 calories as against 157 calories from an equivalent weight of tapioca. But a given outlay could result in considerably more calories from tapioca than from rice, though recent increases in the retail price of tapioca have progressively reduced this difference, as shown in table 9.

TABLE 9. CALORIES DERIVED PER RUPEE OF EXPENDITURE<sup>a</sup>

| Year<br>(1)       | Calories from<br>rice<br>(2) | Calories from<br>tapioca<br>(3) | Ratio of (3)<br>to (2)<br>(4) |
|-------------------|------------------------------|---------------------------------|-------------------------------|
| 1961/62 . . . . . | ...                          | 11,214                          | ...                           |
| 1962/63 . . . . . | ...                          | 10,467                          | ...                           |
| 1963/64 . . . . . | 5,149                        | 11,214                          | 2.18                          |
| 1964/65 . . . . . | 3,791                        | 9,235                           | 2.44                          |
| 1965/66 . . . . . | 2,575                        | 5,607                           | 2.17                          |
| 1966/67 . . . . . | 2,143                        | 6,280                           | 2.93                          |
| 1967/68 . . . . . | 1,659                        | 5,607                           | 3.38                          |
| 1968/69 . . . . . | 1,742                        | 4,906                           | 2.82                          |
| 1969/70 . . . . . | 2,078                        | 5,815                           | 2.80                          |
| 1970/71 . . . . . | 2,276                        | 5,233                           | 2.35                          |
| 1971/72 . . . . . | 2,270                        | 5,065                           | 2.23                          |

<sup>a</sup>Calculated on the basis of open market prices of rice and tapioca given in table 20 below.

Since the beginning of the present decade the price of rice has soared to unprecedented levels; although the price of tapioca also rose, as of today the differential yield of tapioca in terms of calories continues to be substantial.

More important, the average yield of calories per hectare of tapioca is several times larger than that of rice. The average yields of tapioca, potatoes, wheat and rice, in terms of calories for the country as a whole, are presented in table 10.

Recent years have witnessed the introduction of a few new varieties of tapioca with an average yield ranging from 31.9 tons to 39.5 tons per hectare, more than twice the average yield of traditional local varieties. Thus, tapioca will continue to maintain if not increase the yield differential over rice in terms of calories per unit of land, notwithstanding the widespread acceptance of the high-yield varieties of rice in Kerala.

Given the dwindling and undependable supply of rice and other food-grains from outside the state, the limited supply of land, particularly of land suitable for rice cultivation, and the higher yield potentialities of tapioca compared to rice in caloric terms, the obvious and rational solution to Kerala's food problem is the substitution of tapioca for rice and other cereals. The area under tapioca registered a substantial increase during the 1960s; the production of tapioca, which stood at 1.6 million tons in 1961/62, rose to 5.4 million tons in 1971/72. The recourse to increased production and consumption of tapioca had two favourable effects on the status of nutrition of the population of the state: (a) in spite of a reduction in the availability of rice and a sharp rise in its price, the average intake of calories has been maintained, if not improved, during the 1960s; (b) the increased availability of tapioca, the poor man's potato, has averted famine and undernourishment of the poorer strata of society, outcomes which would otherwise have been inevitable in the wake of the skyrocketing price of rice.

### **Recent trends in the availability of food**

The trends in the availability of food during the 1960s are brought out in table 11. It is evident from this table that there has been a perceptible improvement in the intake of calories during the latter part of the 1960s. This improvement has taken place despite a significant fall in the availability of cereals since the mid-1960s. The drop in the availability of cereals would have produced undernourishment among low-income families, and even among middle-class families who could not afford to buy sufficient quantities of rice at the going price. The sharp increase in the output of tapioca has not only averted a deterioration of the situation but even improved the average level of calorie intake in the state.

It may be presumed that, by and large, the increase in the production of tapioca has made a greater impact on the diet of the lower-income households. There is a lingering prejudice against tapioca among members of the upper strata of society; tapioca is not generally acceptable to them for reasons of taste or, more often, of prestige. Therefore, the greater part of the increased output has found its way into the kitchens of the lower strata of

TABLE 10. INDIA: AREA, PRODUCTION AND FOOD CALORIES OF FOUR MAIN CROPS

| Crop               | Area<br>(thousands of<br>hectares) | 1969/70                                   |                   |                         | Area<br>(thousands of<br>hectares) | 1970/71                                   |                   |                         |
|--------------------|------------------------------------|---|-------------------|-------------------------|------------------------------------|---|-------------------|-------------------------|
|                    |                                    | Produc-<br>tion<br>(thousands<br>of tons) | Yield per hectare |                         |                                    | Produc-<br>tion<br>(thousands<br>of tons) | Yield per hectare |                         |
|                    |                                    |   | Tons              | Millions<br>of calories |                                    |   | Tons              | Millions<br>of calories |
| Tapioca . . . . .  | 352.60                             | 5,214.10                                  | 14.79             | 23,516                  | 353.10                             | 5,215.70                                  | 14.77             | 23,484                  |
| Potatoes . . . . . | 496.00                             | 3,912.60                                  | 7.89              | 7,811                   | 513.80                             | 4,639.70                                  | 9.03              | 8,940                   |
| Wheat . . . . .    | 16,625.50                          | 20,093.30                                 | 1.21              | 4,211                   | 17,892.40                          | 23,247.30                                 | 1.30              | 4,524                   |
| Rice . . . . .     | 37,680.30                          | 40,429.70                                 | 1.07              | 3,774                   | 37,432.00                          | 42,448.20                                 | 1.13              | 3,932                   |

SOURCE: "Note for study team on potato and tuber crops for National Commission of Agriculture", prepared by the Central Tuber Crops Research Institute, Trivandrum (mimeographed).

TABLE 11. KERALA: TRENDS IN THE AVAILABILITY OF DIFFERENT ITEMS OF FOOD AND THEIR NUTRIENT VALUES,  
1961/62-1970/71  
(Grams per capita per day, except as otherwise indicated)

| Year              | Cereals | Roots<br>and<br>tubers | Pulses,<br>oil-seeds<br>and nuts | Fruits | Fish  | Milk  | Eggs | Meat | Oils<br>and<br>fats | Proteins | Calories |
|-------------------|---------|------------------------|----------------------------------|--------|-------|-------|------|------|---------------------|----------|----------|
| 1961/62 . . . . . | 310.50  | 372.18                 | 63.57                            | 97.80  | 36.30 | 30.63 | 1.81 | 4.70 | 17.26               | 38       | 2,337    |
| 1962/63 . . . . . | 307.88  | 340.73                 | 66.88                            | 97.88  | 39.73 | 30.57 | 1.80 | 4.64 | 18.32               | 37       | 2,295    |
| 1963/64 . . . . . | 309.03  | 315.94                 | 64.53                            | 96.18  | 22.58 | 30.63 | 1.83 | 4.61 | 17.44               | 35       | 2,234    |
| 1964/65 . . . . . | 306.68  | 337.14                 | 62.26                            | 95.39  | 47.47 | 30.41 | 1.81 | 4.45 | 17.56               | 41       | 2,281    |
| 1965/66 . . . . . | 298.92  | 366.24                 | 64.19                            | 55.22  | 27.29 | 30.33 | 1.83 | 5.12 | 18.65               | 37       | 2,276    |
| 1966/67 . . . . . | 278.38  | 392.93                 | 62.86                            | 90.09  | 27.92 | 30.27 | 1.89 | 4.87 | 20.51               | 35       | 2,275    |
| 1967/68 . . . . . | 282.36  | 470.71                 | 63.35                            | 93.19  | 29.07 | 30.22 | 1.89 | 5.52 | 19.54               | 39       | 2,412    |
| 1968/69 . . . . . | 273.93  | 445.53                 | 72.82                            | 90.91  | 41.31 | 30.17 | 1.81 | 5.80 | 16.54               | 40       | 2,363    |
| 1969/70 . . . . . | 254.03  | 497.22                 | 64.67                            | 89.24  | 41.18 | 30.40 | 1.84 | 4.96 | 20.56               | 36       | 2,379    |
| 1970/71 . . . . . | 297.66  | 477.45                 | 63.53                            | 86.52  | 40.82 | 30.40 | 1.84 | 4.96 | 23.60               | 38       | 2,519    |

SOURCES: See annex I.

society. This has offset the adverse effects of other recent developments on the food front in Kerala, effects which would otherwise have aggravated the inequalities in the distribution of food and nutrition.

## Chapter III

### NUTRITIONAL NORMS AND MAGNITUDE OF UNDER-NUTRITION

Kerala has been ranked among the areas of most acute and massive poverty on the basis of existing data on consumption of food. This ranking is based on the proportion of people whose consumption of food is estimated to fall below a specified norm, a proportion which would naturally depend not only on the availability of food and its distribution but also on the norm itself.

Chapter II dealt with the nature of the evidence on the availability of food. The present chapter begins with a discussion of nutritional norms. The evidence on the distribution of consumption is then examined.

#### Nutritional norms

A variety of factors such as sex, age, body weight, nature and intensity of activity and climate determine a person's nutritional requirements. Since these factors vary from person to person and region to region the task of specifying accurately an average norm for a given population as a whole is practically hopeless. However, an approximation is possible since nutritional norms are usually laid down by experts for different age, sex and occupation groups of a population, and information is usually available in population censuses on the composition of populations with respect to these characteristics.

Nutritional recommendations are, as is recognized by experts themselves, tentative and in process of continual revision. Accordingly, it is best to rely on the latest available norms. The calculations in this chapter are based on the recommendations made in 1968 by the Nutritional Expert Group of the Indian Council of Medical Research (ICMR). The ICMR's earlier norms were laid down in 1944. The 1968 norms take into account the results of the comprehensive research on nutrition done in India during recent years. The recommendations are reproduced in part in annex II.

According to these ICMR norms, the daily *per capita* allowance of calories for an adult, for example, ranges from 2,400 for a sedentary worker to 3,900 for a heavy worker. Taking into account the distribution of population in the different age, sex and occupational groups and the corresponding recommended allowances of calories, the average *per capita* requirement of calories for India as a whole is estimated at 2,400.<sup>1</sup>

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<sup>1</sup>It is pertinent to mention in this context that an expert committee of the Food and Agriculture Organization of the United Nations/World Health Organization recommended 2,223 as the *per capita* calorie requirement applicable to countries in Asia and the Far East. (Quoted in FAO's *Agricultural Commodity Projections*, vol. 1 (1971), p. 31, table 4.



However, this average is not applicable to Kerala, mainly because the proportion of workers in the total population of the state is significantly lower than in the country as a whole and the calorie allowance, as already noted, is crucially dependent on the level of activity of a person. It thus becomes necessary to work out an average calorie norm for Kerala taking its specific population composition into account.

### **An average calorie norm for Kerala**

It was not possible to make an exact correspondence between the work categories embodied in the ICMR recommendations and the occupational and industrial classes as reported in the population census. It was therefore necessary, for the purposes of the following exercise in estimation, to make a number of assumptions, all of which are explained in annex II. But the principal assumptions need to be stated here. They are: (a) the calorie requirement of all non-working adult men is assumed to be 2,400, which is really the recommended allowance for an adult man who does sedentary work; (b) in estimating the requirement for workers, the age-sex composition, not the occupational categorization in the census, is taken as the basis.

The reasons for making the second assumption need to be explained. While the activity of administrative, executive, managerial and clerical workers can be characterized as sedentary work and that of farm workers as heavy work, such an unambiguous correspondence is not possible in respect of categories such as "technical worker" or "craftsman". It is particularly difficult to identify the group corresponding to the "moderate work" category for which the recommended allowance is 2,800 calories, which is significantly different from the allowance for both the sedentary-work category (2,400 calories) and the heavy-work category (3,900 calories). Moreover, data on further division of workers in each occupational class into different age and sex groups are not available. In any case, it appears that a less arbitrary way of estimating calorie requirements is to take the age-sex composition of workers as the basis. Thus, for example, we have assumed that workers belonging to the age group 15-34 do heavy work, while those belonging to the age group 35-59 and 60 and above do moderate work and sedentary work, respectively. In effect, this ignores the occupational distribution of workers, but the resulting bias may be negligible since only a small proportion of the working force is engaged in such occupations as administrative or clerical work which can be classified as sedentary work on the basis of occupation alone.<sup>2</sup>

Calculations made on the above basis yield an estimate of 2,200 for the average *per capita* daily calorie requirement for Kerala (see annex II for details of these calculations) for the year 1961. This figure is significantly lower than the recommended allowance for the country as a whole (2,400 calories *per capita* daily). The difference arises mainly from the fact that the

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<sup>2</sup>Apart from those mentioned, others such as teachers, traders and shop assistants also presumably do sedentary work. But since the main determinant of the average norm is the composition of the rural working force, further adjustment on the basis of the occupational distribution, particularly of urban workers, will only marginally lower the average requirement of calories.

proportion of workers in the total population is only 33.3 per cent in Kerala whereas it is 43 per cent for India as a whole.<sup>3</sup>

The estimated norm of 2,200 calories *per capita* per day, based on the data of the 1961 population census is, strictly speaking, valid only for that year. According to the 1971 census data the proportion of workers in the population has decreased from 33.3 to 29 per cent and this may require lowering the norm for 1971. However, precise estimation is made difficult by the fact that the age-sex composition of the working force and the non-working population are not yet available.

Accordingly, in the remainder of this chapter the figure of 2,200 calories per day *per capita* is taken as the average norm applicable uniformly to the period 1961-1971. This figure is admittedly crude but it takes into account some at least of the important factors that underlie interstate variations in calorie requirements.

### **The magnitude of under-nutrition**

The average availability of calories during the period 1961/62-1970/71 was, as already seen in chapter II, 2,339 *per capita* per day. There was some annual variation, but the availability was always higher than 2,200 calories *per capita* per day (see table 10). Even if allowance is made for inaccuracies in the estimation of both the availability and the requirement it still appears that there was sufficient food available to meet the average requirement of the state throughout the period 1961/62-1970/71. Evidently if there was any under-nutrition in the state it could be due not to inadequate availability but to unequal distribution.

For estimating the inequality in the distribution of food intake the only source of data available is the seventeenth round of the National Sample Survey (1961/62). The nature of these data has already been discussed in chapter II. It may be recalled that, according to NSS data, the *per capita* calorie intake in Kerala in 1961/62 was 1,619, which is considerably lower than the estimate of food availability during that year (2,337 calories). The bias arises mainly because of underestimation of consumption of tapioca and coconuts (see chap. II). Although the average food intake is underestimated in NSS data, as a first step it can be assumed that the distribution reported therein is approximately true. This implies that the degree of underestimation is the same for all expenditure classes. The estimates of calorie intake of different groups of the population thus obtained, and adjusted upward in the light of the food balance-sheet are presented in table 12.

Table 12 gives an idea of the extent of inequality in the distribution of food intake and the magnitude of under-nutrition in 1961/62. In rural areas, for example, the bottom, i.e., the poorest 10 per cent of the population account for only 5.32 per cent of the calories consumed while the top

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<sup>3</sup>The age composition of male and female workers in Kerala is not very widely different from that of all India; and the same is broadly true for male and female non-workers also (see annex II). Since the recommended requirements are age-sex specific for both workers and non-workers, it is obvious that the lower average norm for Kerala is almost entirely the result of lower rates of work participation.

TABLE 12. KERALA: DISTRIBUTION OF CALORIE INTAKE, BY DECILE, 1961/62

| Population decile | Rural                       |   |          |                             | Urban                                     |          |  |
|-------------------|-----------------------------|---|----------|-----------------------------|---|----------|--|
|                   | Share in total (percentage) | Average calorie intake per capita per day |          | Share in total (percentage) | Average calorie intake per capita per day |          |  |
|                   |                             | NSS                                       | Adjusted |                             | NSS                                       | Adjusted |  |
| Bottom            |                             |   |          |                             |   |          |  |
| 10 per cent       | (1) . . 5.32                | 868                                       | 1,297    | 4.95                        | 768                                       | 1,159    |  |
|                   | (2) . . 6.68                | 1,090                                     | 1,604    | 5.61                        | 871                                       | 1,301    |  |
|                   | (3) . . 7.63                | 1,245                                     | 1,819    | 7.06                        | 1,096                                     | 1,612    |  |
|                   | (4) . . 8.30                | 1,354                                     | 1,970    | 7.84                        | 1,217                                     | 1,780    |  |
|                   | (5) . . 8.95                | 1,461                                     | 2,117    | 8.63                        | 1,339                                     | 1,950    |  |
|                   | (6) . . 9.73                | 1,588                                     | 2,293    | 9.55                        | 1,482                                     | 2,147    |  |
|                   | (7) . . 10.73               | 1,751                                     | 2,519    | 10.74                       | 1,667                                     | 2,403    |  |
|                   | (8) . . 11.99               | 1,957                                     | 2,803    | 12.26                       | 1,903                                     | 2,729    |  |
| Top               | (9) . . 13.43               | 2,192                                     | 3,128    | 14.14                       | 2,194                                     | 3,133    |  |
| 10 per cent       | (10) . . 17.24              | 2,814                                     | 3,989    | 19.22                       | 2,983                                     | 4,224    |  |

(richest) 10 per cent account for 17.24 per cent. The average calorie intake corresponding to the different deciles of the rural population varies from 1,297 to 3,989 *per capita* per day. The picture of urban Kerala is not very different, although the inequality appears to be slightly higher.

Table 12 also enables us to estimate the magnitude of under-nutrition, i.e., the proportion of people whose calorie intake was below the norm of 2,200. For this purpose the estimates of averages of the different deciles which take into account the upward adjustment made to the NSS figures according to availability as estimated in the food balance-sheet have been used. The estimates are given in table 13. These estimates show that the food intake of about one half of the population (48 per cent) falls short of the minimum requirement of 2,200 calories *per capita* per day.

TABLE 13. KERALA: ESTIMATES OF THE MAGNITUDE OF UNDER-NUTRITION, 1961/62 (Percentage)

|  | Proportion of population whose food intake is below 2,200 calories per capita per day |       |                          |
|--|---|-------|--------------------------|
|  | Rural   | Urban | Rural and urban combined |
| According to NSS data . . . . .                | 85  | 85    | 85                       |
| According to food balance-sheet data . . . . . | 47  | 54    | 48                       |

In deriving these estimates, however, the tapioca and coconuts additionally available (according to the food balance-sheet) had been allocated to the different expenditure groups—and hence to the deciles—in the same ratios as those that obtain in NSS, where the consumption of these items is underestimated. This assumption of like ratios is unlikely to be valid since tapioca is a relatively cheap and inferior cereal substitute, and for this reason the underestimation of tapioca consumption must have been greater for the

lower-expenditure groups. There is, however, no satisfactory way of making this reallocation. Thus, the estimates given in table 13 overstate the magnitude of under-nutrition since they ignore the possibility of a better distribution of tapioca than is implied in NSS data.

Taking all the available evidence into account, it still appears that the proportion of undernourished population in the state, defined in terms of the 2,200-calorie norm, would have been less than one half in 1961/62. More precise estimation of this proportion is made difficult by the absence of data on the actual distribution of tapioca and coconuts among the different deciles. In *per capita* terms, tapioca consumption as reported by NSS is underestimated by about 335 calories per day (see foot-note 3, chap. II) for the population as a whole. If, instead of assuming, as has been done so far, that the degree of underestimation was the same for all deciles, the alternative assumption is made that underestimation was present only in the bottom six deciles, the average intake for these deciles would improve by a further 123 calories. This, in turn, would imply that the proportion of undernourished population was possibly a little less than 40 per cent in 1961/62.

### Results of a diet survey, 1973

The proportion of the undernourished population is, however, a summary statistic that conveys very little that is useful for policy making. The level of income among poor households might appear to be the most important single determinant of this proportion and for this reason it might be argued that policy making should be concerned almost exclusively with raising levels of income. However, as has been shown in chapter I, such a policy is inadequate; raising levels of food consumption requires, in addition, both increasing the output of food and reducing inequalities in the distribution of land. In any case, it is still legitimate to ask whether the undernourished have any special characteristics apart from low income and how the undernourished are differentiated from those who eat enough.

With this end in view a small sample survey was conducted by the Centre for Development Studies early in 1973 in a region close to Trivandrum City comprising two villages and two urban areas.<sup>4</sup> Although the sample is small it is fairly representative; unlike the usual NSS samples, it has a good proportion of households with fairly high incomes; of the 88 households sampled 17 households had household income of below Rs 100 per month, 32 between Rs 100 and 250, 24 between Rs 250 and 500 and 15 above Rs 500. The average calorie intake of the sampled households works out to 2,010 calories per day *per capita*; the averages corresponding to the households belonging to the four income groups mentioned above were 1,513, 1,761, 2,088 and 2,728, respectively.

The proportion of the undernourished in the sample works out to 66 per cent. To estimate this proportion the requirement of each household is worked out on the basis of the norms of the Indian Council for Medical Research taking into account the age, sex and occupational compositions of

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<sup>4</sup> The sampling design and other details relating to the survey are given in annex III.

the households. For this reason, the estimate is free from aggregation biases that result from specifying average norms for groups of households. However, since no information was available on the amount of food consumed by each member of a household separately, the whole household—i.e., all of its members—had to be identified as either calorie-deficient or not. This leads to an overestimation of the proportion of undernourished persons, since there is a distinct possibility that some members—particularly children—of even a calorie-deficient household eat enough.<sup>5</sup>

For estimating the magnitudes of under-nutrition in Kerala during the early 1970s—or for any period later than 1961/62—no data are available on the distribution of food intake. In this context the question arises whether, and to what extent, the Centre's survey data can be used for making inferences on the direction of change during the 1960s. Two factors severely limit the scope of the Centre's survey data for such a purpose. First, the survey was conducted in a very small region near Trivandrum and it is difficult to judge how representative the region is of the state as a whole. Secondly, there are reasons to believe that the survey estimates of consumption, such as those of NSS discussed earlier, are understated in respect of tapioca; but while NSS estimates could be revised in the light of the food balance-sheet, no such adjustment of the Centre's survey estimates is possible since the food balance-sheet refers to the state as a whole and the average availability of tapioca in the surveyed region could well be different from that of the state.<sup>6</sup> However, it should be mentioned that the average consumption of tapioca of the surveyed households, estimated at 420 calories *per capita* per day, must be regarded as very low in comparison with the average availability of 800 calories for the state as a whole since tapioca is grown in Trivandrum on a larger scale than in some other parts of the state. Even if one assumes that tapioca consumption is underestimated by only 200 calories, the estimate of average calorie intake in the surveyed region would be revised from 2,000 to 2,200 and, correspondingly, the proportion of the undernourished population would be revised from 66 per cent to about 50 per cent. To the extent that the degree of underestimation of tapioca consumption could be much larger the magnitude of under-nutrition might be well below one half of the population.<sup>7</sup>

The summary given below (see table 14) of the results of the NSS survey and the Centre's survey conducted in Trivandrum must be interpreted with a great deal of caution for the reasons explained above. Both sets of figures are given without any adjustment for possible bias in estimation.

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<sup>5</sup>This discussion rules out the counter-possibility of the existence, in households which are not calorie-deficient in the over-all, of some whose consumption falls short of the requirement.

<sup>6</sup>Moreover, there may be seasonal variations in the consumption of tapioca. Since the reference period for the Centre's survey was only one week, it is difficult to say how the survey estimate of *per capita* consumption would compare with actual consumption during the whole year.

<sup>7</sup>Reference has already been made in chapter II to under-reporting of consumption of home-produced foods. Tapioca is a special case: home consumption of tapioca accounts for a large proportion of the production.

TABLE 14. COMPARISON OF CALORIE INTAKE

|  | National sample survey,<br>1961/62 (refers to<br>Kerala as a whole) | Diet survey, 1973<br>(refers to a region<br>of Trivandrum) |
|--|---|--|
| Average calorie intake <i>per capita</i> per day . . .   | 1,620   | 2,010  |
| Percentage of population undernourished . . .  | 85  | 66   |
| Average calorie intake of persons who were<br>calorie-deficient ( <i>per capita</i> per day) . . . . | 1,440   | 1,603  |

### Socio-economic characteristics of the undernourished

An analysis of the results of the above-mentioned diet survey shows that the calorie intake of a household is related to a number of variables such as the size and income of the household, educational attainment of both the head of the household and the housewife, and caste and occupation of the main earner in the household. These variables themselves are interrelated; for example, wage-labour households are not only typically poor but are also of a low degree of literacy. An attempt is made here to unscramble some of these interrelationships and to examine how the different variables interact in influencing the level of calorie intake.

The diet survey results show, as expected, that the magnitude of under-nutrition is inversely related to household income; it is 94 per cent in the lowest income group and falls to 26 per cent in the highest income group. But what is more interesting is the impact of the level of education on the level of calorie intake within each income group. For this purpose the education of the housewife has been taken as a classificatory variable. Table 15 brings out the roles played by household income and educational attainment in the determination of calorie intake.

TABLE 15. KERALA: PROPORTION OF CALORIE-DEFICIENT PERSONS BY EDUCATION OF HOUSEWIFE AND BY HOUSEHOLD INCOME  
(Percentage)

| Education of<br>housewife                         | Household income (rupees per month) |         |         |      | All income<br>classes |
|---|-------------------------------------|---------|---------|------|-----------------------|
|   | 0-100                               | 100-250 | 250-500 | 500+ |                       |
| Illiterate . . . . .                              | 94                                  | 98      | 84      | a    | 94                    |
| Literate but<br>below SSLC <sup>b</sup> . . . . . | 95                                  | 71      | 59      | 43   | 64                    |
| SSLC <sup>b</sup> and above . . . . .             | a                                   | a       | 35      | —    | 9                     |
| All literacy<br>classes . . . . .                 | 94                                  | 81      | 62      | 26   | 66                    |

<sup>a</sup> No sampled households in the cell.

<sup>b</sup> Secondary school leaving certificate (equivalent to matriculation).

The table shows that within each education group the incidence of calorie deficiency generally has a tendency to decrease as income increases;

but the rates of decline are not uniform over all the education classes. For example, if a comparison were made of the income groups 0 to 100 and 100 to 250, the magnitude of under-nutrition would decline from 95 per cent to 71 per cent in the middle education group whereas no such decline is observed among households belonging to the illiterate category. Similarly, the incidence of calorie deficiency declines, within all but the lowest income group, as the level of education rises; the phenomenon is absent within the lowest income group. It may be concluded that improvement of literacy would make no difference to the group designated as illiterate. At higher levels of both income and education the reduction in the incidence of undernourishment associated with improvement in the two characteristics can be quite substantial.

A greater insight into the factors underlying these relationships is provided by the variation of the average calorie intake among the different income and education groups. These averages are given separately for the calorie-deficient and other households (see tables 16 and 17).

TABLE 16. KERALA: AVERAGE INTAKE OF CALORIE-DEFICIENT PERSONS  
(Calories per capita per day)

| Education of<br>housewife                         | Household income (rupees per month) |         |         |       | All income<br>classes |
|---|-------------------------------------|---------|---------|-------|-----------------------|
|   | 0-100                               | 100-250 | 250-500 | 500+  |                       |
| Illiterate . . . . .                              | 1,481                               | 1,307   | 1,399   | a     | 1,363                 |
| Literate but<br>below SSLC <sup>b</sup> . . . . . | 1,339                               | 1,717   | 1,842   | 2,102 | 1,747                 |
| SSLC <sup>b</sup> and above . . . . .             | a                                   | a       | 2,071   | b     | 2,071                 |
| All education<br>classes . . . . .                | 1,418                               | 1,532   | 1,714   | 2,102 | 1,603                 |

<sup>a</sup> No sampled households.

<sup>b</sup> No deficient households.

TABLE 17. KERALA: AVERAGE INTAKE OF PERSONS WHO WERE NOT CALORIE-DEFICIENT  
(Calories per capita per day)

| Education of<br>housewife                         | Household income (rupees per month) |         |         |       | All income<br>classes |
|---|-------------------------------------|---------|---------|-------|-----------------------|
|   | 0-100                               | 100-250 | 250-500 | 500+  |                       |
| Illiterate . . . . .                              | 3,042                               | 3,800   | 2,792   | a     | 3,044                 |
| Literate but<br>below SSLC <sup>b</sup> . . . . . | 3,150                               | 2,657   | 2,750   | 2,853 | 2,749                 |
| SSLC <sup>b</sup> and above . . . . .             | a                                   | a       | 2,411   | 3,062 | 2,940                 |
| All education<br>classes . . . . .                | 3,085                               | 2,708   | 2,699   | 2,951 | 2,819                 |

<sup>a</sup> No sampled households in the cell.

<sup>b</sup> Secondary school leaving certificate.

Table 16 shows that even among households that are undernourished both education and income levels are closely related to average calorie intake. The illiterate households, combined, are able to meet only 57 per

cent of their calorie requirements, whereas the percentage is 77 for the middle group and 91 for the highest education group. Much the same thing obtains within each income group: for example, for the income groups Rs 250-500 the average calorie intake of the undernourished population improves with the level of education from 1,339 to 1,842 to 2,071. Similar relationships hold between the nutrition level and income among the deficient households. Actual consumption as a proportion of calorie requirement improves with income: in percentage terms it is 63, 68, 74 and 90 for the four income groups, respectively.<sup>8</sup>

These facts imply that income and education play important roles in determining not only the proportion of undernourished but also the intensity or degree of undernourishment.

On the other side of the coin is the picture presented by persons who are able to meet their calorie requirement in full or even to exceed it (see table 17). As shown in table 16, the proportion of such people is a bare 6 per cent in both the illiterate group taken as a whole and in the lowest income group. The average calorie intake of those belonging to the lower strata is about 3,000 per day *per capita*, which is significantly higher than that corresponding to those in the higher income and education groups. While this may well suggest the possibility of an association between illiteracy and eating in excess of requirements, the true explanation might be simpler: it could be merely the result of over-reporting of consumption by the illiterate; it could also be due to larger sampling errors associated with the very small number of illiterate households that are not calorie-deficient.

The discussion thus far has focused on the relationships between income and literacy, on the one hand, and nutritional level, on the other. Though in conformity with the expected relationship between income and calorie intake, the foregoing analysis has shown in addition that, given the level of income, the ability to allocate it in such a way as to meet minimal requirements improves with the level of education. This signifies the role that literacy can play in minimizing the magnitude of under-nutrition.

The undernourished have other characteristics, however. For example, of the 88 households surveyed 23 were categorized as wage-labour households;<sup>9</sup> of these 22 were calorie-deficient. Among the 23 wage-labour households, there were 20 whose level of income was below Rs 250 per month, and 15 who were characterized as illiterate. Thus, low levels of income and literacy themselves can be regarded as occupation-specific.

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<sup>8</sup>Since requirements are estimated separately for each household one might ask whether calorie requirement itself is related to income or educational attainment. According to our data, requirement does not appear to bear any relationship to income. Thus, the average *per capita* requirement is 2,237, 2,260, 2,293 and 2,322 for the different income groups, respectively. However, the average requirement for the "illiterate" category, estimated at 2,362, is significantly higher than that for the other two education classes: 2,245 for the middle group and 2,257 for the highest. This difference is possibly due to a higher proportion of manual workers in the illiterate class.

<sup>9</sup>This was done on the basis of the occupation of the main earner in the household. The labourers include, apart from those employed in agriculture, workers in urban areas.



From the policy maker's point of view an explicit recognition of such interrelationships is necessary.

### **Concluding remarks**

It has already been noted that no data are available for estimating inequality in food consumption in the early 1970s. But several measures adopted during the 1960s, such as distribution of free mid-day meals to lower primary school children from low-income households, the sale of rice through a network of fair price shops covering rural as well as urban parts of the state, the availability of wheat and sugar at controlled prices and redistributive land reforms, could have had the effect of reducing the inequality directly; improvement in the levels of education, particularly among the poor households, through the extension of primary education could also have contributed indirectly to a reduction in the incidence of under-nutrition. On the other hand, there were other trends in the economy, such as the rapid growth in the number of agricultural labour households, and the increase in unemployment, which could have worked in the opposite direction. It is difficult, therefore, to assess whether and how far there has been improvement in the levels of nutrition, though the evidence on the availability of food (discussed in chapter II) and the diet survey data suggest that there could have been some such improvement. Chapters IV, V and VI examine in detail some factors that could have affected inequality in income and consumption.

## Chapter IV

### PUBLIC DISTRIBUTION OF FOOD

Chapter II discussed questions relating to the over-all availability of food in general and of cereals and cereal substitutes in particular in Kerala. This was followed in chapter III by an attempt at quantification of the magnitude of under-nutrition in the state, given the over-all availability of data. Chapter IV analyses the impact of public distribution in an attempt to see to what extent it had alleviated the situation described earlier.

Public distribution of food takes place in Kerala at two levels: primary school children approximately 6-10 years old, and the general population. Food, whatever the quantity, is free to primary school children, but to the general population it is distributed at controlled prices, below those prevailing in the open market. But the distribution of food is quite comprehensive at both levels. While only about three fourths of primary school children in the state avail themselves of the free school feeding programme, the proportion of households now covered by the fair price shops is virtually 100 per cent.

Other public programmes and schemes for food distribution are also in operation within the state. For instance, under the maternity and child health programme, food is distributed free through primary health centres and sub-centres to some 150,000 beneficiaries every year, including pre-school children and expectant or nursing mothers. Also, under the special nutrition programme, some 2,000 feeding centres within the state give assistance in the form of food to tribal children or slum-area children. But, in terms of the quantity involved, this programme is not significant. The present chapter is therefore devoted to the public distribution of food through the school feeding programme and the fair price shops.

#### The school feeding programme

Although the present school feeding programme did not come into force in the state until 1961, Kerala had already had some tradition of school feeding at state expense. By the mid-1940s, the then princely states of Travancore and Cochin<sup>1</sup> had established a system of free mid-day meals for poor children in the lower primary schools. This system was continued even after the state of Kerala came into being. Beginning with 1961, the system was extended to those parts of Kerala that had not been part of the territory of Travancore and Cochin.

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<sup>1</sup>The government of Cochin had consulted W. R. Aykroyd, at that time nutrition adviser to the Government of India, who advised that "while the present low scale of ration might not have a serious effect on the health of adults it was likely to injure the health of growing children, who were the vulnerable part of the population". The state government therefore started a scheme to provide free mid-day meals to children attending primary schools. See Rama Varma (Appan), *Tampuran* (Cochin, Government Press, 1944).

An important development that seems to have coincided with the state government's decision in 1961 was the induction of a voluntary relief organization, the Cooperative for American Relief Everywhere, Inc. (CARE),<sup>2</sup> to support the programme. From the beginning CARE undertook to provide almost the entire commodity support for the school feeding programme. It is estimated that the state government has been receiving from CARE some 22,000 tons<sup>3</sup> of food every year for this particular programme. In addition to the fact that this food was distributed among the children of low-income groups, it also represented a net addition to the available supply of food within the state. Attempts are now being made, however, to develop cheap local substitutes for the commodities previously imported through CARE. A formula for a cheap, palatable substitute based largely on tapioca (in which, as noted above, the state is self-sufficient) and supplemented with ground-nut powder has already been worked out and tested, and a pilot school feeding programme using this formula was started in December 1972.

Under the school feeding programme, children attending lower primary classes are entitled to a cooked mid-day meal at school. All children in standards I to IV (and in standard V where that standard is still retained) are eligible. Further, children in pre-primary/nursery schools recognized by the state government are covered by the programme. The mid-day meal contains approximately 410 calories and 15 grams of protein and is supposed to meet one fourth of the normal daily requirement for a child in this age-group. The programme is, however, need-oriented in the sense that only children whose parents expressly wish them to take part are served the school meals. It is estimated that some 2.1 million children avail themselves of this programme (see table 18). On the basis of the actual quantities distributed annually,

TABLE 18. KERALA: COVERAGE OF THE SCHOOL FEEDING PROGRAMME AND QUANTITIES OF FOOD-GRAINS DISTRIBUTED, 1961/62 TO 1971/72

| Year             | Number of pupils (thousands) | Number of pupils covered (thousands) | Percentage of total pupils covered | Quantities of <sup>a</sup> food distributed (thousands of tons) |
|------------------|------------------------------|--------------------------------------|------------------------------------|---|
| 1961/62. . . . . | 2,109                        | ...                                  | ...                                | ...   |
| 1962/63. . . . . | 2,184                        | 1,567                                | 71.75                              | ...   |
| 1963/64. . . . . | 2,272                        | 1,900                                | 83.63                              | ...   |
| 1964/65. . . . . | 2,423                        | 1,734                                | 71.56                              | ...   |
| 1965/66. . . . . | 2,521                        | 1,800                                | 71.40                              | 15.42   |
| 1966/67. . . . . | 2,626                        | 1,800                                | 68.55                              | 14.63   |
| 1967/68. . . . . | 2,681                        | 1,800                                | 67.14                              | 21.24   |
| 1968/69. . . . . | 2,736                        | 1,921                                | 70.21                              | 23.09   |
| 1969/70. . . . . | 2,769                        | 2,010                                | 72.59                              | 19.92   |
| 1970/71. . . . . | 2,868                        | 2,084                                | 72.66                              | 23.40   |
| 1971/72. . . . . | ...                          | 2,140                                | ...                                | 23.21   |

SOURCE: Kerala, administration reports of the Department of Education.

<sup>a</sup>Including corn, soya milk, bulgar wheat and substitutes imported by CARE for this programme.

<sup>2</sup>CARE is a consortium of voluntary relief organizations in the United States of America.

<sup>3</sup>This is the average for the years 1969/70 to 1971/72, based on the figures given in the annual administration reports of the Education Department of the government of Kerala.

every child in the programme is fed at school on average 110 days a year.<sup>4</sup>

There can be little doubt, however, that the present school feeding programme which covers some three fourths of the school children between the ages of 6 and 10 is now well established in Kerala. If, as now appears quite likely, the substitute tapioca-based food is found to be generally acceptable, the state should, within a few years, be able to do without CARE's commodity assistance for the school feeding programme and meet the commodity requirements of the programme from its indigenous resources. But this will certainly mean a decline in the total availability of cereals within the state.

It can be seen that the school feeding programme has two redistributive aspects, one in favour of lower-income groups and the other in favour of those lower age-groups which are said to be particularly vulnerable to the effects of malnutrition. In fact, the two aspects are interconnected, in that the programme is so designed as to secure redistribution in favour of the lower-income groups only through the lower age-groups.

### **Food distribution through fair price shops**

Sale of food-grains through fair price shops in Kerala is probably most comprehensive in the sense that, unlike in any other state in the country, its effective coverage of households is virtually complete. Only those households holding ration cards which are classified as full producers of food-grains are excluded, on the assumption that they would retain enough stock of paddy or rice from each harvest to meet their own requirements. Of the 3.5 million with ration cards in the state only 3 per cent were regarded as full producers in 1971/72. Nearly all the others now seem to be availing themselves of the fair price shops. This aspect of the question is dealt with more fully later in this chapter.

It can be seen from table 19 that the food-grains distributed publicly through the fair price shops form a substantial and increasing proportion of the quantity consumed each year. While in 1961/62 distribution through fair price shops accounted for some 13 per cent of the cereals consumed in the state, in 1971/72 it accounted for over 37 per cent. Though the average proportion for the 1960s was 36 per cent there were intervening years, 1965/66 to 1969/70, when the movement of food-grains into the state through trade channels was virtually stopped and the quantity distributed through fair price shops was a little over 50 per cent of the cereals consumed within the state.

The increased offtake in the state from fair price shops was possibly the result of a combination of factors, the principal one being the stringent restrictions imposed, as of October 1964, on the movement of food-grains from other states into Kerala through private trade channels and the resultant

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<sup>4</sup>Though primary schools are supposed to work 200 days a year, mid-day meals are not served in the opening weeks when admissions are taking place; nor are they served on examination days. Moreover, there is said to be large-scale absenteeism. When all these factors are taken into account, it is not surprising that mid-day meals are served on only a little over half the working days.

TABLE 19. KERALA: AVAILABILITY OF CEREALS AND CEREAL SUBSTITUTES, 1961/62 TO 1971/72  
(Thousands of tons, except as otherwise indicated)

| Year<br>(1)      | Net production of rice, excluding procurement<br>(2) | Offtake of rice and wheat from ration shops<br>(3) | Imports of rice on private trade account<br>(4) | Net avail. ability of cereals<br>(2) + (3) + (4)<br>(5) | Daily per capita avail. ability of cereals (grams)<br>(6) | Net production <sup>b</sup> of tapioca<br>(7) | Rice equivalent of tapioca<br>(8) | Daily per capita avail. ability of tapioca (grams)<br>(9) |
|------------------|--|--|---|---|---|---|-----------------------------------|---|
| 1961/62. . . . . | 879  | 249  | 776   | 1,904   | 306   | 2,019   | 918                               | 166   |
| 1962/63. . . . . | 956  | 207  | 769   | 1,932   | 303   | 2,019   | 918                               | 152   |
| 1963/64. . . . . | 987  | 199  | 805   | 1,991   | 305   | 2,019   | 918                               | 140   |
| 1964/65. . . . . | 981  | 541  | 453 <sup>c</sup>                                | 1,975   | 295   | 2,210   | 1,005                             | 150   |
| 1965/66. . . . . | 821  | 1,187  | (51) <sup>d</sup>                               | 2,008 <sup>c</sup>                                      | ...   | 2,477   | 1,126                             | 164   |
| 1966/67. . . . . | 893  | 1,061  | (56)  | 1,954 <sup>c</sup>                                      | ...   | 2,728   | 1,240                             | 176   |
| 1967/68. . . . . | 907  | 1,007  | (77)  | 1,914 <sup>c</sup>                                      | ...   | 3,358   | 1,526                             | 211   |
| 1968/69. . . . . | 1,017  | 1,011  | (78)  | 2,028 <sup>c</sup>                                      | ...   | 3,265   | 1,484                             | 200   |
| 1969/70. . . . . | 979  | 956  | (94)  | 1,935 <sup>c</sup>                                      | ...   | 3,733   | 1,697                             | 223   |
| 1970/71. . . . . | 1,053  | 866  | (83)  | 2,319   | 298   | 3,694   | 1,680                             | 215   |
| 1971/72. . . . . | 1,113  | 926  | (70)  | 2,489   | 312   | 4,343   | 1,974                             | 247   |

SOURCES: Government of India, Ministry of Agriculture, *Bulletin of Food Statistics*, vols. 15 to 23 (New Delhi); Kerala, Bureau of Economics and Statistics, *Kerala Economic Review* for the years 1965 to 1973; Department of Civil Supplies, Administration Reports, 1960/61 to 1970/71.

<sup>a</sup> Net production equals gross production minus 12.5 per cent for seed, wastage etc.

<sup>b</sup> Net production here equals gross production minus 20 per cent for export and industrial uses of the tapioca.

<sup>c</sup> Only to October 1964.

<sup>d</sup> Figures in parentheses indicate the quantities procured during the year, but they are included in the figures for offtake. The differences between offtake and procurement, if any, represent drawings from the central pool.

<sup>e</sup> Not including imports of rice on private trade account because such imports were virtually stopped during these years.

increase in the open market prices within Kerala. As the gap between the open market prices and those charged by the fair price shops widened it was only natural that the pressure on the public distribution system should have increased. It can be seen from table 20 that, in 1963/64, the open market price of rice in Kerala was higher than the controlled price by only Rs 0.09 per kilogram; the gap in 1971/72 was Rs 0.44 per kilogram. In the intervening years, particularly from 1965/66 to 1968/69, the gap was much higher; the peak year was 1967/68 when the gap was Rs 1.32 per kilogram, while the corresponding gap in 1972/73 was Rs 0.80 per kilogram.

TABLE 20. KERALA: PRICE OF RICE AND TAPIOCA 1961/62 TO 1971/72  
(Rupees per kilogram)

| Year    | Open market price of rice | Issue price of rice in ration depots | Open market price of tapioca |
|---------|---------------------------|--------------------------------------|------------------------------|
| 1961/62 | ...                       | 0.50                                 | 0.14                         |
| 1962/63 | ...                       | 0.58                                 | 0.15                         |
| 1963/64 | 0.67                      | 0.58                                 | 0.14                         |
| 1964/65 | 0.91                      | 0.68                                 | 0.17                         |
| 1965/66 | 1.34                      | 0.72                                 | 0.28                         |
| 1966/67 | 1.61                      | 0.76                                 | 0.25                         |
| 1967/68 | 2.08                      | 0.76                                 | 0.28                         |
| 1968/69 | 1.98                      | 1.03                                 | 0.32                         |
| 1969/70 | 1.66                      | 1.04                                 | 0.27                         |
| 1970/71 | 1.55                      | 1.08                                 | 0.30                         |
| 1971/72 | 1.52                      | 1.08                                 | 0.31                         |

SOURCE: Kerala, Planning Board, *Statistics for Planning Prices*, 1972.

Although, as stated above, the quantity distributed through fair price shops increased substantially during the 1960s, it still did not meet fully the average *per capita* cereal consumption in the state. As against the *per capita* cereal availability of 306 grams in 1961/62, the public distribution system provided only 39 grams; in 1971/72 it still accounted for only 119 grams *per capita* as against the daily *per capita* cereal availability of 312 grams.

While, as pointed out in chapter II, Kerala does not grow any cereals other than rice, it does grow substantial quantities of tapioca, which is now a staple food in the state and is grown particularly extensively in the small plots of land belonging to low-income households. If account were taken of the consumption of tapioca as the principal cereal substitute consumed in the state, the contribution of the fair price shops in meeting the consumption of cereals and cereal substitutes together would be still smaller. In 1971/72, of the *per capita* daily consumption of 559 grams of cereals and cereal substitutes—for this purpose the figure for the consumption of tapioca has been converted into rice equivalent on the basis of the caloric content of a kilogram of tapioca compared to that of a kilogram of rice—the distribution through fair price shops accounted for just under 21 per cent. This meant that the major part of the cereal and cereal substitute consumption in the state was met from other sources including purchases in the open market.

However, almost 44 per cent of the state's consumption of cereals and cereal substitutes (in terms of calories) was met in 1971/72 by tapioca (see table 21), which has been available in fairly adequate quantity for low-income groups from household plots, or through the market at reasonably low prices.

TABLE 21. KERALA: PATTERN OF SUPPLIES OF CEREALS AND CEREAL SUBSTITUTES 1971/72  
(Millions of tons, except as otherwise indicated)

|                                       | Cereals      | Tapioca      | Total        | Proportion of total supplies (percentage) |
|---------------------------------------|--------------|--------------|--------------|---|
| Self-consumption by growers . . . . . | 0.872        | 1.576        | 2.448        | 54.9                                      |
| Public distribution through           |              |              |              |   |
| fair price shops . . . . .            | 0.926        | —            | 0.926        | 20.7                                      |
| Open market . . . . .                 | 0.691        | 0.398        | 1.089        | 24.4                                      |
| <b>TOTAL SUPPLIES</b>                 | <b>2.489</b> | <b>1.974</b> | <b>4.463</b> | <b>100.0</b>                              |

Notes: 1. The open market in cereals in Kerala has two possible sources of supply, the marketed surplus out of domestic production within the state and imports on trade account. As a very rough estimate for 1971/72, the quantity passing through the open market was 690,960 tons. This comprised 310,690 tons estimated as marketed surplus at the rate of 23 per cent of the rice produced within the state (this percentage is based on the Survey on the Distribution of Agricultural Produce, 1959, by the state's Bureau of Economics and Statistics) less 70,000 tons procured by the government through a producer levy, plus 450,000 tons imported on trade account.

2. Tapioca figures have been converted into rice-equivalent in the ratio of 2.2 kilograms of tapioca to 1 of rice.

3. Total marketed surplus of tapioca is estimated at 36.13 per cent, of which 20 per cent is assumed to have been diverted to exports and industrial uses. Only the balance of 16.13 per cent is assumed to go to the open market within the state for sale for final consumption.

4. Quantities channelled through the school feeding programme are not included.

#### RATIONALE FOR INFORMAL RATIONING

It is only in the context explained above that the system of distribution of food through fair price shops prevailing in Kerala can be understood. A distinction is drawn sometimes between statutory and informal rationing mainly on the basis of whether the open market can or cannot operate in rationed areas. In the areas under statutory rationing the open market is legally prohibited from functioning. But this is not the case in areas under informal rationing. Of course, under statutory rationing, there is also the obligation on the part of the government to supply specified quantities to consumers. But in practice the latter condition implies that the specified quantities are adequate to meet the average requirements of the consumers. Where, however, the public distribution system is unable to meet the average consumption requirements, the choice has to be in favour of informal rationing. This is precisely the situation that now obtains in Kerala in the form of sales through fair price shops of equal but small (small in relation not only to a requirement based on certain nutritional norms but even to average consumption) quantities of cereals to virtually all households in the state. It is in a situation like this, when public distribution does not or cannot meet the reasonable requirements of the population as a whole,

that a system of dual pricing comes into operation. Under such a system two prices prevail, one the controlled price at which the fair price shops sell limited quantities of food, the other the open market price which is usually much higher than the controlled price (and at times even higher than the price that would have prevailed in the absence of the dual market).

### Availability of food for low-income groups

Given the over-all picture of the availability of cereals and cereal substitutes in the state, including the quantities canalized through fair price shops, it is worth while assessing the role of the public distribution system in helping low-income households meet their requirements without having to pay the very much higher prices in the open market. In this connexion, it is relevant to recall, first, that during the period 1960/61 to 1971/72 the open market price of rice rose by 153 per cent—from Rs 0.60 per kilogram to Rs 1.52. During this period, however, the controlled price also rose in the same proportion—from Rs 0.42 per kilogram to Rs 1.08. However, the absolute gap, in terms of rupees per kilogram, between the open market price and the controlled price widened by a factor of 2. Secondly, it is necessary to have an idea of the pattern of consumption of the low-income groups. In 1961/62 the bottom 30 per cent of the state's population, in terms of scale of expenditure, are estimated to have consumed only 200 grams of cereals and 148 grams of cereal substitute (i.e., tapioca converted into rice equivalent).

Now, if all those eligible for ration cards in 1961/62 availed themselves of the cereals available through the public distribution system, the *per capita* daily availability therefrom would work out to 44 grams per person as against the formal ration of 160 grams. If, on the other hand, it is assumed that all those who availed themselves of the fair price shops drew the full ration of 160 grams, then only 30 per cent of the population could have bought rice at the controlled price in 1961/62.<sup>5</sup> It is possible that a large number of people preferred to buy cereals in the open market even though that price was higher than the controlled price by 43 per cent, the absolute gap then being Rs 0.18 per kilogram of rice. At the same time, since the controlled price was lower than the open market price by 30 per cent, it would be reasonable to assume that those who made use of the fair price shops belonged to the lower-income groups. In the circumstances, it is likely that as much as 133 grams of the 200 grams (66 per cent) of cereals consumed per person in the bottom three deciles of the population would have been met through the public distribution system.

If the pattern of consumption among the different expenditure groups was the same in 1971/72 as in 1961/62 (in the sense that the quantities of cereals and cereal substitutes available in 1971/72 were distributed among the various expenditure groups in the same ratios as obtained in 1961/62), the bottom 30 per cent of the population would have consumed 208 grams of cereals and 253 grams of tapioca (in terms of rice equivalent) daily per

<sup>5</sup> Actually, if a person holding a ration card claimed the full ration of 160 grams a day per adult, the *per capita* daily availability of an average family would work out to 133 grams. On this basis, the offtake in 1961/62 could have satisfied the claims of about 30 per cent of the state's population.



person. Taking the quantity distributed through the public distribution system in 1971/72 and assuming that all those eligible to hold ration cards availed themselves of this facility, the daily *per capita* availability through the fair price shops would have been 128 grams. On the basis of the figures of offtake from the fair price shops, it is clear that almost 94 per cent of the households in the state would have drawn on the fair price shops in 1971/72.

It is interesting to note that during the course of the 1960s, households that had earlier relied on the open market changed to the public distribution system in spite of the relative gap between the open market price and the controlled price of rice in 1971/72 being no wider than in 1961/62. The inducement to make the change to the rationing system seems to have been that at that juncture they would have to pay only about half the rise in price that was borne by those who had been using the fair price shops all along.

Thus, the bottom 30 per cent of the state's population still got about two thirds of its average cereal consumption at controlled prices in 1971/72, but these prices were 155 per cent higher than in 1961/62. Thus, in the course of the decade, the position of the bottom 30 per cent seems hardly to have improved in this respect; however, to the extent that the assumption made earlier about their only resorting to fair price shops did not hold, and that as a consequence the *per capita* availability to this group through fair price shops in 1961/62 was less than 133 grams, their position in 1971/72 would certainly have improved.

Since only about two thirds of the quantity of cereals they consumed came from the public distribution system, does it follow that for the balance they were driven to the open market? This does not seem necessarily to follow, partly because a good proportion of them should have drawn some of their wages in kind<sup>6</sup> (assuming that none owned or operated any paddy land), partly because the mid-day meal of children between 6 and 10 years is supplied at the primary schools, and partly because of the strong likelihood of a shift among this section of the population to the consumption of tapioca.<sup>7</sup>

It could be argued that this shift to tapioca might well have been on a much larger scale than was necessary just to make up for the deficit arising from the gap between the cereal consumption requirement, calculated on the basis of the 1961/62 pattern of consumption, and the ration quota. The pressure of general price rises could well have forced some, if not complete substitution by this bottom expenditure group of even the cereals—particu-

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<sup>6</sup>According to the National Sample Survey Inquiry into the Disposal of Cereals by Producer Households in Rural Areas, conducted in 1959/60, this proportion was 10 per cent for the country as a whole as against 30 per cent for Kerala. No such enquiry has been undertaken for any recent year but it is likely that this proportion has declined in recent years.

<sup>7</sup>Even though the price of tapioca rose from Rs 0.14 per kilogram in 1961 to Rs 0.31 in 1971, the ratio of exchange between rice and tapioca was 1 to 4.3 in 1961/62 and 1 to 4.9 in 1971/72 in terms of weight and 1 to 2.2, 1 to 2.5, respectively, in terms of caloric content. (This situation was the result of a phenomenal increase in output of tapioca in the state during this period.) Therefore, if the choice was between buying rice in the open market and buying tapioca, the lower price of tapioca in 1971/72 should have encouraged a shift from rice to tapioca with respect to that part of the consumption requirement which this bottom-expenditure group could not meet out of rations.

larly rice purchased from fair price shops at controlled prices—by tapioca. This assumes, of course, that adequate opportunity exists for persons in this expenditure group to effect such an exchange. In this context, however, it should not be overlooked that: (a) tapioca being considered an “inferior food” in relation to rice, and possibly even wheat, the bottom income groups might wish to consume as large a proportion as possible of the cereals obtained by them at controlled prices; and (b) the variety of tapioca grown at present being extremely deficient in protein, the more a person’s diet comprises tapioca the greater will be the need to supplement it with protein-rich food.<sup>8</sup>

### **Dependence on outside supplies**

A reference was made in chapter II to the dependence of the state on outside supplies to meet its cereal requirements. That dependence is reflected sharply in cereals distributed through fair price shops. It can be seen from table 19 that in 1961/62 the entire quantity of 249,000 tons sold through fair price shops came from the central pool; in 1971/72, the proportion reached 92.3 per cent of the 926,000 tons distributed; only some 70,000 tons were procured from within the state under a graded levy system. At the same time, it is worth noting that not only has the quantity from the central pool varied over a significantly wide range (between 1,136,000 tons in 1965/66 and 783,000 tons in 1970/71) but so also has the quantity procured from within the state (between 51,000 tons in 1965/66 and 94,000 tons in 1969/70). Thus, if in 1971/72 the quantity received from the central pool was as high as 1,136,000 tons and the internal procurement was 94,000 tons, the quantity distributed through the fair price shops could have been 1,230,000 tons, i.e., larger by almost 33 per cent than the quantity actually distributed in that year. While releases for the state from the central pool will depend, among other things, on the level of stocks held by the central government, it will be quite relevant to ask if the quantity procured from within the state could not be increased even beyond the maximum quantity of 94,000 tons procured in one year so far; for, after all, even this quantity would form less than 10 per cent of the state’s domestic output of rice and less than one third the estimated marketed surplus. It is true that a larger procurement effort cannot increase the over-all availability of cereals within the state but it can certainly bring about greater redistribution.

### **Kerala’s own procurement effort**

Kerala is one of the few states in the country which has consistently attempted since 1964/65 to procure rice through a system of progressively graded producer levy. The main features of the producer levy currently in force in the state are:

(a) The taluks (a district is divided into between four to seven taluks) are classified under three main groups, A, B, and C, for each of the three

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<sup>8</sup>Experiments are being conducted to develop locally suitable strains from Colombian protein-rich tapioca; if and when these experiments show positive results, the protein aspects of tapioca consumption will cease to be a problem.

paddy crops grown in the state; this classification is based on the mean yield of the crop for the five years immediately preceding the crop to which it relates; and

(b) The rates of levy vary with both the grouping and the size of the paddy holding; these rates of levy, when related to mean yield, work out to between 30 per cent and 80 per cent, the proportion increasing with the size of the holding.

(See table 22 for both the classification of taluks into groups according to mean yield and the rates applicable to holdings of different sizes in each group.)

TABLE 22. KERALA: LATEST RATES OF PRODUCER LEVY

| Area of paddy holding         | Quantity to be sold to the procuring authority                               |  |  |
|-------------------------------|--|--|--|
|                               | In group "A" taluks  | In group "B" taluks  | In group "C" taluks  |
| (1) 0-2 acres . . . . .       | —  | —  | —  |
| (2) 2-5 acres . . . . .       | 3 quintals per acre for every acre in excess of 2                            | 2.5 quintals per acre for every acre in excess of 2                          | 2 quintals for acre for every acre in excess of 2                              |
| (3) 5-10 acres. . . . .       | As for (2) for the first 5 acres; 7 quintals for every acre in excess of 5   | As for (2) for the first 5 acres; 5 quintals for every acre in excess of 5   | As for (2) for the first 5 acres; 3.5 quintals for every acre in excess of 5   |
| (4) 10 or more acres. . . . . | As for (3) for the first 10 acres; 9 quintals for every acre in excess of 10 | As for (3) for the first 10 acres; 7 quintals for every acre in excess of 10 | As for (3) for the first 10 acres; 5.5 quintals for every acre in excess of 10 |

SOURCE: Kerala, *Statistical Handbook of Procurement*, 1973.

Notes: 1. The same rates apply for each of the three paddy crops grown in a year.

2. The taluks are classified on the following basis taking into account the mean yield of the crops for the five years immediately preceding the crop to which the levy applies:

- Group A: Taluks with a mean average yield of more than 2,500 kilograms per hectare;
- Group B: Taluks with a mean average yield of more than 2,000 kilograms per hectare, and up to and including 2,500 kilograms per hectare;
- Group C: Taluks with a mean average yield up to and including 2,000 kilograms per hectare.

Evidently, the rates of producer levy in Kerala are high. Still, the fact is that the procurement made on the basis of a graded levy with such high rates yields less than 10 per cent of the paddy grown within the state (the quantity actually procured in 1971/72 amounted to only 5.3 per cent of the output in that year). This is a matter which calls for some investigation. According to the 1966/67 Land Reform Survey, the proportion of wet land (which is taken as land under paddy cultivation) under operational holdings of 2 acres and above was about 37 per cent. The impression gathered is that, broadly, some 20 per cent of the paddy land in the state falls into group A, 30 per cent into group B and the balance of 50 per cent into group C. Assuming that the holdings of 2 acres and above accounted for the same proportion of the state's land under paddy in 1971/72 as in 1966/67, the quantity of rice collected from these holdings in 1971/72 should have amounted to some 150,000 tons. The actual collection in that year, however, amounted to only 70,000 tons.

Evidently, the assumption made above that the distribution of land was the same in 1971/72 as in 1966/67 does not hold good: the land was held for operational purposes—it would be more accurate to say, reported as such for levy purposes—in much smaller parcels in 1971/72 than in 1966/67.<sup>9</sup> Thus, while according to the 1966/67 Land Reform Survey 37 per cent of the paddy land was in operational holdings of 2 acres and above, it appears from the levy records that only 27 per cent was reported as in operational holdings of this size in 1972/73. Much more significant, while in 1966/67 holdings of 10 acres and above accounted for over 9 per cent of paddy in the state they accounted for only 2 per cent in 1972/73.<sup>10</sup> What the records show is evidence, however, not necessarily of redistribution of land in favour of poorer households but of the parcelling of land in the names of the various household members, including possibly minor children<sup>11</sup> thereby reducing considerably the producer levy. The danger seems to be that the subdivision of holdings of this type has not yet reached an end and there might well be further parcelling of holdings, so that procurement within the state may decline still further. As a consequence, the prospect seems to be for the state to continue to be dependent very largely on releases from the central pool for the distribution of cereals through fair price shops. That course, however, will naturally limit the state's ability to raise on its own the quantum to be so distributed.

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<sup>9</sup>When the levy records are compared with the data collected by the state's Bureau of Economics and Statistics on the basis of crop-cutting experiments in the area under paddy cultivation, considerable under-reporting of the paddy land itself is revealed. (For 1972/73, under-reporting appears to be of the order of 20 per cent.) As noted in chapter V, the survey of land holdings conducted in the state as part of the 1970/71 World Census of Agriculture suffered from considerable under-reporting. One of the major reasons identified in the Census report for such under-reporting is that "the liability on account of procurement of food-grains by the state through a progressively graded producers' levy has created a tendency to under-report the area under paddy".

<sup>10</sup>The proportions have been worked out with reference to the Bureau's figure of the total land under paddy in that year.

<sup>11</sup>It is interesting to note that the state has adopted "person" and not "family" as the basis for determining the size of the holding for the purposes of the levy, particularly in view of the fact that, with respect to its land reform measures, including the imposition of a ceiling on the size of a holding, it has consistently opted for "family" as the basis.



## **Chapter V**

### **LAND REFORMS AND THEIR EFFECT ON DISTRIBUTION OF INCOME FROM LAND**

Chapter IV was concerned only with measures adopted in Kerala for ensuring that a certain minimum quantum of food (particularly food-grains) was available to the entire population at controlled prices and that children going to primary school received some supplementary nutrition. Measures of this kind are obviously important for lessening the impact of inequalities in income on the food intake of the poorer sections of the population, particularly under conditions of scarcity. However, the beneficial effects of such measures could have been neutralized, in whole or in part, if there were other forces at work tending to accentuate the inequalities in income and lower levels of consumption among the poor. If such forces were in the opposite direction (reducing inequalities in income and consumption), measures for providing food through public distribution could have had a strong reinforcing effect and helped perceptibly to improve standards of consumption among the poorer sections of the population. It is therefore necessary to identify the other factors that could have changed the distribution of income and consumption, the directions in which such factors are likely to have worked, and to consider what difference they could have made.

The present chapter is devoted to an analysis of land holdings and the likely effect of land reform on the distribution of income accruing from land. Since land is the most important asset held in agrarian economies, any changes in the distribution of land holdings, or in rental and wage incomes accruing from such holdings, must have significant effects on the distribution of income and consumption. An examination will be made of the inferences that can be drawn from the available information on land holdings in Kerala, the prevailing system of land tenures, and the changes made by land reform. Such an analysis may also have wider interest because Kerala happens to be the only state in India where political pressure based on mass organization and support has been a major factor forcing the pace of land reform and where such reform has consequently received sustained attention.

#### **Earlier evolution of land tenures and their effects on the structure of agrarian society**

A major difficulty in analysing the changes is that, before India attained independence, the territory now constituting Kerala belonged to three different political entities. Travancore, in the south, was a semi-autonomous native state ruled by a Maharajah, as was Cochin immediately contiguous to it in the north, but the districts of Malabar, further north, were part of the Madras province of British India. Land tenure systems had evolved differ-

ently in these three areas over the preceding century and a half and consequently there were important differences between them when the areas were merged to form the state of Kerala. Land legislation passed since their merger in 1956 has covered the entire territory of the state, but it has had to take into account some of the differences arising from earlier evolution of land tenures in these areas, and so its impact has varied from area to area.

A brief and highly simplified account will be given of how these differences developed earlier, and what effect they had on the agrarian structure as it emerged over the first half of the twentieth century. Such an approach is essential for understanding the changes brought about through land reform since then.

Traditionally, most of the land throughout the present territory of Kerala was in the hands of a numerically small class of landlords called *janmies*. There was no centralized monarchical administration as in other parts of India, and the rulers were mostly small chieftains interested in the preservation of feudal relationships in land. However, in contrast to the rights enjoyed by feudal lords in Europe, the *janmies* were customarily not regarded as possessing rights of absolute ownership over land (in the sense of the Roman *dominium*), but only superior ownership rights in a relative sense.<sup>1</sup> This meant in practice that those who secured land directly from the *janmies* (on what was called *kanapattom* tenure) were in effect tenants with rights of permanent occupancy as long as they paid the customary dues to the *janmies*.

The main regional differences which developed within Kerala from the nineteenth century onwards centred around the treatment of *janmies*, the interpretations given to their rights, and the measures taken to protect the interests of those below them in the hierarchy of land holders.<sup>2</sup> In Travancore, which had grown in the course of the eighteenth century from a small principality to a much larger political unit through a process of conquest of other chieftaincies, the traditional interpretation of the rights of *janmies* was upheld to the advantage of the tenants who held land from them.<sup>3</sup> Strength-

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<sup>1</sup>For an account of the differences between feudalism as it developed in Kerala from the eleventh century and mediaeval European feudalism, and some possible reasons for these differences, see E. M. S. Namboodiripad, *The National Question in Kerala* (People's Publishing House, 1952), chaps. I and II.

<sup>2</sup>For a detailed account of the differences and the factors responsible for them, see T. C. Varghese, *Agrarian Change and Economic Consequences: Land Tenures in Kerala, 1850 to 1960* (Allied Publishers, 1970).

<sup>3</sup>Evidence of the rulers of Travancore restraining the *janmies* from ousting tenants can be found in a royal edict issued in 1829. The edict says:

"These Tenants spend their labour and capital on such properties; reclaim such portions as are waste, marshy or otherwise defective; in gardens build houses, dig wells and plant such productive trees as coconut, jack, etc. . . . They raise their rents to the Jenmis at proper times. With a view to secure to Jenmi and Tenant their respective rights and to strengthen their relations, the Tenants do according to the local usages, pay to the Jenmis proper rent, and also make certain payments on the occasion of ceremonies in their families. The Tenants also get their documents renewed by the Jenmis at the end of 12 years, and also when a change of parties by death, etc. occurs, and they further pay on such renewal, certain fees. The Jenmis are in the habit of receiving those dues and of allowing the Tenants to go undisturbed . . . . Such is the custom established and this custom is ancient . . . . Latterly, however it appears that the Jenmis are suing the Tenants

ening of monarchical rule in the state necessitated curbing the power of these *janmies*. Further, in the process of expansion, Travancore had annexed a large part of the land belonging to rival chieftains and their allies; as a result, by the middle of the nineteenth century, state-owned land accounted for more than three fourths of all the cultivated land in its territory. By merely conferring full ownership rights on the tenants of all such state-owned land it became possible therefore to create a broad-based class of peasant proprietors in Travancore. This was done by royal proclamation in 1865.

A similar proclamation was issued in Cochin in 1914, nearly half a century later. However, since state-owned land in Cochin did not form such a large part of the total cultivated area as in Travancore, the impact of the proclamation was less pronounced.

In contrast, the British administration in Malabar was anxious from the beginning to secure political support from the *janmies* who, though small in number, had a commanding position within the prevailing social structure. Given also the tendency of the judiciary in this region to interpret property rights according to English law, *janmies* were able to secure rights of absolute ownership in land,<sup>4</sup> and those below them were reduced to the

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for the recovery of lands which have been improved by their labour and capital and on which the Tenants have been punctually paying their dues to the Jenmis; and that the Courts decree the restoration of lands on repayment by the Jenmis of the amount of Tenant's lien-lands .... His Highness ... directs that ... the Courts maintain the established usage in the country ....

See *The Report of the Jenmi Kudiyan Committee* (Trivandrum, Government Press, 1916), appendix I. This Committee cites also the following observation of Maharajah Rama Varma Ayilyam Tirlunal (1860-1880) on the role of the judiciary in the implementation of land reform legislation prior to 1865:

"The glorious uncertainties of the law are proverbial and have never been more prominently illustrated than in cases appertaining to Jenmie and tenant rights. Confusion was added to confusion and contradiction to contradiction till the whole 'judge-made law' became a tangled mess of chaos. Ignorance, carelessness and a deficiency of the sense of responsibility on the part of the judges might in themselves have produced this result. But to these was added a far more powerful motive—self-interest. I do not mean that self-interest which is the result of actual corruption, but the special self-interest arising from the fact of these judicial functionaries being either large Jenmie landlords or large tenants. For instance, Parameswaran Namburi, who was Chief Justice for ten years, was himself a Jenmi and had largely purchased Jenmon rights from other Jenmis. No single man has perhaps contributed a larger share than this gentleman to make confusion more confused, and it was chiefly on account of some of his decisions that the Jenmis' propensity to oust the tenant attained its climax." *Ibid.*, pp. 114-115.

Nearly a century later, it is interesting to observe, E. M. S. Namboodiripad, Chief Minister of Kerala state, was held guilty of contempt of court in 1970 for saying that "Judges are guided and dominated by class hatred, class interests and class prejudices and where the evidence is balanced between a well dressed pot-bellied rich man and a poor ill-dressed and illiterate man the Judge instinctively favours the former". The Supreme Court of India took the view that the statement was based on a wrong interpretation of the teachings of Marx, Engels and Lenin; that though "the courts, while upholding the laws and enforcing them, do give support to the state" they "do not do so out of impure motives" and that the statements would have "clearly the effect of lowering the prestige of the judges and courts in the eyes of the people". See *The Supreme Court Weekly Reporter*, vol. XVI, 1970, pp. 336-357. For Namboodiripad's reply to the observation that his interpretation of Marx and Engels was erroneous, see *The Kerala Law Reporter*, vol. XIX, 1971, pp. 18-22.

<sup>4</sup>The political attitude of the British administrators of Madras province appears to have been due in large part to fear of the Muslims of the area (the Moplahs) who held large areas of



position of either mortgagees or tenants-at-will. Tenancy reform was taken up seriously in Malabar only in the third decade of the twentieth century.<sup>5</sup>

Conferment of ownership rights on tenants of state-owned land in Travancore (and later in Cochin) did not of course arrest the growth of tenancy. Not only did tenancy continue on land owned by *janmies* but there was considerable leasing and subleasing even of some of the land over which ownership rights were secured from the state.<sup>6</sup>

Diffusion of ownership rights in Travancore did however help to encourage sales and purchases of land on an extensive scale and thus to create a wider base of cultivators with land of their own, and thus reduce the proportion of tenants among the agricultural population of the state. In Malabar, on the other hand, tenancy continued unchecked; though legislative action was taken in 1929 to confer fixity of tenure on those who held land directly from *janmies* (and to a more limited extent on other tenants), nothing was done to reduce the scale of tenancy itself.<sup>7</sup> Cochin occupied an intermediate position in this regard.

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land prior to the British conquest. This is reflected in an observation of Sir Thomas Munro in 1822 describing as "a serious evil" the continuing transfer of land "from the possession of Nairs to that of Moplahs, the worst race in Malabar and the most hostile to our domination". Varghese, *op. cit.*, pp. 34-35. Subsequently, in 1844, a commission appointed by the Madras government recognized "the political necessity for interference with the *janmies'* rights" on account of "agrarian discontent fanned by fanaticism" and "the existence of a system of tyrannies practised by *janmies*"; it also noted that the application of English law by the courts had turned upside down the customary land laws. However, the then Chief Justice of the Madras High Court upheld the correctness of the judicial decisions, found flaws only in the award of compensation to ousted tenants, and ruled that no measure to circumscribe the unlimited rights of *janmies* should have legal sanction. The government of Madras itself was not prepared to change its view of the *janmie* as the possessor of the *plenum dominium* of the soil. Varghese, *op. cit.*, pp. 60-62.

<sup>5</sup>This followed a violent rebellion in 1921. Though it had a communal complexion, and has been generally known as the Moplah Rebellion, it is acknowledged that it had its roots in chronic agrarian unrest resulting from the oppressive land tenure system. "The history of the 19th century in Malabar was primarily one of continuous and violent conflict between high-caste Hindu landlords who sought to augment their rental income, and their Moslem and Hindu tenants... who resisted encroachments on their tenures. By 1880, the eviction rate had climbed so high that roughly one tenant in five had been thrown off his holdings". Thomas W. Shea, Jr., "Barriers to economic development in traditional societies: Malabar, a case study", *The Journal of Economic History*, vol. XIX, No. 4 (December 1959).

<sup>6</sup>Studies which have examined the multitude of *tenures* under which land is held by individual households indicate that, though owner cultivators have been numerically dominant in Travancore, households which held land under several *tenures* formed a higher proportion there than in Malabar or Cochin. It has been inferred from this that "the diffusion of land ownership in Travancore, and the increase in land transfers which followed such diffusion, have been responsible for mortgaging and leasing out of land on a larger scale". Varghese, *op. cit.*, chap. 8, p. 160.

<sup>7</sup>Until the 1930s the development of a market in the titles to ownership of land was also limited due to the *janmies* belonging largely to castes in which these titles to ownership were vested in large joint families.

"The pattern of inheritance laws in Malabar tended to perpetuate certain features of the land tenure structure. ... The properties of Nayar and Nambudiri joint families, who held *janmam* rights to a large portion of the land in Malabar, were until 20 years ago, virtually all entailed. Since these families could not sell their *janmam* rights, granting of leases was the customary method of land alienation .... Until the mid-1930s, the impartibility of Nayar and Nambudiri family property discouraged the development of a market in *jenmom* titles .... When enabling legislation permitting partitioning of most

TABLE 23. COMPOSITION OF AGRICULTURAL POPULATION, BY RELATIONSHIP TO LAND, 1911 AND 1951

| Category                         | Travancore state |       | Cochin state |       | Malabar districts |       |
|----------------------------------|------------------|-------|--------------|-------|-------------------|-------|
|                                  | 1911             | 1951  | 1911         | 1951  | 1911              | 1951  |
| Cultivating landowners . . . .   | 75.3             | 53.3  | 15.7         | 19.0  | 7.7               | 12.7  |
| Tenants . . . . .                | 6.8              | 10.2  | 44.6         | 28.1  | 44.9              | 39.3  |
| Agricultural labourers . . . . . | 12.6             | 34.6  | 36.0         | 48.9  | 41.6              | 44.0  |
| Rent receivers . . . . .         | 5.3              | 1.9   | 3.7          | 4.0   | 5.5               | 4.0   |
|                                  | 100.0            | 100.0 | 100.0        | 100.0 | 100.0             | 100.0 |

The outcome will be evident from table 23, which is based on census data for 1911 and 1951 and shows the percentage shares of the different categories of the agricultural population.<sup>8</sup> It will be seen that, by 1911, more than three fourths of the agricultural population of Travancore were cultivating landowners, compared to less than one sixth in Cochin and less than one twelfth in Malabar. On the other hand, tenants formed only about one sixteenth of the total in Travancore, compared to well over two fifths in Malabar and Cochin. Despite the growth of population in the following four decades, tenants were still only about one tenth of the agricultural population in Travancore in 1951, compared to more than one fourth in Cochin and nearly two fifths in Malabar.<sup>9</sup>

large estates was finally passed in 1933, the legal complexity of partitioning widely scattered, imperfectly defined property holdings among as many as 200 claimants per family deferred effective partition of individual estates for more than a decade."

Thomas W. Shea, Jr., *op. cit.*

<sup>8</sup>For the data from which this table has been constructed, see Varghese, *op. cit.*, pp. 125-129. In the 1911 census there was a category called "growers of special products and market gardening" which accounted for 3.2 per cent of the total agricultural population in Travancore, 5.4 per cent in Cochin, and 2.7 per cent in Malabar. More than nine tenths of those classified in this category were growers of fruit, flowers, vegetables, betel vines, areca-nuts etc. and the remainder were engaged in plantations. They have all been shown in table 23 as part of cultivating landowners, though some of them may have been tenants.

<sup>9</sup>The population of Travancore increased by about 120 per cent over the period 1911-1951, compared to an increase of about 100 per cent in Cochin and only about 60 per cent in Malabar. This is reflected in the percentage of agricultural labourers dependent on wage employment increasing at a faster rate in Travancore during this period than in Cochin and Malabar. The rapid growth in the number of agricultural labourers in Travancore appears to have had the effect of making even cultivating landowners with small holdings rely on them for farming operations.

"The majority of the agricultural holdings in Travancore ... are so small that the cultivators can attend to the farming operations themselves without the help of hired labour. But the Travancore cultivator, though his holding may only be a few cents, is, as a rule, a gentleman farmer. He does not like to soil his hand by handling a plough. The Nayar, the Vellala, the Ilaya and the Syrian Christian who form the bulk of the farmers in this State generally want the Pulayan, the Parayan or the Kuravan to do all the manual work in the field for them and that is why we find here a larger number of agricultural labourers than the smallness of the size of the majority of the holdings warrants."

*Census of India, 1931, vol. XXVIII, Travancore, Part I, Report*, p. 245. How, precisely, the farming operations were done before 1911, when agricultural labourers formed less than one sixteenth of the total agricultural population of the state, is, however, a subject that needs to be investigated.

However, precisely because tenancy assumed larger proportions in Malabar and Cochin and led to serious agrarian unrest, it was there that far-reaching tenancy legislation was introduced first. The Malabar Tenancy Act of 1929 not only fixed fair rents<sup>10</sup> but sought to prevent eviction of even those who had only the status of tenants-at-will. In Cochin also similar measures were adopted after 1938. There was no such legislation in Travancore till the 1950s. Crop-sharers in the state were in fact throughout denied the status of tenants and, even after Travancore and Cochin were united in 1949, there was opposition to legislation seeking to prevent their eviction.<sup>11</sup>

How far enactment of legislation fixing fair rents and prohibiting eviction of tenants could have been effective by itself is open to question. A survey undertaken in Cochin in the late 1940s showed, for instance, that despite such legislation the usual rent on wet land growing paddy was about 60 per cent of the gross produce and that, in some areas, it was more than four fifths.<sup>12</sup> It is doubtful whether there could have been much fixity of tenure in practice when it was possible for landlords to secure such high rents.<sup>13</sup>

<sup>10</sup>The fair rents fixed were quite high. On wet land (i.e., land under paddy) the fair rent stipulated was the difference between two thirds of the average annual gross produce of the three previous years and 2.5 times the seed required for an agricultural year; this is likely to have worked out to over one half of the gross produce. On dry land (i.e., land growing "garden crops" such as coconuts) the fair rents fixed were as high as two fifths of the produce in the case of coconut and one third of the produce in the case of areca-nut and pepper. These rates were brought down later in 1951 (e.g., to about one third of the gross produce in the case of wet land).

<sup>11</sup>One of the committees of the Panel on Land Reforms, appointed by the Planning Commission of India in 1955, reported that in the Travancore-Cochin state the crop-sharers (*waramdars*) were still not considered as tenants and were "liable to ejectment at the will of the landlord"; that when the question of conferment of rights on them was discussed with the ministers of the state "there was a strong opinion among them that *waramdars* should not be considered as tenants"; that "in this State there is no such class as owner-cultivators as obtains in most parts of the country" and "a very large number of people who have rights in the land either cultivate with the help of hired labourers or crop-sharers"; and that in the case of crop-sharers "heavy rents which in some cases exceed half the gross produce yet continue to be paid". See *Report of the Committees of the Panel on Land Reforms* (Government of India, Planning Commission, 1958), pp. 30 and 36. It is not unlikely that, since crop-sharers were denied the status of tenants, some of those who were reported in the censuses as agricultural labourers were in fact tenants; to the extent that this happened, the scale of tenancy in Travancore in 1951 would have been larger than is reflected in table 23.

<sup>12</sup>See *Report of the Cochin Agrarian Problem Enquiry Committee* (Cochin, Government Press, 1949).

<sup>13</sup>That the Malabar Tenancy Act was also not altogether effective in preventing eviction and the raising of rents has been brought out in a study conducted in a village in Malabar in 1955.

"The five largest jannies hold 47.5 per cent of all lands. . . . The jannmi is no longer the omnipotent landlord he was a generation ago. Successive land legislation has curtailed his power to evict and to raise rents. He may evict tenants for the purpose of taking to direct cultivation himself, and this device has been resorted to frequently in recent years by jannies desiring to augment their incomes by appropriating the full economic rent. As a large number of leases are oral . . . eviction, especially from wet lands, should normally be an easy task. Most jannies would be discouraged from evicting tenants from garden lands because of the fact that they would usually be obliged to pay heavy compensation for improvements made by the tenant during this period of tenure, such as newly-planted trees and buildings. In the case of paddy lands, however, no compensation need ordinarily be

## Land reforms since the formation of Kerala state in 1956

The outlook for more radical and effective land reform improved considerably after 1956 when, following the recommendations of the States Reorganisation Commission, the districts of Malabar, until then part of Madras, were merged with Travancore and Cochin (which had already been integrated in 1949) to form with some minor territorial adjustments, the single linguistically unified state of Kerala. Over the preceding two decades the condition of tenants and agricultural labourers had given rise to mass movements demanding radical agrarian change and similar movements had taken root in parts of Cochin and Travancore. The merger, by strengthening these movements and altering significantly the balance of political forces in the region as a whole, brought about a major change in the climate for land reform. The first general elections held after the formation of the new state brought the Communist Party of India to power with an absolute majority in the legislature, and from then on land reform became almost the centre-piece of the programme for social and economic progress in the state. Though none of the measures proposed or adopted for the purpose since then has gone beyond the proposals made for the entire country in successive five-year plans, the main difference in Kerala, compared to other states in India, has been in the political environment which has kept up sustained pressure on this issue.

The first legislative measure, taken early in 1957, was to stay the eviction of tenants by landlords. This step became essential as eviction assumed serious proportions in expectation of radical tenancy reform.<sup>14</sup> Apart from tenants and subtenants proper, a substantial proportion of the agricultural labour households in the state were in occupation of small plots of land given them for the erection of huts to live in. Though these households provided a source of cheap labour to landlords, sometimes as crop-sharers, otherwise as "attached" agricultural labourers, they did not have the legal status of tenants. Such "hutment dwellers" (or *kudikidappukars* as they were called) were brought within the purview of this legislation.

This stopgap measure was followed by a comprehensive set of proposals for land reform embodied in the Kerala Agrarian Relations Bill introduced towards the end of 1957. It sought to give fixity of tenure to all tenants—including in this category not only crop-sharers and "hutment dwellers" but "fugitive cultivators" as well. Even tenants evicted after the formation of Kerala state in 1956, who could otherwise have obtained fixity

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paid because the only 'improvements' ordinarily made on paddy lands are the annual routine tasks of bunding and levelling of the fields."

Thomas W. Shea, "Economic study of a Malabar village". *The Economic Weekly*, vol. VII, No. 34 (20 August 1955).

<sup>14</sup>"The tenancy laws have been enacted to confer rights to the tenants. It was only natural that the landlords should make an all-out effort to get back their lands from tenants free from encumbrances for fear of accrual of adverse rights which might be proposed in the tenancy law."

*Report of the Committees of the Panel on Land Reforms* (1958), p. 38.

of tenure under the Bill, were entitled to have their position restored. Fair rents were also laid down, at not more than one fourth and not less than one sixth of the gross produce in the case of wet land, and at correspondingly low rates for land growing other crops. Further, tenants were given the right to purchase ownership rights by paying an amount equal to a multiple (not more than 16 times) of the fair rents so fixed. There was also to be a ceiling on the total area of land that a primary family unit (consisting of husband, wife and minor children, in all not more than five members) could hold; the limit fixed for the purpose was 15 acres of double-crop wet land or its equivalent.<sup>15</sup> Land over and above that acreage was to be taken over and distributed among agricultural labourers and others, with compensation to be paid to the owner on a graduated scale.

There were however two important provisions which softened the impact of these proposals on landowners. One was designed to protect "small owners" of land, who were defined as those with less than 5 acres of double-crop wet land or its equivalent. The tenants of such landowners not only did not qualify for securing ownership rights but could under certain conditions be evicted if the owners chose to resume possession of the land for self-cultivation. This stipulation was intended to "reconcile the interests of the small owners and those of the poor tenants" and to direct "the attack specially against large absentee landlordism".<sup>16</sup> But it meant in effect that a large number of tenants could not get the benefit of the proposed reform.

The other provision was in regard to ceilings on the holdings of land. A major loop-hole was closed by adopting the total holding of a primary family unit as the basis for fixing ceilings in Kerala, and rejecting the alternative offered in the second five-year plan of taking individual holdings as the basis.<sup>17</sup> The stipulation that the entire holding of such a family unit was to be taken into account, whether held as owners or as tenants, was also designed to widen the coverage of the ceiling legislation. However, land held by plantations or cashew estates, and by religious and charitable institutions was exempted from the application of ceilings. This was an important concession in a region where a high proportion of the larger holdings was plantations and the area so held was likely to have been not less than 10 per cent of the total area under cultivation.

<sup>15</sup>The proposed equivalents were 22.5 acres of single-crop land, or 15 acres of "garden land" (i.e., land that could grow crops such as coconut, areca-nut and pepper), or 30 acres of dry land.

<sup>16</sup>C. Achutha Menon, *The Kerala Agrarian Relations Bill: An Interpretation* (1958), p. 29.

<sup>17</sup>"Transfers permitted under the law as well as clandestine, and exemptions from ceilings are, probably, the two most important factors that have rendered the ceiling laws ineffective. It was suggested in the Second Plan that suitable action should be taken to prevent *mala fide* transfers of land. It was, no doubt, realised that if individual holdings were taken as the basis for enforcement of ceilings, there would be greater scope for *mala fide* transfers since most of the transfers would be to members of the family. Yet it was left to the State Governments to decide whether they would have ceilings on individual or family basis."

See P. S. Appu, "Ceiling on agricultural holdings" (Government of India, Ministry of Agriculture, 1971) (mimeographed), chap. II.

Nevertheless, the proposals aroused considerable opposition from landowners, and, following a period of political turbulence, the communist government was removed from power in 1959 by a presidential decree from the Centre.<sup>18</sup> After fresh elections, a new government was formed by a coalition of other political parties.

The precarious balance of power in the state made it necessary however to press forward with land reform.<sup>19</sup> After dropping, or toning down, some of the provisions in the earlier enactment, the Kerala Agrarian Relations Act was accordingly passed by the legislature in 1960. Thus, elected representatives from local bodies were to be kept out of land tribunals, which were to have only one government official each, "hutment dwellers" were excluded from the category of tenants and could be evicted, the provision for restoration of tenants evicted after the formation of Kerala state in 1956 was deleted, and some further concessions were given to holders of plantations and others in regard to the ceiling provisions. But even this legislation yielded nothing as it was declared by the Kerala High Court in 1963 to be *ultra vires* of the Indian Constitution.

It was therefore only in 1964, seven years after the formation of Kerala state, that it became possible on the basis of another enactment (the Kerala Land Reforms Act) to start implementing land reforms. Meanwhile, apart from the further dilutions introduced in this legislation, such as by fixing fair rents at somewhat higher levels and by defining "small holders" more liberally,<sup>20</sup> a number of sales transactions, divisions of property, and transfers of lease rights had been effected for getting around the proposed

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<sup>18</sup>In the intervening period, two provisions of the proposed legislation received particular attention from critics. One was that the implementation of land reform was to be left to Land Tribunals, with strong representation for elected members of local bodies, and to a Land Board at the top which was to have similar political representation from the state legislature; the other was that no order of a Land Tribunal or of the Land Board could be called in question by any court of law. These provisions were characterized as an attempt to substitute administrative-cum-political processes wholly for what was previously within the purview of the judiciary. Though seemingly a matter of detail, the two provisions were however important for the effective implementation of the legislation; representation of local bodies on the Land Boards would have made it possible to settle disputed issues more satisfactorily and expeditiously in the spirit of the proposed reform than if they were left to be resolved by the courts through the normal processes.

<sup>19</sup>Though the Communist Party lost its majority in the state legislature in the 1959 elections the total number of votes secured by it was about a million more than in the 1957 elections.

<sup>20</sup>"... tenants holding land under 'small holders' do not have the right to purchase the ownership right unless the tenant agrees to the resumption by his landlord of half the area held by him; alternatively the tenant has to continue to hold the land by paying 75 per cent of the contract rent. A 'small holder' is defined as a landlord who does not have interest in land exceeding 8 standard acres (or 24 standard acres). Taking into account the relatively small size of ownership holding prevailing in the state such a liberal definition of a 'small holder' would only facilitate the continuance of the existing tenurial practices. With regard to those tenants who did not enjoy fixity of tenure in respect of holding immediately before 21st January 1961, the small holder can unilaterally resume half of the holding. One evil that will emerge out of resumption by 'small holders' will be the further fragmentation of holdings in the State."

Varghese, *op. cit.*, p. 147.

measures.<sup>21</sup> Continuing political instability in the state and re-imposition of presidential rule from the Centre soon after the passing of the Act resulted also in the non-implementation of one of its major provisions, which required vesting in the hands of the government all surplus land in excess of the stipulated ceiling. Much more was therefore lost than merely the time between these successive legislative measures.

By 1966/67 almost all the leased-in land had secured fixity of tenure.<sup>22</sup> The intervention of Land Tribunals had however been sought for fixation of fair rents in respect of only a negligible fraction of this land<sup>23</sup> and very few tenants had taken advantage of the provision for securing full ownership rights.<sup>24</sup> Not surprisingly regional differences within Kerala concerning the extent of tenancy persisted even a decade after the formation of the new state, as will be evident from table 24, which shows the percentage of leased-in land in the total area operated by households in 1966/67.

Tenancy was still dominant in the territory of the earlier Malabar districts of Madras province as well as of the Cochin state, though relatively unimportant in the territory of the earlier Travancore state except on wet

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<sup>21</sup>It has been estimated that, over the decade 1957-1966, ownership was transferred on about 0.22 million acres of land (two thirds by sale and the rest by partition and gift), about one quarter of which was land already leased out. During the same period, transfer of possession was effected on about 0.19 million acres of land, nearly 85 per cent of which was through transfer of lease rights; such transfer of lease rights was effected either through surrender of leased-in land to landlords or by transfer of these rights from one tenant to another through "the machinations of landlords". It is significant that about 44 per cent of the area over which ownership was transferred changed hands in the course of two years, 1960 and 1963; about 46 per cent of the area over which possession was changed was similarly transferred in the course of two years, 1958 and 1963. "When the Communist Party came into power in Kerala in 1957, big landlords rightly apprehended that their feudal interests on land would be at stake. This fear paved the way for large scale land transfers in the State even before the Agrarian Relations Act of 1960 was adumbrated. The passing of the Agrarian Relations Act in 1960 and the Kerala Land Reforms Act in 1963 also prompted some hectic sales and transfers around those years." See Kerala, Bureau of Economics and Statistics, "Land reforms survey, 1966-1967: report" (mimeographed, 1968), chap. X. This survey covered both rural and urban areas, and the households selected for detailed study numbered 3,475, adequate for arriving at estimates for the various districts. The report on this survey, though not published, is available in mimeographed form and is not only one of the best studies of its kind but remains the most dependable of all the sources of data available on land holdings in Kerala.

<sup>22</sup>Under the provisions of the Kerala Land Reforms Act, there was no need to obtain an order from either a court or a Land Tribunal for securing fixity of tenure except where the tenancy, being oral, was disputed by the lessor. By 1966/67, in the state as a whole, about 94 per cent of the leased-in land under all types of tenures had obtained fixity of tenure either through the sanction of the Land Tribunals or through mutual agreement between the parties concerned; tenancy was under dispute in the case of 3 per cent, the right of fixity of tenure was not being pressed in the case of 2 per cent, and only the balance of much less than 1 per cent represented land for which the claim of tenancy had been rejected. *Ibid.*, chap. XI.

<sup>23</sup>Only about 3 per cent of the households with leased-in land, accounting for a little over 4 per cent of the total area so leased-in, had applied to the Land Tribunals for fixation of fair rent. Of those who had not, about one half reported themselves to be satisfied with the contract and nearly one quarter pleaded ignorance of the law. *Ibid.*

<sup>24</sup>Though a few tenants had purchased leased-in land from the owners by mutual agreement without going by the provisions of the legislation in this regard, more than 99 per cent of them had not initiated any action. About a third of them were reported to be ignorant of the law, but nearly a quarter gave the "desire to maintain good relations with the landlord" as their reason and two fifths mentioned other reasons such as "indifference, aversion to litigation, financial capacity to meet the expenses connected with the purchase, voluntary choice to continue as a tenant in cases where the rent is very low, etc." *Ibid.*

TABLE 24. KERALA: INCIDENCE OF TENANCY 1966/67

| Districts of Kerala<br>falling broadly within<br>the territory of:                      | Leased-in land as percentage of<br>total area operated |          |       | Area leased-in by<br>holdings smaller<br>than 5 acres as<br>percentage of total<br>leased-in area |
|---|--|----------|-------|---|
|   | Wet land   | Dry land | Total |   |
| Travancore state<br>(Trivandrum, Quilon,<br>Alleppey and Kottayam) . . . . .            | 46.0   | 8.4      | 15.3  | 36.1  |
| Cochin state<br>(Ernakulam and Trichur) . . . . .                                       | 72.9   | 48.0     | 57.2  | 46.6  |
| Malabar districts of<br>British India<br>(Palghat, Kozhikode<br>and Cannanore). . . . . | 70.2   | 59.6     | 65.4  | 63.9  |
| Kerala (all districts) . . . . .  | 63.7   | 36.1     | 42.6  | 55.7  |

land, i.e., on land used for paddy cultivation.<sup>25</sup>

Tenancy was however done away with altogether in 1969 by an amendment of the 1964 Act, after another swing of the political pendulum which brought into power a coalition dominated by leftist parties. While the Act had earlier left to tenants responsibility for securing ownership rights, the new enactment vested in the government the ownership rights on all land held by tenants and deprived them of the option to continue their tenurial arrangements with the owners in any form. Thus, by the end of the 1960s, rental income from land was virtually abolished throughout Kerala.<sup>26</sup>

<sup>25</sup>It will also be observed from table 24 that small holdings of less than 5 acres in size accounted for only about a third of the total leased-in land in the Travancore region. Tenancy on wet land in this region has been in fact primarily a feature of capitalist farming: not only was three fourths of all leased-in wet land in the region concentrated in the district of Kottayam (known for cultivation of paddy on land reclaimed from backwaters) but more than two thirds of the leased-in wet land in this district was in holdings of more than 25 acres *ibid.*, part III, table 17.4. This feature of land holding in the Kuttanad area of the Kottayam district has also been noted in earlier surveys. "The average area of owned land in the hands of owner-cultivators is much less than in the case of either rent-receivers or tenants. A phenomenon . . . —namely, that of large owners leasing in more areas than they own and thereby moving into the category of tenant-cultivators—is strikingly seen in Kuttanad." Varghese, *op. cit.*, p. 169.

<sup>26</sup>The process of assignment of ownership right to tenants has, however, been slow.

"The main difficulty in the assignment of these rights to the cultivating tenants is that we do not have a record of tenancies . . . the experience has been that neither the tenants nor the landlords are in any great hurry to avail themselves of these provisions. One reason for the tenants not applying for assignment is that as it is they are practically the owners of the land and they may not find any immediate advantage in getting the landlords' and intermediaries' rights assigned to them formally . . . . In some areas, however, there are genuine fears prevailing among the cultivating tenants that in case they apply for assignment, that is likely to provoke their landlords to harass them in a number of ways. There are reports that persistent efforts have been made by the landlords to deprive the tenants of their rights in the land on the false plea that they are trespassers or otherwise persons not entitled to have the land. The usual method adopted is to make out a case that there is dispute in regard to possession . . . . Fears as indicated . . . are however not prevalent, generally speaking, in areas where peasant organizations are strong. In those areas, the tenants do not apply perhaps out of a hope perhaps artificially raised in these that the land reform law is likely to be still further amended, by which the compensation amount payable may be very drastically reduced still further, if not altogether given up."

Cf. Note on implementation of land reforms prepared for a conference of district collectors held in 1972.



The amending legislation of 1969 also lowered the ceilings on land holdings (to 10 "standard" acres, subject to a maximum of 15 and a minimum of 12 "ordinary" acres), removed some of the exemptions from ceilings (such as for cashew estates), and gave to "hutment dwellers" the right to purchase at a nominal price about one tenth of an acre of land per household. Nevertheless, even after the amendments, the imposition of ceilings has yielded very little surplus land—partly because households with holdings above 15 acres had on average three family units per household (which made it possible for them to retain much larger areas than the proposed ceilings), partly on account of the transfers of property and of lease rights referred to earlier, and partly because the amending Bill itself invalidated only such of these transfers of land above the stipulated ceilings as had taken place after June 1969.<sup>27</sup> The main benefit for the wholly landless out of all this legislation has therefore been confined to the small plots of land the "hutment dwellers" could secure.

### Effects of land reform on distribution of income from land

It remains to be considered what effect the land reforms that have taken place in Kerala since the formation of the state in 1956 are likely to have had on the distribution of income from land. The best way of making such an assessment, it would appear, is to use data collected through surveys of land holdings at different times since the mid-1950s to work out the coefficients of variation in the distribution of holdings, and see what kind of trends they reveal. If there is a decline over the period in the coefficients of variation in the case of both ownership and operational holdings it can safely be concluded that the distribution of income from land is less unequal than it was. If there is a decline only in the case of ownership holdings, and the coefficient of variation in the distribution of operational holdings has risen, it would support the view that the abolition of tenancy has perhaps enabled

<sup>27</sup> According to one estimate (made on the basis of the Land Reforms Survey of 1966/67), only a little over 0.1 million acres would in any case have been available as surplus out of the total operated area of over 4.5 million acres, given the size-distribution of holdings in 1966/67, the allowances made for families of large size, and the exemptions permitted (such as for plantations, cashew estates, and private forests) in the Kerala Land Reforms Act of 1964. Though the ceilings were lowered further by the amendment of 1969, the surplus actually identified so far has been only about 0.05 million acres. This is perhaps not surprising since the transfers of property (above the ceiling) between 1964 and 1969 were in effect not invalidated by the amending legislation. The original Act had stipulated that "with effect from such dates as many be notified by the Government in the Gazette, no person shall be entitled to own or hold or to possess under a mortgage lands in excess of the ceiling area"; and that "all voluntary transfers effected after the date of publication of the Kerala Land Reforms Bill, 1963, in the Gazette" [except certain specified types of transfer such as by way of partition] "by any family or any member thereof or by an adult unmarried person owning or holding land in excess of the ceiling area shall be deemed to be transfers calculated to defeat the provision of this Act and shall be invalid". No Gazette notification of the kind needed to make the ceilings effective was however issued between 1964 and 1969. The earlier stipulation was then substituted in the 1969 amendment by a provision that "notwithstanding anything contained in any law for the time being in force, all voluntary transfers effected by any person (other than a family or any member thereof or by any adult unmarried person) owning or holding land in excess of the ceiling area after the 1st July 1969" [except certain specified types of transfer, such as by way of partition] shall be deemed to be transfers calculated to defeat the provisions of the Act [italics added for emphasis]. See *The Kerala Land Reforms Act 1963 (Act 1 of 1964) (as of 1.6.1973)* (1973), pp. 106-107.

the cultivators of the larger holdings to acquire more land from big landlords and that, therefore, nothing can be said about the effect on the distribution of income from land without more information about the incomes derived by way of rent and profits by those two categories of land holders.

A number of surveys of land holdings have in fact been undertaken over the past two decades and the data are available. Closer scrutiny of these surveys shows however that the coverage and the method adopted differ in important respects. This discrepancy vitiates the possibility of drawing meaningful conclusions from the surveys about trends in the distribution of land holdings and in income derived from land.

Thus, even in the case of the National Sample Surveys (conducted first in 1954/55 in respect of land holdings in the then integrated Travancore-Cochin state, and later in 1960/61 and 1961/62 in the Kerala state as a whole), the size of the samples taken vary a great deal. In the 1954/55 survey relating to Travancore-Cochin the number of households covered by the sample was 2,278. In the much larger Kerala state the number of households covered in the "central" sample for the 1960/61 survey was only 834. The "state" sample for the same 1960/61 survey covered 1,964 households, but data collected with this larger sample related only to operational holdings (and not to ownership holdings as well, as in the case of the other two National Sample Surveys). The number of households covered by the sample for the 1961/62 survey for Kerala as a whole was nearly as large as for the 1954/55 survey for Travancore-Cochin and, to that extent, they are more comparable; but, on account of the difference in geographical coverage, no inferences can be drawn about changes in the distribution of land holdings between these two years. Since then there has been no National Sample Survey of land holdings in the state comparable to the 1961/62 survey. Further, all the National Sample Surveys of land holdings in Kerala (except the 1954/55 survey relating to Travancore-Cochin state) have covered only households in the rural sector.

Data on land holdings were collected along with the 1961 Population Census through a Household Schedule; households engaged in cultivation alone, as well as those engaged in both cultivation and household industry, were classified by 11 size classes of holdings and, within each size class, the households were distributed according to whether they fell into the category of ownership holdings or pure tenancy holdings, or mixed tenancy holdings.<sup>28</sup> But "cultivation" was defined to include only ploughing, sowing and harvesting, and did not include "fruit growing or keeping orchards or groves or working for plantations like tea, coffee, rubber, cinchona and other medicinal plantation", which, in the case of Kerala, must be expected to have very considerably reduced its coverage.

The most comprehensive survey of all was the Land Reforms Survey of 1966/67 conducted by the Bureau of Economics and Statistics of the

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<sup>28</sup>For an analysis of the data on land holdings collected through household schedules along with the Census of 1961, see P. S. Sharma, "A study of the structural and tenurial aspects of rural economy in the light of 1961 census", *Indian Journal of Agricultural Economics*.

government of Kerala. Since it was designed to cover both the rural and urban sectors and permit estimates for each district, the number of households in the sample was as high as 3,475. Not only were data collected in considerable detail on tenancy but an effort was made by the investigators to cross-check the information given by the respondents with other information available locally, including village records. The findings of this survey are therefore clearly superior in both coverage and quality to those of any other.

More recently, a further survey of land holdings was conducted by the same agency as part of the 1970/71 World Census of Agriculture; the coverage of this survey was also very wide.<sup>29</sup> However, though it was designed to investigate all agricultural operational holdings including plantations and other institutional holdings, it was later found that there was considerable under-reporting of area, caused in part by the provisions of the land reform legislation.<sup>30</sup> Moreover, no data were collected on ownership of holdings, perhaps because tenancy had been legally abolished by 1970 and it was assumed that owners who were not operating their land would have forfeited ownership to the actual operators. The data yielded by this survey cannot therefore be used for analysing the changes that took place between 1966/67 and 1970/71.

Not surprisingly, estimates of the coefficients of variation made on the basis of data from all these surveys conducted at different times present an incoherent picture from which no clear conclusions can be drawn about trends in the distribution of land holdings during this period. This fact will be evident from table 25.

The only alternative, therefore, is to use the relatively more reliable data on ownership and operational holdings, land leased-in etc., all by size

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<sup>29</sup>About 25 per cent of the census villages and urban blocks were selected first by simple random sampling; all operational holders in these villages and blocks were then listed. While holders operating less than one tenth of an acre were not taken up for detailed inquiry, 10 per cent of those operating between one tenth of an acre and less than 10 acres were selected as were all holders operating 10 acres and more. See Kerala, Bureau of Economics and Statistics, "The third decennial World Census of Agriculture, 1970-71, report for Kerala state: vol. 1. General report" (mimeographed, 1973), chap. VII.

<sup>30</sup>The report mentioned in foot-note 29 above lists the following special reasons for under-reporting in Kerala: (a) the legislation imposing ceilings on land holdings has led to large-scale partitions in families and, though the land belonging to a family may be operated as a single unit for all practical purposes, only the land legally belonging to the head of the household will be reported as the holding area; (b) if a member of a household operated land on behalf of other members who are residing away from the household, the details of the land belonging to such persons in many cases may not be reported by the household member; (c) the liability on account of procurement of food-grains by the state through a progressively graded producer's levy has created a tendency to under-report the area under paddy; (d) since the area under perennial crops in the dry lands of the state is estimated with reference to the number of trees or plants of each kind in the garden, and the respondent may not know the exact number, the "guesstimates" offered tend to be generally on the lower side; (e) there are several operational holdings in the state whose holders reside outside the state and are therefore not covered by the Census; and (f) though operational holdings belonging to institutions such as schools, temples etc. were intended to be enumerated in the Census, the results show that the investigators had not enumerated all of them. The Land Reforms Act has however been identified in the report as the most important factor responsible for under-reporting. "The extent of under-reporting is seen largest in the holdings of more than 4 hectares. This shows that the Land Reforms Act has heavily influenced the cultivators while reporting the area of their operational holdings." *Ibid.*, chap. VIII.

TABLE 25. KERALA: COEFFICIENTS OF VARIATION IN THE DISTRIBUTION OF LAND HOLDINGS

| Source of data and year  | Number of sample households | Ownership holdings         |             | Operational holdings       |                |
|--|-----------------------------|----------------------------|-------------|----------------------------|----------------|
|  |                             | Distribution of land among |             | Distribution of land among |                |
|  |                             | All rural households       | Owners only | All rural households       | Operators only |
| National Sample Survey (Travancore-Cochin, 1954/55) . . . . .      | 2,278                       | 2.64                       | 1.97        | 2.44                       | 2.11           |
| National Sample Survey (Kerala, central sample, 1960/61) . . . . . | 834                         | 3.58                       | 2.89        | 4.36                       | 3.88           |
| National Sample Survey (Kerala, state sample, 1960/61) . . . . .   | 1,694                       | ...                        | ...         | 2.46                       | 2.22           |
| National Sample Survey (Kerala, 1961/62) . . . . .                 | 2,051                       | 2.50                       | 2.00        | 2.55                       | 1.94           |
| Population Census, (Kerala, 1961) . . . . .                        | ...                         | ...                        | ...         | 1.72                       |                |
| Land Reforms Survey (Kerala, 1966/67) . . . . .                    | 3,475                       | ...                        | 3.75        | ...                        | 2.24           |
| World Agricultural Census (Kerala, 1970/71) . . . . .              | ...                         | ...                        | ...         | 4.94                       | 4.50           |

of holdings, for the year 1966/67, collected through the Land Reforms Survey, and see whether and how they can be used for assessing the likely impact of the abolition of tenancy, effected through the 1969 amendment of the Kerala Land Reforms Act on the distribution of income from land. Of course this means that the changes in the distribution of land holdings that took place between 1956 and 1966 will in effect be ignored. Since there were considerable transfers of land during this period, either in expectation or as a result of land reforms, the full impact of the legislative measures taken since the mid-1950s will not be revealed by this method of assessment.

Nevertheless, in the absence of a better alternative, this method is used. As the imposition of ceilings has not yielded much surplus land so far, and as the landless seem to have gained very little except the small plots of land which "hutment dwellers" have been able to secure, abolition of tenancy has proved to be the most effective part of the land reform legislation. It will have been observed from table 24 that the incidence of tenancy, as revealed by the 1966/67 survey, conforms closely to the trends in tenancy discussed earlier in this chapter.<sup>31</sup> There is therefore enough basis for using the data from this survey for an assessment which, even if not complete, can be regarded as reflecting a significant part of the changes that have taken place.

<sup>31</sup> Leased-in land accounted for well over four fifths of the total operated area of 4.52 million acres in 1966/67. In the territory falling within the earlier Malabar districts of Madras province, leased-in land formed about two thirds of the total operated area, while in Cochin the share was nearly three fifths; it was only in Travancore that the incidence of tenancy was low. These findings are in line with inter regional differences in the relative numerical importance of tenants in the total agricultural population in 1911 and 1951 (see table 23).

TABLE 26. KERALA: PATTERN OF DISTRIBUTION OF LAND OWNED AND OPERATED AMONG DIFFERENT CATEGORIES OF AGRARIAN HOUSEHOLDS, 1966/67

| Category of household  | Number of households (thousands) | Area owned | Area leased-out * | Area leased-in (millions of acres) | Area operated |
|--|----------------------------------|------------|-------------------|------------------------------------|---------------|
| Landowning households with rent as main source of income from land . . . . .                                       | 8                                | 0.93       | 0.65              | 0.04                               | 0.32          |
| Landowning households with rent as subsidiary income from land . . . . .   | 57                               | 0.33       | 0.15              | 0.06                               | 0.24          |
| Landowning households with neither rental income nor rental obligations . . . . .                                  | 1,148                            | 1.54       | —                 | —                                  | 1.54          |
| Landowning households with rental obligations on leased-in land:   |                                  |            |                   |                                    |               |
| Those with operational holdings of 15 acres and more and of which leased-in land formed a large part . . . . .     | 14                               | 0.13       | —                 | 0.26                               | 0.39          |
| Those with operational holdings of less than 15 acres and of which leased-in land formed the smaller part. . . . . | 277                              | 0.47       | —                 | 0.44                               | 0.91          |
| Non-landowning households with rental obligations on leased-in land . . . . .                                      | 977                              | —          | —                 | 1.12                               | 1.12          |
| Non-landowning households with allotments of land for hutments only ("hutment dwellers") . . . . .                 | 343                              | —          | —                 | —                                  | —             |
| All agrarian households . . . . .  | 2,825                            | 3.40       | 0.80              | 1.92                               | 4.52          |

\* In addition to 0.80 million acres leased out by households, 1.12 million acres were leased out by companies, temples, churches, families, ex-rulers, etc. Details relating to the latter were not collected by the Land Reforms Survey of 1966/67 and are not available.

Table 26 shows the distribution of land in Kerala in 1966/67 as between different categories of agrarian households classified broadly according to the relative importance of leased-in land as source of income from land.<sup>32</sup>

It will be seen that households for whom rent could have been the main source of income from land were not more than about 8,000 in number but that they accounted for nearly 30 per cent of the total area owned by households and over 80 per cent of the total area leased-out. This is the class that is likely to have lost most heavily by the abolition of tenancy.

<sup>32</sup> Table 26 is based on some reclassification of the data available from the report on the Land Reforms Survey of 1966/67. The survey, for instance, defined a "landlord" as anyone who has leased out any part of his land, however small the area. Of the landowning households so identified, a distinction has been made in table 26 between: (a) those whose operational holdings were 15 acres or more but who had still leased-out more than twice as much land as

On the other hand, the potential beneficiaries of this tenancy legislation numbered over 1.25 million households (excluding those with allotments of land for hutments only). Of these, nearly a million had no land of their own and could become owners only as a result of the legislation. The remainder, however were already owners who apparently leased-in additional land merely to increase the area they could operate; the effect of the legislation in their case would have been, obviously, to make them owners of more land than they had earlier.

Above 5 per cent of this latter group, approximately 14,000 households, had leased-in twice as much land as they owned and were therefore in a position to treble the area under their ownership. They had operational holdings of 15 acres or more, and the total area leased-in by them was about 40 per cent as high as the entire area leased-out by the households with rent as the main source of income from land. So, while the abolition of tenancy would have substantially reduced the income of the 8,000 rentier households referred to earlier, a fairly high proportion of the loss in their income is likely to have accrued as gain to the 14,000 households with fairly large operational holdings in their possession (unless in the process they came within the purview of the ceiling legislation). A large number of the latter type of household were in the southern region of Kerala where, as noted earlier, a considerable part of the land leased-in for paddy cultivation was divided into holdings larger than 25 acres.<sup>33</sup>

From this, as well as from the earlier analysis of interregional differences in the pattern of land holding, it will be evident that abolition of tenancy need not have reduced inequalities in income from land in all parts of the state. In fact, its impact is likely to have been marginal in the territory falling within the southern districts. In the northern districts, however, particularly those whose territory earlier formed part of the British-administered province of Madras, the effects on income distribution are likely to have been more significant, since the incidence of tenancy was so much higher there and the bulk of the tenants were relatively small holders of land.

A rough idea of the probable direction and extent of the changes brought about can be had by comparing the size distribution of the ownership holdings of households in 1966/67 with the size-distribution of their operational holdings in the same year, since the effect of the subsequent abolition of tenancy was really to confer ownership on whoever operated the

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they operated themselves ("landowning households with rent as main source of income from land"); and (b) those whose operational holdings were less than 15 acres and who had leased-out only about two thirds as much land as they operated themselves ("landowning households with rent as subsidiary income from land"). It should perhaps be added that "agrarian households" were taken in the survey to include households which had "any kind of interest in land". They also covered therefore those which had no owned or leased-in land but only small allotments on which they had been permitted to build hutments without having the legal status of tenants ("hutment dwellers"). As indicated earlier in this chapter, they became beneficiaries of the 1969 legislation which gave them fixity of tenure and the right to purchase up to one tenth of an acre at a nominal price.

<sup>33</sup>See foot-note 25 to this chapter.

TABLE 27. KERALA: COEFFICIENTS OF VARIATION IN THE DISTRIBUTION OF OWNERSHIP OF LAND AND OPERATIONAL HOLDINGS, 1966/67

| District<br>or region  |  | Ownership<br>holdings | Operational<br>holdings | Difference in<br>value of<br>coefficients |
|------------------------|--|-----------------------|-------------------------|---|
| Trivandrum . . . . .   | corresponding broadly to the<br>former state of Travancore | 1.50                  | 1.56                    | +0.06                                     |
| Quilon . . . . .       |  | 1.41                  | 1.40                    | -0.01                                     |
| Alleppey . . . . .     |  | 3.66                  | 3.43                    | -0.23                                     |
| Kottayam . . . . .     |  | 1.76                  | 1.82                    | +0.06                                     |
| Ernakulam . . . . .    | corresponding broadly to the<br>former state of Cochin     | 2.29                  | 1.77                    | -0.52                                     |
| Trichur . . . . .      |  | 2.64                  | 2.08                    | -0.56                                     |
| Palghat . . . . .      | corresponding broadly to former<br>districts of Malabar    | 2.04                  | 1.77                    | -0.27                                     |
| Kozhikode . . . . .    |  | 2.08                  | 1.35                    | -0.83                                     |
| Cannanore . . . . .    |  | 4.08                  | 2.46                    | -1.62                                     |
| Kerala state . . . . . |  | 3.75                  | 2.24                    | -1.51                                     |

land. Table 27 shows the coefficients of variation in the distribution of ownership and operational holdings in that year; where the coefficient of variation in the distribution of operational holdings is lower, the difference is shown with a minus sign to indicate that the effect of tenancy abolition would have been to reduce inequalities. This suggests that, even allowing for the regional differences, there is likely to have been some reduction in inequalities in income from land in Kerala as a whole as a result of the abolition of tenancy. (The higher the rents paid by tenants earlier on land leased-in the greater of course would have been the reduction on this account.) Though the area of land transferred to the landless (mainly "hutment dwellers") could not have been very much,<sup>34</sup> there is no reason to doubt that land reforms in Kerala taken as a whole have helped to reduce inequalities in wealth and income, despite the limitations of the legislation and the impediments to its effective implementation.

#### Other factors affecting income distribution among agrarian households

It should perhaps be added that, apart from the changes brought about by land reforms over the past decade, there are two reasons why the distribution of income among agrarian households in Kerala could have been less unequal than might be inferred from available data on ownership holdings or on asset holdings in the rural sector in the early 1960s.<sup>35</sup> One reason is the extent of dependence on wage labour in agriculture and the other is the scale on which agrarian households with land supplement their income from sources other than agriculture.

<sup>34</sup> According to the most recent official reports, over 0.32 million "hutment dwellers" were given rights of ownership over land following the 1969 legislation. Since none of them could have secured more than one tenth of an acre, the total amount of land so transferred to the landless would have been only a little over 30,000 acres at most. To this must be added the surplus land of about 50,000 acres yielded by the ceiling legislation, most of which has not been distributed so far.

<sup>35</sup> Data collected throughout the state on the distribution of all assets held by households resident in the rural sector suggest that it is more unequal in Kerala than in any other state (except Andhra Pradesh). The estimated concentration ratio for Kerala is 0.727 compared to 0.652 for India as a whole. See "Distribution of value of total assets among households resident in the rural sector of India", *Reserve Bank of India Bulletin*, October 1966.

TABLE 28. KERALA: DISTRIBUTION OF CULTIVATORS ACTUALLY ENGAGED IN AGRICULTURE BY SIZE OF OPERATIONAL HOLDING, 1966/67

| Size of operational holding (acres) | Number of operational holdings (thousands) | Area under operational holdings (thousands of acres) | Cultivators actually engaged in agriculture |   |
|-------------------------------------|--|--|---|---|
|                                     |  |  | Number (thousands)                          | Number of cultivators as percentage of number of operational holdings |
| Below 0.50 . . . . .                | 1,160 (46.8) <sup>a</sup>                  | 186 (4.1) <sup>a</sup>                               | 53  | 4.6   |
| 0.50-1.00 . . . . .                 | 320 (12.9)                                 | 375 (8.3)  | 150   | 46.9  |
| 1.00-2.50 . . . . .                 | 548 (22.1)                                 | 843 (18.7)   | 259   | 47.3  |
| 2.50-5.00 . . . . .                 | 250 (10.1)                                 | 887 (19.6)   | 209   | 83.6  |
| 5.00-10.00 . . . . .                | 139 (5.6)                                  | 958 (21.2)   | 148   | 106.5   |
| Above 10.00 . . . . .               | 62 (2.5)                                   | 1,268 (28.1)   | 79  | 127.4   |
| All holdings . . . . .              | 2,479 (100.0)                              | 4,516 (100.0)  | 899   | 36.3  |

<sup>a</sup> Figures in parentheses are percentages.

Available data show that even on operational holdings of less than 0.5 acre about one sixth of the rural households depend on hired labour for the bulk of the agricultural work. For holdings of 5 to 7.5 acres, the proportion is well over two fifths; it rises further with increase in the size of holdings.<sup>36</sup> Though no estimates are available of the total wage-bill in agriculture or of its distribution according to size of holdings, it seems probable that wages have absorbed about one sixth of the value added in agriculture;<sup>37</sup> their share in the larger-sized holdings may have been, on average, about one fourth of the value added.

It is also clear that, of the total number of agrarian households with land, a fairly high proportion is engaged primarily in activities other than agriculture. Table 28 shows the distribution of these households in 1966/67 according to the size of their operational holdings (which, by the reasoning indicated earlier, can be taken as broadly approximating the size distribution of 1970), and the proportion of cultivators "actually engaged in agriculture" in each size-group.<sup>38</sup>

While almost all households with holdings of 2.5 acres or more had at least one cultivator engaged in agriculture, it will be seen that more than 95 per cent of the households with holdings below 0.5 acre and over 50 per cent of those with holdings between 0.5 and 2.5 acres had none.

About 1 million agrarian households including those which had only

<sup>36</sup>See Kerala, Bureau of Economics and Statistics "The third decennial World Census of Agriculture, 1970-71: report for Kerala state: vol. II. Statistical tables, table XXI" (mimeographed, 1973).

<sup>37</sup>According to the All-India Rural Debt and Investment Survey conducted by the Reserve Bank of India in 1961/62, the average income in salaries and wages of a rural household in Kerala in that year was Rs 447. Since the estimated number of rural households was 2.5 million, their total income from wages and salaries might be placed at about Rs 1,118 million. If about one third of this sum is assumed to have been wages earned from agriculture, their share of wages in the value added in agriculture would have been approximately 15 per cent.

<sup>38</sup>See Kerala, Bureau of Economics and Statistics, "Land reforms survey in Kerala, 1966-67: report" (mimeographed, 1968), chap. VIII.



allotments of land for hutments, are likely to have depended mainly on wage employment in agriculture for their livelihood.<sup>39</sup> If households with cultivators "actually engaged in agriculture" are assumed to have been also mainly dependent on it for their livelihood, the total number deriving their income primarily from agriculture would have been approximately 1.9 million.<sup>40</sup> This implies that there were still about 0.9 million households with land which were primarily engaged in non-agricultural activities and for whom the income from land might have been only a supplementary source of income.

An attempt is made in table 29 to present a rough picture of the distribution of all agrarian households according to their primary activity and the size-group of the operational holdings in their possession in 1966/67. If this is a reasonable approximation to the actual position it would appear that one half of the agrarian households engaged primarily in non-agricultural activity had holdings of less than 0.5 acre but that the other half had holdings of more than 0.5 acre. Whether the supplementary income from such activity increased or decreased, the extent of over-all inequality would depend naturally on the amount of income so earned by these households relative to their income from land. Unfortunately, no data are available for attempting even a rough quantitative assessment of the effect of supplementary income on income distribution among agrarian households.

TABLE 29. KERALA: DISTRIBUTION OF AGRARIAN HOUSEHOLDS BY PRIMARY ACTIVITY AND SIZE OF OPERATIONAL HOLDING, 1966/67  
(Millions, except as otherwise indicated)

| Size of operational holding (acres) | Households engaged primarily in agricultural activity |                 | Households engaged primarily in non-agricultural activity | Total |
|-------------------------------------|---|-----------------|---|-------|
|                                     | Agricultural labour                                   | Own cultivation |   |       |
| Nil . . . . .                       | 0.34  | —               | —   | 0.34  |
| Below 0.50 . . . . .                | 0.66  | 0.05            | 0.45  | 0.16  |
| 0.50-1.00 . . . . .                 | —   | 0.15            | 0.17  | 0.32  |
| 1.00-2.50 . . . . .                 | —   | 0.26            | 0.29  | 0.55  |
| Above 2.50 . . . . .                | —   | 0.44            | 0.01  | 0.45  |
| All holdings . . . . .              | 1.00  | 0.90            | 0.92  | 2.83  |

<sup>39</sup>According to the Population Census of 1971 there were nearly 1.2 million male agricultural labourers in Kerala. Assuming that there was on the average one male worker in each agricultural labour family, and allowing for some workers belonging to cultivator households earning their livelihood from agricultural labour, the estimate of 1 million agricultural labour families appears to be a reasonable approximation for 1966/67.

<sup>40</sup>The total number of households in Kerala in 1966/67 has been estimated at 3.5 million. Households deriving their income primarily from agriculture would therefore be nearly 55 per cent of the total. This figure corresponds to the share of the primary sector in the total working force as reflected in the Population Census data.

## Chapter VI

### POPULATION GROWTH AND UNEMPLOYMENT

Though land reforms are likely to have reduced inequalities in income originating in ownership of land, particularly over the period 1956-1971, there have been other forces at work that could have accentuated such inequalities. The most prominent of these forces were the rapid growth of population in Kerala since the turn of the present century and its impact on the labour market. The present chapter deals with the effect of population growth on the rate of participation in economic activity, the distribution by sector of those so engaged and their activity status, with a view to assessing trends in employment and unemployment during this period.

#### Growth of population in Kerala, 1901-1971

The population of Kerala rose from less than 6.5 million in 1901 to nearly 21.5 million in 1971. As a result, the state is now one of the most densely populated parts of the world, with about 550 persons per square kilometre; the density of population in Japan is only about 260 per square kilometre, and in Bangladesh, 525.

It will be evident from table 30 that the rate of population growth in Kerala was significantly higher than in India as a whole in the first five decades of the twentieth century. The conspicuously higher rates were however confined to the territory of the earlier native states of Travancore and Cochin, particularly of the former; the rate of population growth in the Malabar districts of Madras province was not much higher than in the rest of the country.<sup>1</sup>

The early lead of Travancore in population growth appears to have been due mainly to the considerable attention given to medical and public health services in the state in the latter half of the nineteenth century.<sup>2</sup> As with reform of land tenures, the rulers of the state followed policies in

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<sup>1</sup>Some parts of the territory of the earlier native state of Travancore and of the Malabar districts of Madras province now form part of the states of Tamil Nadu and Karnataka; they are not taken into account here. For the purpose of making the estimates given in table 30, the area now covered by the districts of Cannanore, Kozhikode, Malappuram and Palghat have been taken to correspond broadly to the territory of the earlier Malabar districts falling within the present state of Kerala; the districts of Trichur and Ernakulam to that of the native state of Cochin; and the districts of Kottayam, Alleppey, Quilon and Trivandrum to that of the native state of Travancore.

<sup>2</sup>This appears to have been in part fortuitous, the result of the intense personal interest in western medicine and surgery of Maharajah Martanda Varma (Uthram Thirunal) who ruled Travancore from 1847 to 1860. Seven hospitals were opened in different parts of the state up to the time of his death. The role of Christian missionary institutions has also perhaps been an important one in the development of medical services in the state. See P. Shungoonny Menon, *A History of Travancore* (Madras, Higginbothams and Co., 1878), chap. VIII, pp. 444-447.

TABLE 30. KERALA AND INDIA: POPULATION GROWTH, 1901-1971  
(Percentage compound rate per annum)

| Period              | Kerala | Areas of Kerala corresponding broadly<br>to the pre-1947 territories of |                 |                      | India |
|---------------------|--------|---|-----------------|----------------------|-------|
|                     |        | Travancore<br>state   | Cochin<br>state | Malabar<br>districts |       |
| 1901-1911 . . . . . | 1.11   | 1.48  | 1.25            | 0.72                 | 0.56  |
| 1911-1931 . . . . . | 1.44   | 2.19  | 1.44            | 0.81                 | 0.51  |
| 1931-1951 . . . . . | 1.79   | 2.03  | 1.82            | 1.53                 | 1.30  |
| 1951-1971 . . . . . | 2.30   | 2.25  | 2.16            | 2.42                 | 2.11  |
| 1901-1971 . . . . . | 1.74   | 2.04  | 1.73            | 1.47                 | 1.20  |

medicine and public health which were much ahead of the times.<sup>3</sup> Apart from starting a separate Department of Vaccination in 1865/66, the Government set up a large number of hospitals and dispensaries and introduced a system of grants to support private medical institutions. It is a measure of the progress made by Travancore in the following four decades that, by 1903/04, the number of beds in hospitals and dispensaries in the state was nearly 60 per 100,000 population,<sup>3</sup> a level reached in India as a whole only six decades later. The number of beds per 100,000 population was less than 29 in Malabar even in 1951.<sup>4</sup>

#### Trends in the rate of participation in economic activity

The growth of population has been accompanied by a sharp decline in the rate of participation in economic activity. It will be seen from table 31 that, while about 45 per cent of the population were recorded in the Census of 1901 as being workers, this proportion shrank to less than 33 per cent in 1951 and to about 29 per cent by 1971.

The decline is explained only marginally by change in the age structure of the population.<sup>5</sup> The main contributory factors, it would appear, were lower rates of female participation in certain kinds of economic activity and, more generally, delayed entry into the labour force consequent on the spread of schooling (for reasons dealt with in chapter IV) and longer periods spent in education.

It will be evident from table 32 that the rate of female participation has declined most perceptibly in activities in which most women are likely to

<sup>3</sup>The total number of beds available was 1,026 in 1900/01 and 1,406 in 1903/04. The average number of patients treated in hospitals and dispensaries in the state rose from less than 10,000 in 1864/65 to 0.62 million by 1903/04. See V. Nagam Aiya, *The Travancore State Manual*, vol. II, chap. XII, p. 542.

<sup>4</sup>This has been estimated from data presented in *Census Handbook, 1951, Malabar District* (Madras, Government Press, 1953).

<sup>5</sup>In 1931 a large number of women, who had apparently not been recorded as workers in the previous Census of 1921 because they were "women doing manual work at house-keeping", were classified as workers engaged in "domestic services". (*Census of India, 1931, vol. XXVIII, Travancore, Part I, Report*, pp. 228-231.) If allowance is made for overestimation in this account, the female working force in 1931 would come to only about 20 per cent of the total female population; consequently, the total working force in 1931 would also be only about 35 per cent of the total population of Kerala.

TABLE 31. KERALA:<sup>a</sup> WORKING FORCE AS PERCENTAGE OF POPULATION

| Census year    | Male working force as percentage of total male population | Female working force as percentage of total female population | Total working force as percentage of total population |
|----------------|---|---|---|
| 1901 . . . . . | 57.3  | 32.7  | 45.0  |
| 1911 . . . . . | 53.8  | 28.9  | 41.4  |
| 1921 . . . . . | 51.1  | 24.9  | 38.0  |
| 1931 . . . . . | 50.0  | 35.9  | 43.0  |
| 1951 . . . . . | 46.7  | 18.3  | 32.5  |
| 1961 . . . . . | 47.2  | 19.7  | 33.5  |
| 1971 . . . . . | 44.9  | 13.5  | 29.2  |

<sup>a</sup> The percentage of the total population in the working-age group (15 to 59 years) was only slightly higher in 1901 than in 1971. It was 53 per cent among males and 54 per cent among females in Kerala as a whole in 1971. In 1901 males and females formed 58.2 and 57.1 per cent respectively of the total population of the state of Travancore, and 55.5 and 55.7 per cent, respectively, of the total population of Cochin state. Dates for the Malabar districts of Madras province are not readily available.

have been self-employed. Some of this decline, as in the case of cultivators and even among those engaged in trade and commerce, could have been the result of voluntary withdrawal of labour induced by social change.<sup>6</sup> But it seems less probable in the case of those engaged in household industry (who account for most of the workers in manufacturing industry).<sup>7</sup> In their case, the explanation lies perhaps mainly in the decay of some of the traditional industries and the resulting contraction of gainful employment opportunities within households. Significantly, the percentage of agricultural labourers in the total female population has shown no clear declining trend over this period, hence agricultural labourers accounted for nearly one half of the total female working force in 1971 compared to less than one sixth in 1901 and about one third even in 1951.<sup>8</sup>

The extent to which educational activity has been indirectly responsible for lowering the participation rate, by delaying entry into the labour force, will be clear from table 33.<sup>9</sup> The data, which relate to 1965, show the

<sup>6</sup>For instance, in Travancore more than 10 per cent of the total number of female workers in 1901 had been recorded as "landholders and tenants"; this proportion could have declined significantly since then because land is perhaps not held by women as landholders and tenants to the same extent as previously. There is also reason to suppose that women belonging to some of the lower castes, and previously engaged in cultivation, have tended to withdraw from such activity.

<sup>7</sup>Of about 0.35 million workers engaged in manufacturing industries in Travancore in 1931, nearly 0.33 million belonged to household enterprises and only the remaining were factory workers.

<sup>8</sup>It will be seen from table 32 that there was a sharp increase in the number of agricultural labourers reported in the Census of 1911. According to the Census Report of that year for Travancore, a large number recorded in the 1901 Census as "unspecified labourers" were classified in 1911 as agricultural labourers.

<sup>9</sup>The source of the data is Kerala, Bureau of Economics and Statistics, "Sample survey on employment and unemployment" (1966). The survey, which was conducted in October-November 1965, covered a sample of about 2,000 households from each district in the state. Unfortunately, the report has not been published and is available only in mimeographed form.

TABLE 32. KERALA: NUMBER OF WORKERS<sup>a</sup> PER 1,000 OF TOTAL FEMALE POPULATION, 1901-1971

| Category of activity  | 1901 | 1911 | 1921 | 1931 | 1941 | 1951 | 1961 | 1971 |
|---|------|------|------|------|------|------|------|------|
| Cultivators . . . . .   | 127  | 45   | 47   | 27   | ...  | 31   | 32   | 7    |
| Agricultural labourers . . . . .                                | 53   | 107  | 84   | 62   | ...  | 59   | 54   | 66   |
| Manufacturing industry (including household industry) . . . . . | 82   | 78   | 63   | 58   | ...  | 49   | 51   | 28   |
| Trade and commerce . . . . .                                    | 35   | 28   | 25   | 11   | ...  | 4    | 3    | 2    |
| Other services . . . . .  | 20   | 19   | 17   | 183  | ...  | 24   | 46   | 23   |
| All categories of workers . . . . .                             | 327  | 289  | 249  | 359  | ...  | 183  | 197  | 135  |

<sup>a</sup> The distinction between women who are mere dependants and those who contribute to economic activity, as earners or workers, is often not clear-cut in household enterprises. Consequently, slight changes in the definition (or classification) of who constitutes a worker or earner, or even in the wording of the questions, have resulted in considerable variation in the estimated rate of female participation from census to census. Nevertheless, the trends are clear enough in table 32.

percentage of students in the population by sex and age group, as also of the employed and the unemployed<sup>10</sup> who together constitute the labour force. About one fourth of the total population of Kerala, and nearly one half of the total number in the working age group of 15-59 years, were students in 1965.<sup>11</sup> The fact that, even in the age group of 20-24 years, over 11 per cent of the male population and nearly 4.5 per cent of the female were students suggests very strongly that the period of education was being prolonged for lack of adequate employment opportunities.

TABLE 33. KERALA: COMPOSITION OF STUDENTS AND OF THE LABOUR FORCE, 1965  
(Percentage of the population in each age group)

| Sex/Category           | Below 15 years | 15-19 years | 20-24 years | 25-29 years | 30-34 years | 35-39 years | 40-59 years | Above 60 years | 15-59 years | All ages |
|------------------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|-------------|----------|
| <b>Male</b>            |                |             |             |             |             |             |             |                |             |          |
| Employed . . . . .     | 1.3            | 31.4        | 70.0        | 87.8        | 92.0        | 93.5        | 89.9        | 43.0           | 74.3        | 42.7     |
| Unemployed . . . . .   | —              | 10.6        | 11.9        | 6.4         | 3.5         | 2.3         | 2.1         | —              | 6.2         | 3.3      |
| Labour force . . . . . | 1.3            | 42.0        | 81.9        | 94.2        | 95.5        | 95.8        | 92.0        | 43.0           | 80.5        | 46.0     |
| Students . . . . .     | 50.0           | 48.4        | 11.1        | —           | —           | —           | —           | —              | 11.8        | 26.8     |
| <b>Female</b>          |                |             |             |             |             |             |             |                |             |          |
| Employed . . . . .     | 1.4            | 17.9        | 24.7        | 29.2        | 31.6        | 32.5        | 29.4        | 10.0           | 26.8        | 15.8     |
| Unemployed . . . . .   | —              | 7.5         | 9.2         | 4.0         | 2.8         | 2.5         | 2.0         | —              | 4.7         | 2.5      |
| Labour force . . . . . | 1.4            | 25.4        | 33.9        | 33.2        | 34.4        | 35.0        | 31.0        | 10.0           | 31.5        | 18.3     |
| Students . . . . .     | 46.9           | 31.8        | 4.4         | —           | —           | —           | —           | —              | 7.5         | 22.5     |

<sup>10</sup> A person in the age group of 15 to 59, without any gainful employment during the reference week and either seeking or available for work, was treated as unemployed. An unemployed person was considered to be seeking work if he was currently registered with employment exchange or had applied for or contacted any person for any job during the preceding 60 days from the date of enquiry. An unemployed person was considered to be not seeking but available for work if he was not seeking work as explained above but was available and willing to undertake gainful work under the normal terms and conditions which usually accompanied such work". *Ibid.*, chap. III.

<sup>11</sup> Incidentally, it will be noted from table 33 that child labour accounted for only a little over 1.25 per cent of those in the age group below 15 years. This figure is borne out by the Census data for 1971. In India as a whole, more than 6.5 per cent of the males and over 2.5 per cent of the females in this age group were part of the working force in 1971.

TABLE 34. KERALA AND INDIA: ACTIVITY STATUS OF THE RURAL POPULATION, EARLY 1960s

| Category of activity   | Kerala (1960/61)               |  | India (1961/62)                |  |
|--|--------------------------------|--|--------------------------------|--|
|  | percentage of total population | percentage of labour force and of others not in labour force | percentage of total population | percentage of labour force and of others not in labour force |
| Owner-operators and working partners hiring labour (employers) . . . . .         | 3.1                            | 9.6  | 2.6                            | 7.0  |
| Owner-operators and working partners not hiring labour (self-employed) . . . . . | 6.7                            | 20.8   | 13.1                           | 34.9   |
| Dependent working members of households (self-employed) . . . . .                | 0.9                            | 2.9  | 8.8                            | 23.5   |
| Workers on salary and wages (employees) . . . . .                                | 18.2                           | 56.6   | 11.1                           | 29.5   |
| Unemployed . . . . .   | 3.2                            | 10.1   | 1.9                            | 5.1  |
| TOTAL LABOUR FORCE   | 32.1                           | 100.0  | 37.5                           | 100.0  |
| Students . . . . .   | 22.9                           | 33.6   | 6.9                            | 11.0   |
| Houseworkers . . . . .   | 16.9                           | 24.8   | 16.1                           | 25.8   |
| Persons too old or too young to work . . . .                                     | 24.3                           | 35.8   | 35.7                           | 57.1   |
| Others not in labour force . . . . .   | 4.0                            | 5.8  | 3.8                            | 6.1  |
| POPULATION NOT IN LABOUR FORCE   | 68.0                           | 100.0  | 62.5                           | 100.0  |
| TOTAL POPULATION   | 100.0                          |  | 100.0                          |  |

Table 34, which compares the activity status of the rural population of Kerala with that of India as a whole in the early 1960s, brings out still more clearly the differences made by education, inadequate opportunities for self-employment, and quantum of unemployment to the rate of participation in economic activity in the state. Table 34 also shows the differences in employment status among those in the labour force.<sup>12</sup> Even rural Kerala, it will be seen, is characterized by: (a) a remarkably high percentage of students in the total population (about three times as high as in the rural sector in India as a whole); (b) a very limited scale of self-employment (which absorbs less than a quarter of the rural population in the state compared to nearly three fifths in the entire country); (c) the relative insignificance of dependent household workers among the self-employed (such workers accounting for less than 1 in 7 of the total self-employed in Kerala compared to 2 in 5 in the country as a whole); and (d) a very high degree of dependence on contractual employment (i.e., on wages or salaries) together with a high rate of open unemployment, the relative proportion being in each case twice as high as in the entire country.

It is not easy to determine how far these characteristics are causally interrelated. But whatever the nature and strength of the forces responsible

<sup>12</sup>For the country as a whole, the estimates are based on data from the seventeenth round of the National Sample Survey (NSS report No. 197), and for Kerala on data from the sixteenth round of the National Sample Survey (NSS report No. 12) (Kerala, Bureau of Economics and Statistics).

for them, it is evident that the rapid growth of population in Kerala has been accompanied by a considerable shift of workers away from self-employment. Though part of the potential growth in the labour force has been absorbed by extension of the coverage and duration of education, the proletarianization of labour consequent upon the spread of education has increased mobility in general and brought problems of employment more sharply into view than in the remainder of the country.

### Sectoral distribution of the working force

Higher labour mobility in Kerala has taken two forms: greater movement away from agriculture to other sectors of economic activity within the state, and larger scale migration from the state to the rest of India (as well as to other parts of the world). No reliable estimates are available about the latter except that, in 1965, over 0.5 million were reported as having left the state, of whom over 0.4 million had left "for taking up work".<sup>13</sup> Intersectoral movements within the state are easier to analyse.

Table 35 presents in summary form the available data on the sectoral distribution of the working force for the period 1901-1971. It will be seen from table 35 that the share of the primary sector in the total working force has fallen perceptibly over the period, to a lower level in fact than in most economies at comparable levels of *per capita* income. However, this has been accompanied by only a marginal increase in the share of the secondary sector. The tertiary sector has shown the most rapid growth.<sup>14</sup>

This shift from the primary to the tertiary sector is explained in part by the high density of population in the state, the difficulty of absorbing larger numbers in agriculture, and the growing dependence on contractual em-

<sup>13</sup>"Sample survey on employment and unemployment," chap. II. The report on this survey points out that "this large-scale out-migration of workers may perhaps be one of the reasons for the low labour force participation rate in the State" and that "it is also likely that a major part of the out-migrants are men and this may explain the higher sex-ratio". (The number of females per 1,000 males had risen in Kerala from 1,004 in 1901 to 1,028 in 1951, but it has fallen since then to 1,016 in 1971.) Incidentally, remittances from outside the state accounted for about 10 per cent of the total net receipts per rural household in 1961/62 from industry, trade, miscellaneous professions and services and salaries and wages. See "All-India rural debt and investment survey, 1961-62: current resources of rural households", *Reserve Bank of India Bulletin*, December 1965.

<sup>14</sup>The percentage share of the secondary sector in the total working force in Kerala has been higher throughout this period than in the remainder of India. Some of the reasons for the difference, it is interesting to note, were identified in the Census Report of 1911 on Cochin state:

"This comparative preponderance of industrial population in these two States [Travancore and Cochin] is due not to the infertility of the soil or its unsuitability to agriculture but to certain natural advantages possessed by them which have directed a larger proportion of people than in most other parts of India to industrial occupations. Among these may be mentioned the existence of a large extent of backwaters and canals teeming with fish life and providing occupation to a large number of fishermen, fish-curers and dealers, and boat and boatmen; of valuable forests covering nearly one-half of the States and providing employment to numbers of wood-cutters, sawers, carpenters and collectors of forest produce; and of the facilities for the cultivation of coconut palm, the raw produce of which affords scope for important and extensive industries, such as toddy drawing, jaggery making, arrack distilling, oil pressing, coir making, etc. . . ."

See *Census of Cochin, 1911*, vol. XVIII, part I, Report, p. 83.

TABLE 35. KERALA: SECTORAL DISTRIBUTION OF THE WORKING FORCE, 1901-1971  
(Percentage)

| Sector              | Male workers |       |       |       |       | Female workers |       |                   |       |       |
|---------------------|--------------|-------|-------|-------|-------|----------------|-------|-------------------|-------|-------|
|                     | 1901         | 1911  | 1931  | 1951  | 1971  | 1901           | 1911  | 1931 <sup>a</sup> | 1951  | 1971  |
| Primary . . . . .   | 64.2         | 65.1  | 59.8  | 55.9  | 55.0  | 57.5           | 56.1  | 29.5              | 56.8  | 59.3  |
| Secondary . . . . . | 15.2         | 14.3  | 15.0  | 17.5  | 16.5  | 25.4           | 27.3  | 16.4              | 27.3  | 20.8  |
| Tertiary . . . . .  | 20.6         | 20.6  | 25.2  | 26.6  | 28.6  | 17.1           | 16.6  | 54.1              | 15.9  | 20.0  |
| ALL SECTORS         | 100.0        | 100.0 | 100.0 | 100.0 | 100.0 | 100.0          | 100.0 | 100.0             | 100.0 | 100.0 |

<sup>a</sup> The reason why the estimates for 1931 are sharply out of line with those for other years is that a large number of "women doing manual work at house-keeping" were classified as workers engaged in "domestic services" in the Census of that year (see foot-note 5 to this chapter).



ployment. But it might have been helped also by more positive factors such as the development of an extensive network of transport, communications and power, the wide range of gainful activity which the collection and distribution of agricultural products made possible, and the extension of education.

Whatever the reasons, an important effect of the shift has been to narrow intersectoral differences in the product per worker. The share of the three main sectors in the total working force in Kerala now corresponds fairly closely to their share in total output, as will be evident from table 36.

The limited range of intersectoral differences in product per worker noticeable in Kerala is an unusual feature for an underdeveloped economy. In economies in the earlier stages of industrialization the percentage share of the primary sector in the working force is generally much higher than its share in the total output and, correspondingly, the reverse is the case in the secondary and tertiary sectors. The relative sectoral product per worker is therefore naturally much lower in the former than in the other two sectors. The differences tend to narrow only when, in the process of development, the working force in agriculture is attracted away on a large scale to manufacturing industry and services.<sup>15</sup>

That Kerala is exceptional in this respect within India will be evident from table 37, which shows estimates of the relative sectoral product per worker in the different states.<sup>16</sup>

<sup>15</sup>This will be evident from the following data relating to the early 1950s (and in some cases the early 1940s) for a few selected countries:

|                                       | Percentage distribution<br>of the labour force |                     |                    | Relative sectoral<br>product per worker <sup>a</sup> |                     |                    |
|---------------------------------------|--|---------------------|--------------------|--|---------------------|--------------------|
|                                       | Primary<br>sector                              | Secondary<br>sector | Tertiary<br>sector | Primary<br>sector                                    | Secondary<br>sector | Tertiary<br>sector |
| Thailand . . . . .                    | 84.8   | 2.3                 | 12.9               | 0.64   | 6.48                | 2.40               |
| Turkey . . . . .                      | 85.7   | 7.4                 | 6.9                | 0.57   | 2.20                | 5.10               |
| Pakistan . . . . .                    | 76.5   | 7.3                 | 16.2               | 0.79   | 0.93                | 2.02               |
| India . . . . .                       | 70.6   | 10.7                | 18.7               | 0.71   | 1.59                | 1.77               |
| Mexico . . . . .                      | 58.3   | 15.6                | 26.1               | 0.32   | 1.55                | 2.18               |
| Italy . . . . .                       | 41.2   | 30.5                | 28.5               | 0.64   | 1.28                | 1.22               |
| Japan . . . . .                       | 28.7   | 30.2                | 41.1               | 0.50   | 1.47                | 1.46               |
| Denmark . . . . .                     | 25.1   | 32.7                | 42.2               | 0.82   | 1.07                | 1.05               |
| Sweden . . . . .                      | 20.4   | 39.7                | 39.9               | 0.63   | 1.26                | 0.93               |
| Canada . . . . .                      | 19.1   | 34.3                | 46.6               | 0.68   | 1.14                | 1.03               |
| United States<br>of America . . . . . | 12.2   | 34.7                | 53.1               | 0.59   | 1.09                | 1.04               |

SOURCE: Simon Kuznets, "Quantitative aspects of the economic growth of nations: industrial distribution of national product and labour force", *Economic Development and Cultural Change*, supplement to vol. V, No. 4 (July 1957), appendix tables 3 and 5.

<sup>a</sup>Ratio of product per worker in the entire economy. Even in Sri Lanka, the economy of which resembles that of Kerala in many respects, intersectoral differences are much larger. In 1968 the relative sectoral product per worker in Sri Lanka was 1.17 and 1.68 in the secondary and tertiary sectors, respectively, compared to 0.64 in the primary sector.

<sup>16</sup>These estimates are based on data furnished by the National Council of Applied Economic Research in its publication, *Distribution of National Income by States, 1960-61*. A close examination of trends in the relative shares of the different industrial categories in the total working force, as estimated from earlier and subsequent population censuses, suggests however that in the 1961 Census a little over 0.5 million agricultural labourers were incorrectly

TABLE 36. KERALA: RELATIVE SECTORAL PRODUCT PER WORKER, 1970/71

| <i>Sector</i>       | <i>Percentage share in total working force</i> | <i>Percentage share in total output</i> | <i>Relative sectoral product per worker<sup>a</sup></i> |
|---------------------|--|---|---|
| Primary . . . . .   | 56.0   | 55.4                                    | 0.99  |
| Secondary . . . . . | 17.5   | 12.6                                    | 0.72  |
| Tertiary . . . . .  | 26.6   | 32.0                                    | 1.20  |
| ALL SECTORS         | 100.0  | 100.0                                   | 1.00  |

<sup>a</sup> Ratio of product per worker in the entire economy.

One obvious reason of course is that industrialization in Kerala has not progressed much beyond the processing of agricultural and other primary products based on traditional, labour-intensive techniques. Though nearly one fifth of the total working force is engaged in manufacturing, about one half of it is in household enterprises where the value added per worker has been estimated as only a small fraction of the net output per worker in the economy. Even in factory enterprises, in which about one seventh of the working force in manufacturing industry is employed, the value added per worker is only about 1.5 times as high as in the primary sector; and in industries such as cashew processing, textiles, bricks and tiles, coir and saw mills, which account for more than three fourths of such factory employment, the difference is still less. The limited range of intersectoral differ-

TABLE 37. INDIAN STATES: RELATIVE SECTORAL PRODUCT PER WORKER, 1960/61

| <i>State</i>                         | <i>Primary sector</i> | <i>Secondary sector</i> | <i>Tertiary sector</i> |
|--------------------------------------|-----------------------|-------------------------|------------------------|
| Andhra Pradesh . . . . .             | 0.78                  | 0.76                    | 2.31                   |
| Assam . . . . .                      | 0.74                  | 2.17                    | 1.77                   |
| Bihar . . . . .                      | 0.71                  | 1.95                    | 2.28                   |
| Gujarat . . . . .                    | 0.62                  | 1.86                    | 2.04                   |
| Jammu and Kashmir . . . . .          | 0.79                  | 1.36                    | 2.17                   |
| Kerala . . . . .                     | 1.17                  | 0.80                    | 0.87                   |
| Madhya Pradesh . . . . .             | 0.72                  | 1.57                    | 2.85                   |
| Madras (Tamil Nadu) . . . . .        | 0.72                  | 1.13                    | 1.74                   |
| Maharashtra . . . . .                | 0.49                  | 1.84                    | 2.75                   |
| Mysore (Karnataka) . . . . .         | 0.75                  | 1.37                    | 2.04                   |
| Orissa . . . . .                     | 0.89                  | 0.96                    | 1.53                   |
| Punjab (including Haryana) . . . . . | 0.83                  | 1.25                    | 1.96                   |
| Rajasthan . . . . .                  | 0.77                  | 1.07                    | 2.58                   |
| Uttar Pradesh . . . . .              | 0.89                  | 1.02                    | 1.59                   |
| West Bengal . . . . .                | 0.64                  | 1.29                    | 2.79                   |
| India . . . . .                      | 0.71                  | 1.41                    | 2.03                   |

classified as workers engaged in "other services". Their inclusion in the primary sector would raise the number of workers in this sector by about 20 per cent over the number reported in the Census. The consequent correction of the percentage shares of the primary and tertiary sectors in the total working force will also change slightly the estimates of the relative sectoral product per worker in Kerala in 1960/61; the revised estimates for the primary, secondary and tertiary sectors will work out to 0.99, 0.80 and 1.17, respectively.

ences in the product per worker in Kerala, though an important factor in preventing further accentuation of inequalities in income within the state, could therefore be attributed largely to its extreme industrial backwardness.

### Forms and quantum of unemployment

This industrial backwardness of the state, together with the limited scope for absorption of more workers in agriculture and the considerable dependence on contractual employment, has led to large-scale and growing unemployment. Such unemployment is acute among two categories of the population, agricultural labourers and the "educated" segment ("educated" defined here to include only matriculates, i.e. those who have successfully completed 10 years of school education, and those who have had higher education), but it is extensive also among other sections of the population.

The number of agricultural labourers within the present territory of Kerala has risen from 0.5 million in 1901 to over 1.9 million by 1971.<sup>17</sup> The distinction between agricultural labourers and "labourers not elsewhere classified" (most of whom are shown in the Census under "other services" and therefore included as part of the tertiary sector)<sup>18</sup> is however not a very dependable one, since the same workers who at times report themselves as employed in agriculture may at other times be engaged in labour elsewhere (as in handling of goods in trade and transport, or in construction activity). Agricultural labourers and "labourers not elsewhere classified", who together can be taken as forming the core of the floating labour force in the state, constitute no less than about two fifths of its total working force.<sup>19</sup>

By comparison, the segment of the population which was "educated" was relatively small. In 1965 it was only about one twelfth of the total working force. But it formed over one fourth of the total number reported as unemployed at the time (the "unemployed" being defined as those who had no gainful employment during the reference week and were either seeking or available for work). As will be evident from table 38, the incidence of

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<sup>17</sup> Approximate estimates for the period 1901-1971 are given below (millions):

| <i>Year</i>   | <i>Male</i> | <i>Female</i> | <i>Total</i> |
|---------------|-------------|---------------|--------------|
| 1901. . . . . | 0.33        | 0.17          | 0.50         |
| 1911. . . . . | 0.35        | 0.38          | 0.73         |
| 1931. . . . . | 0.38        | 0.30          | 0.69         |
| 1951. . . . . | 0.71        | 0.41          | 1.12         |
| 1961. . . . . | 0.79        | 0.70          | 1.49         |
| 1971. . . . . | 1.20        | 0.71          | 1.91         |

The estimate for 1961 is given after correction for the error in classification referred to in foot-note 16 to this chapter.

<sup>18</sup> "Agricultural labourers" form one of the nine industrial categories into which the working force is divided in the Census, while "labourers not elsewhere classified" is an occupational category cutting across these categories. Most of the latter have been classified as part of three industrial categories (trade and commerce; trade, storage and communications; and other services) which are taken to form the tertiary sector; they accounted for nearly 60 per cent of the working force in that sector in 1961.

<sup>19</sup> Agricultural labourers numbered 1.49 million in 1961, and "labourers not elsewhere classified" falling within the tertiary sector, about 0.82 million, making a total of 2.31 million. The total working force in 1961 numbered 5.63 million.

TABLE 38. KERALA: UNEMPLOYMENT AMONG THOSE IN THE LABOUR FORCE OVER 15 YEARS OF AGE, BY LEVEL OF EDUCATION, 1965

| <i>Level of education</i>                     | <i>Percentage of labour force over 15 years of age</i> | <i>Unemployed over 15 years of age as percentage of total labour force over 15 years of age at each level of education</i> |
|---|--|--|
| Illiterate . . . . .                          | 29.0   | 5.8  |
| Literate but below middle school . . . . .    | 54.5   | 6.5  |
| Middle school but below matriculate . . . . . | 8.2  | 19.0   |
| Matriculate . . . . .                         | 7.1  | 32.6   |
| Graduate . . . . .                            | 0.9  | 12.7   |
| Post-graduate . . . . .                       | 0.2  | 9.1  |
| "educated"                                    |  | 29.9   |
| All levels . . . . .                          | 100.0  | 8.3  |

unemployment among those in the labour force who were over 15 years of age tended to rise with educational attainment till it reached a peak for those who had completed school education (the matriculates); for those with higher levels of education the incidence was lower, but it was still highest for the "educated" as a whole (i.e., for matriculates and above).<sup>20</sup>

However, among the "employed" (defined liberally, as in all the National Sample Surveys, to cover those who had worked at least one hour on at least one day during the reference week) there was considerable underemployment. It will be seen from table 39 that nearly 30 per cent of the total employed worked 28 hours or less during the reference week, and that over 30 per cent of the total employed reported themselves as available for more work if it were available. Most of such underemployment is likely to have been among the less educated segments of the population.

TABLE 39. KERALA: PERCENTAGE DISTRIBUTION OF EMPLOYED PERSONS, BY HOURS AT WORK DURING THE REFERENCE WEEK, AND OF THOSE REPORTING AVAILABILITY FOR ADDITIONAL WORK, 1965

| <i>Hours at work during week</i> | <i>Percentage of employed persons</i> |               |              | <i>Persons available for additional work as percentage of total employed</i> |               |              |
|----------------------------------|---------------------------------------|---------------|--------------|--|---------------|--------------|
|                                  | <i>Male</i>                           | <i>Female</i> | <i>Total</i> | <i>Male</i>  | <i>Female</i> | <i>Total</i> |
| 0-14 . . . . .                   | 9.8                                   | 15.2          | 11.3         | 3.3  | 3.6           | 3.4          |
| 15-28 . . . . .                  | 16.5                                  | 21.7          | 17.9         | 8.8  | 11.0          | 9.4          |
| 29-42 . . . . .                  | 25.2                                  | 26.3          | 25.5         | 12.4   | 12.4          | 12.4         |
| 43-56 . . . . .                  | 29.9                                  | 26.1          | 28.8         | 5.1  | 4.1           | 4.8          |
| 57 and above . . . . .           | 18.6                                  | 10.7          | 16.5         | 1.5  | 0.7           | 1.3          |
|                                  | 100.0                                 | 100.0         | 100.0        | 31.1   | 31.8          | 31.3         |

Even if only those at work for 28 hours or less per week, and reporting themselves as available for additional work, are treated as the acutely underemployed among the employed, they would comprise over 12.5 per

<sup>20</sup>"Sample survey on employment and unemployment", chap. IV.

cent of the total.<sup>21</sup> Taking into account also the wholly unemployed, the figure for which was estimated at a little over 9 per cent of the labour force in 1965,<sup>22</sup> a minimal estimate of the acutely underemployed and the wholly unemployed together would have amounted to over 20 per cent of the labour force in the mid-1960s. The wholly unemployed, and all those among the employed who reported themselves as available for more work, were actually about two fifths of the total labour force in 1965.

No estimates of the quantum of unemployment and underemployment in Kerala are available for the period since 1965. However, some of the available indices (such as the number on the live register of the employment exchanges<sup>23</sup> and fragmentary evidence relating to unemployment in particular agricultural areas (such as the Kuttanad area) and industries (such as coir and cashew) indicate that it has been growing rapidly.

One of the significant features of the Kerala scene has been that, despite the quantum of unemployment and underemployment, not only have the daily wage rates of agricultural labourers been higher than in most other states but their real wage rates (after allowing for rises in the prices of wage-goods) have been found to be rising in many parts of the state during periods when they have declined in other states. Chapter VII is therefore devoted to an analysis of trends in the wage rates of agricultural labour and of what can be inferred from these trends.

In the light of the nature and magnitude of unemployment in Kerala and the trends in wage rates, chapter VIII deals with the public works programmes that have been experimented with in the state in recent years and the policy conclusions that can be drawn from the experience. Chapter IX is devoted mainly to an analysis of the effects of education on the labour market, particularly the phenomenon of the "educated unemployed".

<sup>21</sup>Since the sample survey covered only the months of October and November, which are part of the busy season in Kerala, it seems probable that the intensity and scale of underemployment could have been considerably underestimated.

<sup>22</sup>The estimates made from the 1965 survey were as follows:

| <i>Unemployed</i>                                | <i>Percentage of labour force</i> |               |              |
|--|-----------------------------------|---------------|--------------|
|  | <i>Male</i>                       | <i>Female</i> | <i>Total</i> |
| Seeking work . . . . .                           | 3.6                               | 5.5           | 4.2          |
| Not seeking, but available<br>for work . . . . . | 3.5                               | 8.4           | 4.9          |
| TOTAL  | 7.1                               | 13.9          | 9.1          |

<sup>23</sup>The number on the live register of the employment exchanges was 0.14 million at the end of December 1965; it was 0.45 million at the end of December 1972. According to the "Sample survey on employment and unemployment" of 1965, about 18.5 per cent of the number on the live register of the employment exchanges at that time were already employed. On the other hand, only a little over 20 per cent of the unemployed (nearly 40 per cent in the urban sector and less than 16 per cent in the rural sector), as estimated through the survey, had registered with employment exchanges. According to the sample survey conducted by the Centre for Development Studies during 1973 in the districts of Trivandrum and Kozhikode (see the appendix to chapter 10), the percentage of those already employed on the live register of the employment exchanges was still only about 15; no estimates are however available of the percentage of the total unemployed who had not registered with employment exchanges in that year.

Needless to say, what is attempted in these chapters is by no means an exhaustive treatment of the labour markets in the state or of the various dimensions of the unemployment problem. A selective approach has been adopted, covering only some of the issues that have come up in the context of recent discussions on the problems of poverty and unemployment in developing countries.



## Chapter VII

### TRENDS IN WAGE RATES

Chapters V and VI have brought out the dependence of over one third of the agrarian households in the state on wage employment in agriculture. Agricultural labourers are in fact one of the categories of the population in which unemployment is acute. Since no data are available on trends in the quantum of employment available to agricultural labourers and the other important variable determining the incomes of agricultural labour households is the wage rate, the present chapter is devoted to an analysis of levels and trends in agricultural wage rates in Kerala. An interstate comparison, as well as an explanation of differences within the state, is attempted.

#### Money and real wage rates in different states

Table 40 shows the daily money wage rates for unskilled male labour engaged in operations such as ploughing, sowing, weeding, manuring etc., as reported from selected centres in different states for the years 1956/57, 1961/62, 1966/67 and 1971/72 (i.e., at five-yearly intervals beginning with 1956/57, when the states were reorganized and their boundaries redrawn).<sup>1</sup>

TABLE 40. INDIAN STATES: DAILY MONEY WAGE RATES OF MALE FIELD LABOUR, 1956/57 to 1971/72

(Rupees per day, except as otherwise indicated)

| States                   | 1956/57 | 1961/62 | 1966/67 | 1971/72 | Percentage increase in 1971/72 over 1956/57 |
|--------------------------|---------|---------|---------|---------|---|
| Andhra Pradesh . . . . . | 1.14    | 1.57    | 2.15    | 2.73    | 139   |
| Assam . . . . .          | 2.20    | 2.25    | 3.03    | 3.95    | 180   |
| Bihar . . . . .          | 1.19    | 1.24    | ...     | ...     | ...   |
| Gujarat . . . . .        | 1.44    | 1.75    | 2.28    | 3.35    | 133   |
| Karnataka . . . . .      | 1.24    | 1.59    | 1.80    | 2.45    | 98  |
| Kerala . . . . .         | 1.45    | 1.93    | 3.33    | 4.90    | 238   |
| Madhya Pradesh . . . . . | 1.07    | 1.30    | 1.74    | 3.25    | 110   |
| Maharashtra . . . . .    | 1.31    | 1.50    | 2.29    | 2.76    | 111   |
| Orissa . . . . .         | 1.00    | 1.27    | 2.11    | 2.26    | 126   |
| Punjab . . . . .         | 2.27    | 2.87    | 4.08    | 6.93    | 205   |
| Tamil Nadu . . . . .     | 1.32    | 1.43    | 2.10    | 2.87    | 117   |
| Uttar Pradesh . . . . .  | 0.80    | 1.13    | 2.00    | 2.61    | 226   |
| West Bengal . . . . .    | 1.63    | 1.86    | 2.88    | 3.29    | 102   |

<sup>1</sup>The latest year for which published data are available is 1965/66. See Government of India, Ministry of Food, Agriculture, Community Development and Co-operation, Directorate of Economics and Statistics, *Agricultural Wages in India, 1965-66*. For subsequent years, relevant data have been collected from the unpublished records of the Directorate. For more details on the procedure and methodology adopted for the construction of table 40, see A. V. Jose, "Trends in wage rates of agricultural labourers", *Economic and Political Weekly*, vol. IX, No. 13, Review of Agriculture, 31 March, 1974.



The corresponding percentage increase between terminal years is also given.

It will be seen from table 40 that Kerala was among the four states in which the highest money wage rates were paid to agricultural labourers. In this respect the state distinctly improved its ranking between 1956/57 and 1971/72, rising from fourth to second position. (The wage rate in Punjab has always been the highest in India.) It will also be noted that the daily wage of agricultural labourers in Kerala was nearly twice as high as in Uttar Pradesh.

The table also shows that the percentage increase in the money wage rate between 1956/57 and 1971/72 was highest for Kerala among all States including Punjab. Apart from Kerala and Punjab, the money wage rate registered an increase of more than 200 per cent in only one other state, Uttar Pradesh; however, there the wage rate in the base year was the lowest in the whole of India, in fact only about one third as high as that in Punjab.

This does not mean that in real terms, i.e., in terms of the consumer goods on which agricultural labourers spend their income, the wage rate in Kerala was higher to begin with (i.e., in 1956/57) than in all the states in which the money wage rate was lower, or that it has since been rising at a faster rate in real terms. For this will depend on what goes into the consumer basket of the agricultural labourer in each state and what the prevailing prices are for different items. Since food accounts for nearly three fourths of consumer expenditure of agricultural labour households everywhere, and cereals and cereal substitutes form a considerable part of their total food intake, a major factor determining the level and trend of the movement in the real wage rate will be the prices of these items in each state.

The initial level of real wages in the mid-1950s may be considered first. Data are available from the Second Agricultural Labour Enquiry on the quantity of cereals consumed daily *per capita* in agricultural labour households in different states in 1956/57.<sup>2</sup> The average price of cereals in each state can be derived by dividing the daily expenditure on cereals *per capita* in the same households (which are also available from this survey)<sup>3</sup> by the quantity of cereals consumed *per capita* per day. The average prices of cereals in different states thus estimated would reflect the extent of interstate price variation in the case of this important wage good. Unfortunately, similar data are not available for cereal substitutes, a fact which could be important, particularly in a state such as Kerala where there is a serious shortage of cereals. However, if the average prices of cereals in different states in 1956/57 are expressed in terms of the average price of cereals then prevailing in Kerala, and if these index numbers are used to adjust the current money wage rate in the various states, it will be possible

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<sup>2</sup>See Government of India, Ministry of Labour and Employment, Labour Bureau, *Agricultural Labour in India: report on the second enquiry, vol. I. All-India* (1960), p. 191.

<sup>3</sup>*Ibid.*, p. 188.

to estimate the cereal-equivalent of the latter (i.e., the real wage rate expressed in terms of cereals) in each state. The results of this exercise are presented in table 41.

TABLE 41. INDIA: INDICES OF REAL WAGE DIFFERENCES BETWEEN STATES, 1956/57

| State                    | Index number of<br>the price differ-<br>ential of cereals<br>(Kerala = 100) | Money wage rates<br>in 1956/57 adjust-<br>ed by the corre-<br>sponding index num-<br>ber (rupees per day) | Index number of<br>real wage rates in<br>different states<br>in relation to<br>Kerala<br>(Kerala = 100) |
|--------------------------|---|---|---|
| (1)                      | (2)   | (3)   | (4)   |
| Andhra Pradesh . . . . . | 83  | 1.38  | 95  |
| Assam . . . . .          | 111   | 1.98  | 137   |
| Bihar . . . . .          | 86  | 1.38  | 95  |
| Gujarat . . . . .        | 74  | 1.95  | 134   |
| Karnataka . . . . .      | 74  | 1.68  | 116   |
| Kerala . . . . .         | 100   | 1.45  | 100   |
| Madhya Pradesh . . . . . | 69  | 1.55  | 107   |
| Maharashtra . . . . .    | 74  | 1.77  | 122   |
| Orissa . . . . .         | 72  | 1.39  | 96  |
| Punjab . . . . .         | 70  | 3.24  | 223   |
| Tamil Nadu . . . . .     | 79  | 1.67  | 115   |
| Uttar Pradesh . . . . .  | 74  | 1.08  | 74  |
| West Bengal . . . . .    | 101   | 1.61  | 111   |

From the index numbers in column (4) of table 41 it is evident that in the base year the real wage rate (in terms of cereals) was highest in Punjab among all the states and that it was lowest in Uttar Pradesh. Kerala stood relatively low in the ranking, much lower than Assam, Gujarat, Maharashtra, Karnataka and Tamil Nadu, where real wages (in terms of cereals) ranged from 15 to 37 per cent above those of Kerala. Only in four states, i.e., Andhra Pradesh, Bihar, Orissa and Uttar Pradesh, were real wage rates (in terms of cereals) below the level in Kerala; in Uttar Pradesh they were actually about 25 per cent lower.

The trend in real wage rates since 1956/57 can be assessed by using the more comprehensive consumer price index numbers for agricultural labourers, available separately for each state,<sup>4</sup> to deflate the money wage rates prevailing in subsequent years. The results are shown in table 42.

On this basis the states can be divided into two groups; those in which real wage rates have risen between the terminal years and those in which real wages have declined. In the first group, real wage rates rose highest in Uttar Pradesh, Kerala and Punjab. Of the states in the second group, the decline has apparently been most severe in Assam.

<sup>4</sup>These index numbers are estimated by the Labour Bureau of the Government of India on a monthly basis, and are published every month in the *Indian Labour Journal*. The weights used for different items of consumption in each state are derived from the findings of the Second Agricultural Labour Enquiry.

TABLE 42. INDIA: INDICES OF REAL WAGE RATES OF MALE FIELD LABOUR IN DIFFERENT STATES, 1956/57 TO 1971/72

| State                    | 1956/57 | 1961/62 | 1966/67 | 1971/72 |
|--------------------------|---------|---------|---------|---------|
| Andhra Pradesh . . . . . | 100     | 124     | 110     | 119     |
| Assam . . . . .          | 100     | 95      | 67      | 78      |
| Bihar . . . . .          | 100     | 100     | ...     | ...     |
| Gujarat . . . . .        | 100     | 117     | 101     | 125     |
| Karnataka . . . . .      | 100     | 114     | 73      | 92      |
| Kerala . . . . .         | 100     | 118     | 134     | 151     |
| Madhya Pradesh . . . . . | 100     | 119     | 81      | 102     |
| Orissa . . . . .         | 100     | 119     | 105     | 96      |
| Maharashtra . . . . .    | 100     | 114     | 98      | 99      |
| Punjab . . . . .         | 100     | 121     | 102     | 148     |
| Tamil Nadu . . . . .     | 100     | 94      | 90      | 113     |
| Uttar Pradesh . . . . .  | 100     | 143     | 120     | 172     |
| West Bengal . . . . .    | 100     | 109     | 90      | 96      |

Two factors mentioned as possible causes for the significant rise in the real wage rate of agricultural labourers in Kerala are: (a) improvement in productivity, and (b) organization of agricultural labourers into trade unions. These factors are examined briefly below.

In table 43 indices<sup>5</sup> of productivity per hectare of cropped land in the different states for selected years between 1956/57 and 1971/72 are given. It will be seen that, though productivity per hectare did improve substantially in Kerala (by 36 per cent), much greater improvements were registered in Gujarat (98 per cent), Punjab (92 per cent), Karnataka (52 per cent) and Bihar (52 per cent). Of these five states, however, Kerala tops the list in terms of improvement in the real wage rate (51 per cent) with Punjab

TABLE 43. INDIA: INDICES OF PRODUCTIVITY PER HECTARE OF CROPPED AREA IN DIFFERENT STATES

| State                    | 1956/57 | 1961/62 | 1966/67 | 1971/72 |
|--------------------------|---------|---------|---------|---------|
| Andhra Pradesh . . . . . | 100     | 111     | 115     | 116     |
| Assam . . . . .          | 100     | 95      | 90      | 98      |
| Bihar . . . . .          | 100     | 122     | 67      | 152     |
| Gujarat . . . . .        | 100     | 125     | 121     | 198     |
| Karnataka . . . . .      | 100     | 109     | 114     | 152     |
| Kerala . . . . .         | 100     | 112     | 117     | 136     |
| Madhya Pradesh . . . . . | 100     | 95      | 64      | 107     |
| Maharashtra . . . . .    | 100     | 101     | 90      | 85      |
| Orissa . . . . .         | 100     | 103     | 100     | 97      |
| Punjab . . . . .         | 100     | 110     | 143     | 192     |
| Tamil Nadu . . . . .     | 100     | 110     | 109     | 133     |
| Uttar Pradesh . . . . .  | 100     | 108     | 92      | 118     |
| West Bengal . . . . .    | 100     | 107     | 103     | 129     |

<sup>5</sup> These indices have been arrived at by taking the weighted average productivity of each agricultural crop (except plantation crops), with the weights assigned according to the share of the different crops in the total value of all crops in 1956/57.

following closely behind (48 per cent). While Gujarat recorded an improvement of 25 per cent, Karnataka's real wage rate seems to have fallen. The correlation between productivity increase and improvement in wage rate does not appear to be particularly strong.<sup>6</sup>

The other explanation is offered in terms of the strength of the peasant organizations in Kerala relative to that in other parts of the country. In addition, the support given by the government of Kerala, which "may have been more responsive to the demands of these organizations" has also been mentioned.<sup>7</sup>

This is a proposition that cannot be accepted or rejected on the basis of whatever little information is available on the subject of unionization of agricultural labour. As is noted subsequently in this chapter in analysing interdistrict variations in the level and trend of wage rates, unionization as such does not seem to have been in all cases the only, or even the main, factor contributing to their rise over this period; if it has indeed been the most important factor, the precise links through which it has been effective have yet to be identified.

It is pertinent to refer in this context to the observation in chapter V that the most effective part of land reform legislation in the state was its success in virtually abolishing tenancy. Landless labourers derived little direct benefit from land reforms, except through the small plots of up to one tenth of an acre per household which "hutment dwellers" were entitled to acquire at a nominal price. It is, however, possible that these measures led to some small tenant farmers becoming less dependent on the labour market, and to agricultural labourers who earlier had no land improving their bargaining power and raising their reserve price. In this manner, the more effective tenancy reform together with the other marginal measures taken in Kerala could have contributed to the high percentage rise in the real wage rates of agricultural labour in the state. This is, however, a tentative hypothesis on which much more work needs to be done.

### Interdistrict variations

Levels and trends in agricultural wage rates in the 10 districts of the state may now be examined.<sup>8</sup> Table 44 presents the average money wage

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<sup>6</sup>The rank correlation coefficient estimated for the year 1971/72 comes to 0.4476, which is not significant at 5 per cent.

<sup>7</sup>Pranab Bardhan, "Green revolution and agricultural labourers", *Economic and Political Weekly*, Special Number, July 1970. Bardhan's study of movements in real wage rates was related to Intensive Agricultural Development Programme (IADP) districts of various states between 1962/63 and 1967/68 (which in Kerala were the districts of Alleppey and Palghat). His study showed that the daily wage rate among male agricultural labourers recorded a higher percentage increase in these two districts than in any of the other IADP districts in India, even though much higher increases in agricultural production were recorded in other states.

<sup>8</sup>In 1971, an eleventh district, Idikki, was carved out of the high-range areas of Kottayam and Ernakulam districts.

TABLE 44. KERALA: MONEY WAGE RATES OF MALE AGRICULTURAL  
LABOURERS IN DIFFERENT DISTRICTS, 1960/61-1970/71  
(Rupees per day, except as otherwise indicated)

| District                              | 1960/61 | 1962/63 | 1964/65 | 1966/67 | 1968/69 | 1970/71 | Percent-<br>age in-<br>crease |
|---------------------------------------|---------|---------|---------|---------|---------|---------|-------------------------------|
| Trivandrum . . . . .                  | 1.79    | 2.41    | 2.68    | 3.67    | 4.63    | 4.75    | 147                           |
| Quilon . . . . .                      | 1.75    | 2.12    | 2.69    | 3.44    | 4.63    | 4.75    | 164                           |
| Alleppey . . . . .                    | 1.94    | 2.29    | 2.72    | 3.89    | 4.65    | 5.50    | 186                           |
| Kottayam . . . . .                    | 1.74    | 2.09    | 2.88    | 3.50    | 4.63    | 5.00    | 169                           |
| Ernakulam . . . . .                   | ...     | 2.80    | 3.39    | 4.19    | 5.44    | 5.94    | 121                           |
| Trichur . . . . .                     | 1.71    | 2.70    | 2.97    | 3.86    | 5.35    | 5.96    | 187                           |
| Palghat . . . . .                     | 1.25    | 1.50    | 1.99    | 2.52    | 3.15    | 3.00    | 126                           |
| Malappuram . . . . .                  | 1.50    | 2.47    | 2.51    | 3.61    | 4.69    | 4.58    | 165                           |
| Kozhikode . . . . .                   | 2.09    | 2.66    | 3.11    | 3.59    | 4.25    | 4.33    | 92                            |
| Cannanore . . . . .                   | 1.56    | 1.62    | 1.81    | 2.37    | 3.00    | 3.56    | 134                           |
| Coefficient<br>of variation . . . . . | 15.01   | 17.44   | 15.87   | 16.63   | 17.44   | 18.76   |                               |

rates in the various districts for selected years from 1960/61 to 1970/71.<sup>9</sup> Percentage increases have been worked out, taking the average wage rate for the three years 1959/60 to 1961/62 as the base for all districts (except for Ernakulam, where the increase is calculated only with reference to the wage rate in 1961/62).

It will be seen that considerable interdistrict variations in money wage rates existed throughout the 1960s. This can be seen from the coefficients of variation given in the table. This problem of interdistrict differences in

<sup>9</sup>The data given in table 44 for 1965/66 are taken from the reports of the state Bureau of Economics and Statistics which collected wage information from 19 villages spread over the 10 districts of Kerala. The names of the villages and the districts to which they belong are given below:

| Village            | District   | Village            | District   |
|--------------------|------------|--------------------|------------|
| Keezhanur . . . .  | Trivandrum | Vengur . . . . .   | Ernakulam  |
| Chencherry . . .   | Trivandrum | Chengallur . . .   | Trichur    |
| Perumkulam . . .   | Quilon     | Vilvattom . . . .  | Trichur    |
| Azhoor . . . . .   | Quilon     | Elappully . . . .  | Palghat    |
| Karuvatta . . . .  | Alleppey   | Othallur . . . . . | Malappuram |
| Pennukara . . . .  |            | Nilambur . . . . . | Malappuram |
| North . . . . .    | Alleppey   | Koduvally . . . .  | Kozhikode  |
| Keezhanthur . . .  | Kottayam   | Balusserly . . . . | Kozhikode  |
| Poozhikole . . . . | Kottayam   | Panur . . . . .    | Cannanore  |
| Cheranallur . . .  | Ernakulam  | Thrikkaripur . . . | Cannanore  |

For these villages, wage data are available for all 12 months of the year. The normal duration of work in these centres ranges from 7 to 9 hours a day. However, in the two villages from Cannanore district, the range is between 4 and 6. An attempt has been made to estimate the wage rate per district for each year by taking the simple average of wage rates for villages falling within the same district. In estimating the wage rate for Kottayam district, Keezhanthur village, which belongs to the high-range category, has not been taken into account. Hence Kottayam is represented by only one village, Poozhikole. Palghat district is likewise represented by the only available village, Elappully. In the case of all other districts, the average wage rate from two villages is taken.

agricultural wages within Kerala has not gone unnoticed. The report of the Second Minimum Wages Committee for Employment in Agriculture<sup>10</sup> appointed by the state government referred to this and pointed out that agricultural wage rates in the earlier Travancore-Cochin region of the state were initially high enough to conform to the existing minimum-wage legislation, and were continuing to rise between 1957 and 1961. The Committee noted that in the districts of Kozhikode and Cannanore in the northern part of Malabar wage rates were even higher, but that the Palghat district in southern Malabar had remained a low-wage pocket.

It can be seen from table 44 that, while the broad pattern has not undergone a major change, the highest money wages now obtain not in Kozhikode and Cannanore—the wage rates reported for Cannanore district, it should be noted, are throughout for half-day employment—but rather in Trichur, Ernakulam, Alleppey and Kottayam. It is interesting to note that the rate of increase in money wage rates has been slowest in Kozhikode, which in 1960/61 had the highest wage rates. The money wage rate in Palghat, however, has remained the lowest throughout the decade. On the other hand, Malappuram district appears to have done reasonably well; the wage rate there in 1960/61 was just above that obtaining in Palghat, but in 1970/71 it was slightly higher than the wage rate obtaining in the neighbouring district of Kozhikode.

Having analysed the interdistrict variations in money wages, it is necessary to look at the interdistrict picture in terms of real wage rates. For this purpose, the money wage rates for each year have been deflated by the Agricultural Labourers Consumer Price Index Number (ACPI) for Kerala for the corresponding year. It should be noted that this index number is available only for Kerala as a whole and not for each of the districts or for any region; the assumed consumption basket and the implicit weights are therefore the same for all districts.<sup>11</sup> Table 45 nevertheless gives the indices

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<sup>10</sup>*Report of the Minimum Wages Committee for Employment in Agriculture, 1961* (Trivandrum, Government Press, 1964), chap. 5.

<sup>11</sup>This particular index number has been used in full awareness of its limitations, the most serious being:

(a) The weighting diagram for ACPI (new series) is based on the results of the survey conducted for the Second All-India Agricultural Labour Enquiry of 1956/57. In the survey, the weightage given to rice alone in the food group is 54.3 per cent. Tapioca, which, as has been shown in earlier chapters, is produced on a large scale in Kerala, and probably meets the major part of the calorie requirements of the low-income groups in the state, is not adequately represented in ACPI for Kerala;

(b) The ACPI figures are for the state as a whole and thereby fail to take into account the interdistrict differences in weightage that should be attached to cereals and cereal substitutes. There exist considerable regional differences within Kerala in the production as well as in intake of rice and tapioca. Most of the rice production in Kerala is concentrated in the northern districts, whereas tapioca is produced mainly in the southern districts. The intake of rice is also relatively greater in the northern districts; in the southern districts, tapioca accounts for a larger part of the total calorie intake;

(c) To estimate these indices, the Labour Bureau has used only the controlled price of rice supplied through the public distribution system. This ignores the inadequacy of the quantities sold through fair price shops and the consequent dependence of many consumers on the open market for supplementing their requirements of rice.

TABLE 45. KERALA: INDEX NUMBERS OF REAL WAGE RATES IN DIFFERENT DISTRICTS, 1960/61-1970/71

| District                | 1960/61 | 1962/63 | 1964/65 | 1966/67 | 1968/69 | 1970/71 |
|-------------------------|---------|---------|---------|---------|---------|---------|
| Trivandrum . . . . .    | 100     | 120     | 109     | 121     | 126     | 118     |
| Quilon . . . . .        | 100     | 112     | 116     | 121     | 135     | 126     |
| Alleppey . . . . .      | 100     | 113     | 110     | 128     | 127     | 136     |
| Kottayam . . . . .      | 100     | 107     | 120     | 119     | 130     | 128     |
| Ernakulam . . . . .     | 100     | 103     | 102     | 103     | 110     | 109     |
| Trichur . . . . .       | 100     | 124     | 111     | 118     | 135     | 137     |
| Palghat . . . . .       | 100     | 108     | 116     | 120     | 124     | 108     |
| Malappuram . . . . .    | 100     | 136     | 112     | 132     | 142     | 126     |
| Kozhikode . . . . .     | 100     | 112     | 107     | 101     | 98      | 91      |
| Cannanore . . . . .     | 100     | 102     | 92      | 99      | 103     | 111     |
| ACPI (Kerala) . . . . . | 100     | 105     | 129     | 158     | 191     | 210     |

SOURCE: ACPI figures are taken from *Indian Labour Journal*, monthly publication of the Labour Bureau, Simla.

of real wage rates for the various districts from 1960/61 onwards using this index number.

These indices show clearly that, during the decade under review, real wage rates have risen over the level of the base year in all districts of Kerala except Kozhikode. The extent of such wage increase ranges from 10 to 35 percentage points. The largest increases are noticeable in Trichur, Alleppey and Kottayam. In real terms, Kozhikode district seems to have fared the worst. Apparently the rise in money wages in the Kozhikode district was not adequate to compensate for the rise in the cost of living over the base-year living standards. The other northern Malabar district, Cannanore, also appears to have experienced declining real wage rates until the end of the decade (when an increase of 11 per cent appears in 1970/71). By comparison, Palghat district does not seem to have done too badly in real terms. Till 1968/69 its real wage rate in agriculture was higher by 24 per cent compared to the base year, though in the terminal year, 1970/71, price rises seem to have eroded a good part of that improvement.

Having surveyed the position in the various districts with respect to the trend in the real as well as in the money wage rates for agricultural labour, it is appropriate to revert to the question of the factors which might possibly have contributed to interdistrict variations. Of the three districts which have recorded maximum increases in real wage rates, Alleppey and Kottayam have portions belonging to the Kuttanad region, where agricultural labour unions were quite powerful all through the 1960s. In fact such unions have a history of 25 to 30 years and there is little doubt that they exercise considerable influence on wage fixation in this region. However, in Trichur, which also registered a rapid rate of increase in real wages, unions do not appear to have been a major force. In fact, outside Kuttanad, there is not much unionized collective bargaining of that type. It is therefore very difficult to link the significant rise in the real wage rate in Kerala as a whole with unionization.

Any perceptible change in the situation for the whole of Kerala came about only after 1970. There has been a noticeable expansion of trade union activities among agricultural labourers from the early 1970s. At the instance of different political parties, agricultural workers' unions are being set up in different parts of the state. Out of the 59 such unions functioning in Kerala (registered in the Office of the Labour Commissioner, Trivandrum, up to July 1974) 39 were registered after January 1970. Among the other 20 unions registered before 1970, seven belong to the Kuttanad region and another seven are organizations of agricultural workers in government seed farms and research institutes. This indicates that, prior to the 1970s, the spread of agricultural workers' unions in Kerala was on a relatively limited scale.

It may, however, be noted that there have been several instances when the state government took the initiative to revise agricultural wages. A minimum wage committee for employment in agriculture was first appointed in 1953, and again in 1961. In addition, the government has often come forward to declare wage rates for the whole state through notifications. The latest notification was in 1968, when the government fixed the wage rates for ordinary agricultural operations at Rs 3.50 for men and Rs 2.50 for women. Further, the government also intervenes in labour disputes, as and when they emerge in Kuttanad, and fixes wage rates applicable to the entire region through notifications.

It should also be mentioned that in 1974 the government of Kerala passed a Bill in the Assembly called the Kerala Agricultural Workers Bill. The Bill, designed to safeguard the interests of over 1.9 million agricultural labourers in the state, sought among other things to provide security of employment to labourers and also to ensure better terms and conditions for wage employment. It made obligatory on the part of employers the responsibility to maintain a register recording the employment of hired workers and to contribute 5 per cent of current wage payments to Labourers' Welfare Fund. The Bill also provided for the setting up of labour tribunals at the district level to settle agricultural disputes as and when they arose.

There has, however, been no follow-up action yet on this Bill. It should also be pointed out that the scope of the Bill itself was reduced between preparation and final enactment. While it was being deliberated in the state Assembly, cultivators owning less than 1 hectare of paddy land were exempted from the purview of the Bill.





## Chapter VIII

### PUBLIC WORKS PROGRAMMES

Public works programmes have attracted considerable attention in recent years as part of the policy measures recommended for those economies which are characterized by mass poverty and unemployment. Given the magnitude of under-utilized labour in these economies, particularly in agriculture and various services, and the obvious limits to the rate at which productive employment can be expanded in manufacturing industries, public works programmes have seemed to be a potentially powerful instrument for generating employment. As the literature on this subject has emphasized, such programmes could be designed not only to create employment opportunities for the poor and increase their purchasing power but also to build up productive assets essential for accelerating the development process itself.

#### **Some important prerequisites of a massive public works programme**

Experience has, however, clearly shown that there are certain important conditions to be satisfied before public works programmes can be used on a large and expanding scale as an effective instrument for achieving those objectives. The most important condition is that there should become available increased supplies of essential consumer goods, particularly food, on which the increased purchasing power of those absorbed in public works is likely to be spent. Failing this, any large outlay on employment-oriented public works tends to push up the price of the consumption basket of the poor, and create problems more serious than those to be resolved by the creation of additional employment.

Unless the required additions in the supply of these consumer products can be secured through aid from external sources, the works programmes themselves should be such as would help to increase supplies to the maximum extent possible. A corollary is that, if such aid is not forthcoming (or is considered undesirable for some important social or political reason), and if the supplies of the essential consumer goods cannot in any way be increased to the full extent required to meet the additional demands generated by public works, some other way must be found to prevent a rise in their prices.

Public distribution of essential consumer goods, particularly of food, is of course one obvious way of keeping prices in check. The effective operation of such a system would itself be endangered, however, if the additional purchasing power created by the public works programmes were so large relative to the available supplies of essential consumer goods as to encourage open or black market transactions at higher prices. This means that some method would have to be devised to raise the rate of saving as investment in public works is increased. Indeed, the greater the rate of

saving the less would be the pressure on the available supplies of consumer goods.

It is of course not essential that the additional savings needed should be made wholly or even mainly by those whose purchasing power is increased by additional employment in public works programmes. In fact, if public works are to be viewed as part of the entire development programme, various fiscal and other measures can be devised to promote the required saving by the society as a whole, taking into account relevant considerations such as ability to save, equity, and political and administrative feasibility. One can easily conceive of situations in which it would be neither desirable nor essential to expect low-income groups benefiting from the additional employment generated by public works to save any significant proportion of the increase in their income.

However, in countries such as India, where for a variety of social, political and administrative reasons the scale of investment that would be feasible without being inflationary has been severely constrained by inadequacy of savings, it becomes necessary to consider every possible way in which additional savings can be encouraged. Even those found additional employment in public works must be persuaded to do some saving, since otherwise the scale on which additional employment opportunities can be created through public works might prove to be disappointingly small.

This does not mean that considerations of equity should be overlooked and the lowest-income groups be made to bear most or a large part of the burden of raising the necessary resources. It is generally accepted that higher income groups are not saving enough and adequate steps are not being taken to force them to do so. These considerations imply that, together with measures for raising the rate of saving among higher-income groups, it would help to enlarge the scale of the public works programmes if some methods could be devised to induce workers employed on such programmes as well as other low-income groups benefiting from them to save some part of their increased incomes.

The greater the degree to which such additional saving by low-income groups can be linked with opportunities simultaneously made available to them for acquiring desired assets, the more satisfactorily one can take care of the equity aspect of such induced saving. Otherwise the ultimate effect of these programmes will very probably be to widen disparities in wealth and income, and increase poverty in the relative sense. This outcome is likely because higher-income groups, who already own the greater part of the desired assets, benefit from the windfall gains accruing from the development process, and are also generally able to secure through their higher saving potential and command over finance the larger part of the new assets. Questions of how wealth is distributed and how development will affect it cannot therefore be considered as outside the purview of the issues of equity raised by public works programmes. Basically, these issues are socio-political in character, and whatever arrangements are devised in the context of public works programmes must take them into account.

It follows that there are ideally, at least five important considerations that public works programmes should satisfy if they are to succeed in promoting both equity and economic growth. The first is that they should help to build up productive assets. The second is that they should help to increase to the maximum extent possible the supply of essential consumer goods, particularly food. A third interrelated condition is that, since perfect matching of available supplies with demand might not always be possible, there has to be a reasonably effective public distribution system to ensure that the minimum requirements of such commodities are made available at a fair price. A fourth condition is that there should be some built-in mechanism to induce additional saving even among the low-income groups whose incomes are increased as a result of the public works programmes. A related final condition is that such additional saving should be linked with opportunities for low-income groups to acquire desired assets on favourable, even preferential, terms.

The literature on the role of public works programmes in countries with mass poverty and unemployment has generally focused attention mainly on the first two conditions.<sup>1</sup> The second and third conditions are also mentioned at times, but with less emphasis on their importance.<sup>2</sup> The last condition has seldom been noted.<sup>3</sup> In fact, much of the controversy as to how much can be achieved by relying on public works is traceable either to inadequate attention being paid to one or other of the five conditions listed above or to some implicit judgement being made about them. Typical of the issues that have thus been debated without much advantage is whether public works should be regarded as an integral component of the entire development programme for a country, and therefore built into it from the outset, or treated as something with a separate identity and additional, even if complementary, to the rest of the programme; the same is true of much of

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<sup>1</sup> The best and most famous example is the work of Ragnar Nurkse, *Problems of Capital Formation in Underdeveloped Countries* (Basic Blackwell, 1952). It should be added that this book was "concerned mainly with the potential sources of capital formation, rather than with the ways and means of tapping these sources" and that Nurkse, after pointing out that he had confined himself to a theoretical outline of the problem, added that he had "no illusions about its practical difficulty". *Ibid.*, chap. II.

<sup>2</sup> See, for instance, K. N. Raj, "The second five year plan: investment magnitudes and their implications", in Government of India, Planning Commission, *Papers Relating to the Formulation of the Second Five Year Plan* (1955). This paper, which visualized a rural works programme to give direct employment to 6 million additional workers, examined the implications in terms of additional demand for food-grains and other essential consumer goods, and proposed a programme both for the construction of warehouses on a country-wide scale for storing food-grains and the taking over by the Government of the wholesale trade in essential commodities such as cloth, sugar, vegetable oils and kerosene. It also argued the case for schemes of compulsory saving, but did not link such schemes with the rural works programme.

<sup>3</sup> Not only has the probable effect of public works programmes on distribution of wealth not been explicitly noted but proposals have been made for using such programmes to develop agricultural land which would later be distributed through a market auctioning process from which the landless would be altogether excluded. See B. S. Minhas, "Rural poverty, land redistribution and development strategy: facts and policy" (Economic Development Institute, International Bank for Reconstruction and Development, September 1970). For a critical comment on this particular proposal, see K. N. Raj, "Agricultural development and distribution of land holdings" (presidential address delivered at the All-India Agricultural Economics Conference, 1 December 1974), *Indian Journal of Agricultural Economics*, vol. XXX, No. 2.

the argument about the scale on which public works can or should be undertaken and their practicality.<sup>4</sup>

### Types of public works programmes in Kerala

In this section the experience with public works programmes in Kerala will be discussed, not so much with reference to the scale on which they have been undertaken so far (the scale has indeed been very small, whether judged in relation to the magnitude of poverty and unemployment in the state or with reference to their additive effect on investment) but rather in terms of the implications of the different kinds of public works programmes organized in recent years, viewed in the light of the five conditions listed above as prerequisites for public works programmes performing their potential role.

There is, of course, the construction component of all the investment schemes undertaken in the state as part of the public sector development programme in each five-year plan period. One could interpret public works to cover this alone.<sup>5</sup> No estimates of such public expenditures in the state are however available.<sup>6</sup> Moreover, though it is true that such construction

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<sup>4</sup>See V. M. Dandekar and Nilakantha Rath, *Poverty in India* (Indian School of Political Economy, 1971), chap. VII; also John P. Lewis, "The public works approach to low-end poverty problems: the new potentialities of an old answer", *Journal of Development Planning*, No. 5 (United Nations Publication, Sales No. E.72.II.A.13). While both advocate a massive rural works programme, Dandekar draws attention only to the implication that its implementation would require cutting the consumption of the top 5 per cent of the population by about 15 per cent and of the next 5 per cent of the population by 7.5 per cent. How, precisely, this is to be done, and what the implications are in regard to the last three of the five conditions listed in the text, are not touched upon at all. Lewis, on the other hand, assumes that foreign aid would be available, and merely states that "there are few countries that could responsibly embark on a major works programme with no extra foreign assistance, without a great deal of the internal fiscal belt-tightening that the austere end of the financing range implies".

<sup>5</sup>In fact it was in the sense of all constructional activity undertaken by the Government for development that the term "public works" was used earlier in India. It was therefore also with these larger developmental objectives in mind that the case for public works was made.

"The old Public Works of Irrigation now existing, show plainly that at some previous time and in some places, Natives have had some idea that there were things of more importance than *collecting Revenue*; but so low have the Europeans sunk, that they have not even been roused by the sight of these valuable works, so far as to make it a point to keep them in repair. The very name of local controllers of the Revenue shows unmistakable how low an idea was formed of the duties of Government: they were called simply *Collectors*, clearly implying that *Collection* was the leading idea, and the supposition that all other things could take care of themselves. With a right view of the case, they would have been called *Directors of Public Works*, or some such title, and the *collection of the Revenue* would have been understood to be quite a secondary matter, and a thing that would follow of course, when the people were enabled to pay it."

A. T. Cotton, *Public Works in India: Their Importance with Suggestions for their Extension and Improvement* (Madras, Higginbotham and Co., 1885), third edition, p. 24. Cotton went on to make the case for and to assess the relative costs and benefits to be secured from irrigation, river navigation, roads and railways.

<sup>6</sup>The only estimates of gross capital formation available for Kerala relate to two five-year periods, 1956/57 to 1960/61 and 1961/62 to 1965/66. According to these estimates the gross capital formation in the latter period (i.e., corresponding to that of the third five-year plan) was about Rs 4,540 million (excluding investment in commodity stocks); since the estimated state income for the same five-year period works out to a little over Rs 30,000 million, the rate of gross capital formation appears to have been nearly 15 per cent of the state income. Of the gross capital formation of Rs 4,540 million, nearly one fourth (Rs 1,028 million) has been

raises the same kind of issues as expenditure on public works or rural works programmes described specifically as such, the main interest today in public works programmes stems from the belief that they could, in addition to whatever has been customarily attempted so far in the five-year plans help to absorb unemployed labour, increase the incomes of the poor and at the same time raise the rate of capital accumulation on a significantly larger scale than has hitherto been possible. For this reason there is advantage in concentrating attention on those schemes which were intended to have such effects. This is attempted below.

Applying the more restricted interpretation of the term "public works", there are three types of schemes that may be touched upon. The first is well represented by the "crash schemes for rural employment" which were undertaken in Kerala (as in other states) at the instance of the Planning Commission in 1971/72. Another scheme, different in some important respects from that described above, is for constructing about 0.1 million houses for low-income groups. This was initiated by the government of Kerala early in 1972, and was in effect a modified version of another scheme for developing house sites for landless agricultural labour families sponsored by the Central Government in 1971. The third is an experiment, started in 1973 and still in process of being implemented on a very limited scale in one district in the state, to set up a financial institution (called a Labour-cum-Development Bank) with the specific purpose of promoting and supporting labour-intensive projects proposed by village panchayats, and which is designed to become self-financing to a considerable degree over a period of time.

### **Approach to rural employment programmes**

The idea of promoting special employment-oriented rural works programmes as a first step towards ensuring "gainful employment for everyone who seeks work", and earmarking for this purpose a part of the financial resources available to the public sector, won official acceptance in India only in the third five-year plan covering the period 1961/62-1965/66. The amount actually set apart for such programmes was not more than about 2 per cent of the total proposed developmental outlay of the public sector and, ultimately, of the amount so earmarked less than 15 per cent was actually made available on account of various budgetary cuts during this period.

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estimated as due to land reclamation and a little over two fifths (Rs 1,872 million) on account of construction (including construction of houses, buildings and "public works"); no breakdown is however available of this capital formation as between the private and public sectors. See G. Krishnan Kutty, "Capital formation in India with special reference to Kerala" (unpublished doctoral thesis submitted to the University of Kerala, September 1971), chap. VII. The reliability of these estimates is, of course, open to question on account of the weak statistical basis on which they have been constructed. It should be added in fairness, however, that estimates of gross capital formation made by the Central Statistical Organization for India as a whole are not very much better. It will be of interest to note that, according to its estimates, gross capital formation in India rose from about 16 to 17.5 per cent of the gross national product over the period 1961/62 to 1965/66. For a critique of the available estimates of capital formation and saving in India, see K. N. Raj, "Some issues concerning saving and investment in the Indian economy", in E. A. G. Robinson and Michael Kidron, eds., *Economic Development of South Asia* (Macmillan, 1970).

An evaluation of the limited experience gained during this period brought out clearly the problems created by the limited scale, compared to the original allocations, on which funds were made available, particularly on account of uncertainty about the continuation and extension of the works programmes, as also by various administrative and technical drawbacks in their execution.<sup>7</sup> Furthermore, it highlighted the following defects in the conception and implementation of the programmes: (a) the insistence on voluntary contributions of labour (*shramdan*), as a pre-condition for the execution of specific projects under the programme, not only obstructed their being taken up but, when they were taken up, led to the exploitation of the poorest sections of the population for whose benefit the entire programme was conceived; and (b) since no serious effort was made to frame well co-ordinated and technically sound programmes for the integrated development of the areas concerned, the execution of the schemes turned out to be haphazard and wasteful, often leading to nothing more than a semblance of asset creation followed by a period of total neglect of whatever had been so created.

The experience of this period had evidently some effect on the whole approach to rural works programmes. Though some schemes for guaranteed rural employment were prepared by the governments of Maharashtra and Gujarat towards the late 1960s, and even experimented with on a limited scale, no specific provision was made for rural works programmes in the final version of the fourth five-year plan (1969/70-1973/74) except as part of famine relief work. The approach used in the plan, it was clear, was to adopt a general strategy of development "involving comprehensive programmes of rural development, labour intensive public works programmes and fuller utilisation of industrial capacity, promotion of labour intensive industrial products for domestic and foreign markets and application of economically sound labour intensive techniques in industrial production" rather than on what might be described as additive public works specially oriented to the generation of employment. It was pointed out in the plan that "the emphasis on labour intensive programmes through development of agriculture, rural infra-structure including communication and transport links, rural electrification, water management, rural industries, decentralization and dispersal of industrial investments, rural and urban housing in the investment programmes is in line with this strategy", and that the experience gained through the schemes of the governments of Maharashtra and Gujarat "has been utilised in working out and launching special programmes for small farmers with viable and non-viable units of cultivation, agricultural and landless labour and rural artisans, particularly in dry areas as well as in backward districts, the allocations on which have been considerably stepped up", with renewed attention being given to the "problems of coordination which such schemes demand".<sup>8</sup>

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<sup>7</sup>Government of India, Planning Commission, Programme Evaluation Organisation, *Report on Evaluation of Rural Manpower Project* (1967).

<sup>8</sup>Government of India, Planning Commission, *Fourth Five-year Plan, 1969-74* p. 429.

This approach met with serious criticism, partly on the grounds that the observed defects of the earlier rural works programmes were mainly due to the lack of an adequate developmental machinery at the district level and below, which could and should be rectified,<sup>9</sup> partly because without special rural works programmes the local needs and possibilities for mobilization of resources would never receive the attention they deserve,<sup>10</sup> and partly on the reasoning that the additional employment generated by the proposed development programme in the fourth five-year plan would have very little impact on the problems of mass poverty and unemployment in the country.<sup>11</sup> Perhaps in response to various political developments in the period immediately following the publication of the fourth five-year plan, and perhaps also in order to meet some of these criticisms, a provision of Rs 500 million (an amount which, in nominal terms, was about three times as large as that provided for rural works programmes in the third plan) was made in the budget of the Central Government for 1971/72, a little before the general elections held early in 1971. It is this sum which helped to finance a crash programme for rural employment which came into operation in the course of 1971/72.<sup>12</sup> Kerala's share of the total all-India provision was a little over Rs 15 million.

One feature of some of the proposals for rural works programmes put forward in the intervening period was the suggestion that the wage offered to those employed on these programmes should be somewhat lower than the prevalent normal wage in the relevant season; this, it was stated, was necessary "in order that the works programmes may leave the pattern of other employment undisturbed".<sup>13</sup> Another suggestion, which appears to be not quite in conformity with the first, was that the aim should be to offer "not so much slack season employment to those engaged in agriculture but to provide continuous employment ... to all those who need it" such that it would "induce and enable a part of the agricultural proletariat to withdraw more or less completely and permanently from agriculture while the remaining find fuller employment in agriculture". This would naturally require

<sup>9</sup>Ranjit Gupta, "Rural works programme: where it has gone astray", *Economic and Political Weekly*, vol. VI, No. 2, 15 May 1971.

<sup>10</sup>K. N. Raj, "'Planning from below' with reference to district development and state planning: a note", *Economic and Political Weekly*, vol. VI, Nos. 30-31, Special Number, July 1971.

<sup>11</sup>Dandekar and Rath, *op. cit.*

<sup>12</sup>The scheme has a two-fold purpose. First, each project should provide employment for 1,000 persons on an average continuously over a working season of 10 months in a year in every district. Secondly, each project should produce works of assets of a durable nature in consonance with local development plans. The expenditure has already covered 344 districts ... It has now been decided to include the scheme in the Plan with a provision of Rs 100 crores (Rs 1,000 million) for remaining two years." Government of India, Planning Commission, *The Fourth Plan Mid-term Appraisal* (December 1971), p. 69.

<sup>13</sup>In the scheme devised by the Maharashtra government the wages paid to those employed in the works programmes were to be fixed at 10 per cent less than the normal wage in the relevant season. Dandekar and Rath also expressed agreement with this approach and argued that in order to leave the pattern of other employment "undisturbed" the wages to be paid on rural works programmes should be "somewhat below the normal wage". Dandekar and Rath, *op. cit.*, pp. 116-119 and 131.



moving people who were willing to work to wherever scope exists for productive employment. Departmental organization under government auspices, or presumably even through quasi-public agencies, was however not favoured, and labour co-operatives, it was stated, "must be kept as the goal and not be made the starting point"; it was therefore proposed to start with regularization of the existing agency of labour contractors through licensing and by subjecting them to "a certain amount of supervision, inspection and labour legislation".<sup>14</sup>

Evidently these suggestions, coming as they did just before the crash programme was launched, had some effect on official policy. For, though the total financial provision for the programme was too small to attempt any kind of reorganization of the pattern of rural employment on a perceptible scale, the guidelines issued by the Central Government stated specifically that the nature and location of the works chosen should be such as would provide continuous employment for a period of 10 months in a year, and moreover, that wages paid to workers should correspond to the locally prevailing off-season rates, not exceeding Rs 100 per head per month. These guidelines had in addition some other provisions, not all of which were in conformity with the suggestions made earlier.<sup>15</sup>

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<sup>14</sup>The case made for providing continuous employment does not appear to be consistent with the reasoning immediately preceding that wages paid should be somewhat below the normal in order that the pattern of other employment be left undisturbed. The following passage shows how the case for providing continuous employment has been argued:

"there is no reason why we should take the existing pattern of rural employment for granted or why we should ... leave it undisturbed. In fact it is not only desirable but imperative to reorganise and rationalise this pattern if the rural manpower is to be mobilised for efficient and productive utilisation ... if by means of the additional works programme, together with other plan projects, we could create a certain amount of secure and dependable employment, that is regular full-time employment throughout the year, for all those who need it, things could be entirely different. In particular, it would go a long way in reorganizing and rationalising the pattern of rural employment."

(Dandekar and Rath, *op. cit.*, pp. 131-132.) Wage rates payable for continuous employment are of course generally lower than those for casual labour, and to that extent there is no inconsistency. But it still leaves unresolved the question of what precisely is implied by the apparently contradictory statements that the pattern of "other employment" should be left undisturbed and that at the same time the whole pattern of rural employment should be reorganized and rationalized. Presumably there is some implicit judgement about the desirable extent of change in rural wage rates inherent in the process of such reorganization and rationalization. But the contradiction could also be due to inadequate allowance being made for the institutional and other factors which govern the supply response of labour to any given wage rate or structure of wage rates; failure to appreciate the relevance of these factors is reflected in the observations of Dandekar and Rath on the *Report of the Committee of Experts on Unemployment Estimates*, as well as in their own method of estimating the quantum of unemployment. See Dandekar and Rath, *op. cit.*, pp. 123-127.

<sup>15</sup>The other interesting features of the guidelines for the crash programme were: (a) the schemes chosen in each area should not only generate additional employment but create "productive assets or complementary facilities which are part of the area development plan of each district"; (b) the district collectors were to be responsible for the formulation of the schemes to be taken up, the schemes were to be carried out by local committees of beneficiaries, and the block development officers were to undertake periodical inspection of the works; (c) the selection of labourers to be engaged for each work was to be made by the beneficiary committee concerned under the guidance of the block development officer, and priority was to be given to those who belonged to families where no member was already employed or to families which were acutely underemployed; (d) the amount spent on materials

Together with this crash programme for rural employment, a beginning was made by the Central Government, towards the end of 1971, in implementing a scheme for village housing first proposed towards the end of the 1950s.<sup>16</sup> The Government of Kerala modified the scheme, widening to some extent its scope in the state. The details of what has since come to be known as the One Lakh Houses Scheme in Kerala<sup>17</sup> are outlined in annex IV. Though the scheme was not primarily oriented towards the creation of employment or even regarded as a public works programme in the sense of the crash programme for rural employment, there is some advantage in viewing it from a similar perspective. In the following section, with the considerations stated earlier in this chapter kept in mind, a brief review is made of the experience of Kerala in regard to both of these schemes.

### **Record of the crash scheme for rural employment and of the One Lakh Houses Scheme in Kerala**

The experience in respect of the crash programme for rural employment has been fairly well appraised in two reports prepared by the Evaluation Division of the State Planning Board.<sup>18</sup> The main findings of the reports are summarized and commented upon below.

According to the programme the financial allocation for 1971/72 was to be used for creating employment on productive works for a minimum of 1,000 persons in each district for a period of 10 months. From a total provision of nearly Rs 16 million for Kerala as a whole, each district

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and equipment was ordinarily not to exceed 25 per cent of the total wage bill for each scheme, though some relaxation of this condition might be permitted in certain cases; (e) though recruitment of labourers was to be made directly by the beneficiary committees and not through the contract system, the use of contractors was apparently not ruled out altogether since the stipulation that "no provision for contractors profit has to be made in the estimate for the project works" implied that this agency might be used if the funds necessary for covering their profit margin could be met from elsewhere; and (f) projects were to be so dispersed as to dispense with the need for migration of labour to the project sites from distant places.

<sup>16</sup>"The essential tasks in the sphere of village housing will be to get appropriate lay-outs made for the growing villages, to provide basic amenities such as water and sanitation facilities, and to stimulate private building and renewal activity. Encouragement will have to be given to cooperative effort ... Introduced in 1957, the village housing projects scheme provides for assistance to villagers for construction or improvement of houses, for house sites to landless agricultural workers and for streets and drains in selected villages. The scheme has not made such progress. A study of its working supported by some quick field surveys has brought to light the low priority that is being accorded to it in the States ... It is necessary to protect the homesteads of families of landless agricultural labour, large numbers of whom belong to scheduled castes and backward classes and who live on land belonging to others. Laws conferring proprietary rights in such cases will have to be passed and enforced where this has not already been done. Measures to help these weaker sections in putting up a decent superstructure on these sites have to be adopted by supplying materials and guidance."

See Government of India, Planning Commission, *Fourth Five-year Plan, 1969-74*, chap. 19, pp. 403-404.

<sup>17</sup>One lakh is equivalent to 100,000; the other commonly used term in India is a crore which is equivalent to 10 million (or 100 lakhs).

<sup>18</sup>See Kerala, State Planning Board, Evaluation Division, "Interim appraisal of crash scheme for rural employment in Kerala, 1971-72" (February 1972) and "Crash scheme for rural employment in Kerala, 1971-72" (November 1972), Evaluation Series (Nos. 10 and 14). Both are available in mimeographed form.

received an allotment of a little over Rs 1.5 million. There were some initial delays in implementation, mainly because enough schemes of the required kind were not readily available at the level of the district administration and partly also due to other procedural obstacles. Judged in terms of the expenditure incurred over the year (which exceeded Rs 18 million) these delays were more than made up later, but a closer scrutiny of how the expenditure was incurred has brought to light a number of serious deficiencies in implementation.

It was the original intention that nearly two thirds of the total outlay should be on schemes for increasing agricultural production through minor irrigation works, land reclamation and soil conservation, and that only the balance should be spent on road construction. When the allocations by district were made the share of the schemes for increasing agricultural production was reduced to a little less than three fifths of the total; by the time the programme was implemented their share was less than one fourth, and that of road construction rose to more than three fourths.

It is of course not an unusual experience for road construction to absorb high proportions of the resources made available for public works programmes,<sup>19</sup> and under certain conditions this could even be justified on social and economic grounds. Kerala has, however, already such a wide network of roads and other forms of communication (such as canals) that there can be little doubt about the distortion of priorities which such an allocation of resources reflects. The general tendency for roads to absorb the bulk of the funds made available for public works, when there are potentially much more productive uses available in agriculture, is in many cases explained not only by the ease with which road construction can be undertaken at short notice but also by the fact that such investment does not generally bring into sharp focus some of the difficult issues which the selection and implementation of schemes affecting agricultural land directly would almost inevitably raise.<sup>20</sup> Moreover, road construction is such a contractor-oriented type of public works that, where decisions of this nature are dominated by considerations of political patronage and administrative corruption, it becomes the preferred investment even when it cannot be justified on any economic grounds at all.

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<sup>19</sup>For instance, it has been reported that, in the West Godavari district of the state of Andhra Pradesh, more than 90 per cent of the expenditure in 1971/72 under the same programme was on road works. See G. Parthasarathy and G. Dasaradha Ramo Rao, *Employment and Unemployment of Rural Labour and the Crash Programme (A Study of West Godavari District)* (Andhra University Press, 1974). Similarly, about three fourths of the expenditure on the rural public works programme undertaken in East Pakistan in the early 1960s, supported by assistance under Public Law 480 of the United States of America, was on the construction of roads. See John Woodward Thomas, "The rural public works program in East Pakistan", *Quarterly Journal of Economics*.

<sup>20</sup>"One way of appraising the general benefits of the roads is to examine changes in the value of land contiguous to new Works Program roads . . . . Since there is as yet little demand for commercial sites along these Works Program roads, the increase in land value suggests that the roads offer substantial benefits to the farmers located near them."

(John Woodward Thomas, *op. cit.*) The benefits, so measured, will of course be greater for farmers with larger holdings and higher proportions of marketed output, but this is unlikely to

Another important feature of the crash programme as implemented was that the wage rate paid turned out to be significantly higher than had been stipulated in the original guidelines. The prevailing wage rate for casual labour varied at the time between approximately Rs 4.5 and Rs 5 per day in different parts of the state; it was found difficult to attract and retain workers at lower off-season wage rates.<sup>21</sup> Since it was decided in the course of the year that the ceiling on the total wage payable to a person (Rs 100 per month) would not apply in the case of workers engaged on a piece-rate basis, this system of wage payment was adopted in some areas; a sample survey of the workers so employed showed that many of them received wages ranging from Rs 6 to Rs 12 per day.<sup>22</sup> Though some abuses could

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create the kind of problem at the stage of decision making and implementation that a land development programme would tend to.

"Because of the presence of externalities in land development process, the individual owners are unable to assess the development potential of different classes of land. The market for land is riddled with all sorts of imperfections and institutional restrictions. Very few inter-class transfers of land take place. The set-up here is suggestive of an n-person, non-cooperative, game-theoretic situation, in which each person comes in with a given amount of land of different types but lacks information about its development potential. Individual interest will produce a solution in this case which will be collectively inoptimal ... individual behaviour is frequently inoptimal in the presence of informational deficiencies or in the presence of externalities, which, for institutional or other reasons, cannot be internalized ... The fact of interdependence in public works is obvious. Construction of drainage works, in particular, and, to a large extent, levelling of land and digging of field channels are prime examples of interdependence in land development. There are also economies of scale in these very activities, due essentially to significant indivisibilities of the scale at which they can be constructed. And this minimum scale in general will be too large for any particular individual peasant."

(B. S. Minhas, *op. cit.*) This is one of the main reasons why many important rural works schemes of the kind needed for agricultural development are not taken up when land is in fragmented private plots and the agreement of a large number of owners (or operators) is required. An interesting example has been cited of one person not allowing even a small drain to pass by the side of his plot and thus preventing an irrigation scheme being taken up "even though about fifty persons owning land within the alignment had allowed it", in the Pakistan Academy for Rural Development, Comilla, East Pakistan, *Report on a Rural Public Works Programme in Comilla Kotwali Thana* (June 1962). Only some effective institutional arrangements to overcome such obstacles will make it possible for public works to make their potentially important contribution to agricultural development.

<sup>21</sup>"It was found that a large majority of the selected workers [selected for the evaluation study] ... did join the project work without actually knowing the wage rate (off-seasonal) fixed for the project work. Later on realising the actual position on wage rate many of them seemed to have left the project work in search of other works."

There was also evidence of workers seeking and preferring employment outside the project work. *Crash Scheme for Rural Employment in Kerala, 1971-72: An Evaluation Study*.

<sup>22</sup>"In view of the special type of road construction and bunding operations requiring lifting of mud from backwaters, the project works in Palluruthy were undertaken by employing workers on piece rate. As such many of the selected sample workers were reported to have received higher wages ranging from Rs. 6 to Rs. 12 per day." *Ibid.* In the West Godavari District of Andhra Pradesh wages were paid on a time basis, but "the wage rate paid at the project site was much more compared to the off-season wage rate and more even when compared to the weighted wage rate within agriculture." G. Parthasarathy and G. Dasaradha Rama Rao, *op. cit.*, p. 154. It has been pointed out in this study relating to Andhra Pradesh that, while "the norm that wages should be paid at off-season rate may be justified when employment is essentially of a relief nature", workers should be paid at a higher rate when they "are expected to create durable assets and display efficiency in work". *Ibid.*, p. 155.

have taken place, independent inquiries conducted in these areas regarding the details of piece-rate payment suggest that the rates adopted for these projects were generally lower than those laid down by the Public Works Department and that, if some workers were able to earn high wages, the main explanation probably lies both in their higher rate of work turnover and in the margin of profit implicit in the rates of payment of the Public Works Department.<sup>23</sup> In so far as the schemes selected were themselves worth while and malpractices could be checked through administrative devices, there was much to be said in favour of the piece-rate system since the daily wage payment would thus be related not merely to the hours of labour but to the measurable quantum of actual work done. The pros and cons of the piece-rate system of wage payment do however need further investigation.

Similarly, though it had been stipulated that priority was to be given in the selection of workers to those who belonged to families where no member was already employed or families which were acutely underemployed, only about a quarter of the workers covered by the sample for the evaluation study belonged to households with no other earning member; nearly two fifths of the total number had one other earning member, and over one third had two or more earning members besides the one employed in the crash programme. This only indicates that usually there are few who are totally unemployed in rural areas and that therefore "asking project officers to take only from families where no other adult member is employed does not make sense".<sup>24</sup>

Perhaps some of these features of this particular crash programme could be attributed to delays at the initial stage and to heavy concentration of expenditure in the last three months of the financial year (when nearly four fifths of it was incurred). An important comment on this aspect of the programme made in the Evaluation Study deserves however particular attention: "The rush of expenditure at the fag end of the financial year clearly indicates that the Crash Scheme for Rural Employment was handled almost in the same manner as the routine works of the Public Works Department in the state. The Project work could not be undertaken in a phased manner probably because of the rigidity of administrative procedures". There has also been evidence of use of contractors for getting the work done.

Thus, all in all, the experience in regard to the crash programme for rural employment in Kerala has only confirmed the experience with similar experiments elsewhere. Several of the important assumptions underlying it have proved to be questionable, invalidating to that extent the whole approach to public works in this form. The inference to be drawn is of course not that the defects are inherent in all public works programmes; but it is impossible to escape the conclusion, in the light of the above analysis, that such defects cannot be remedied without very close re-examination of the basic premises and without taking the necessary remedial steps which, in

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<sup>23</sup>In the case of the schemes requiring lifting of mud from the back-waters at Palluruthy (to which reference is made in foot-note 22 above), inquiries on the spot showed that the piece-rate fixed for the schemes was somewhat lower than the Public Works Department rate.

<sup>24</sup>G. Parthasarathy and G. Dasaradha Rama Rao, *op. cit.*, p. 153.

respect of some of the problems (such as the tendency to select relative unproductive works in preference to the obviously more productive ones in agriculture), may not be easy without fairly basic institutional and organizational changes.

The One Lakh Houses Scheme in Kerala was a more ambitious venture, estimated originally to cost Rs 120 million (at the rate of about Rs 1,250 per house). This was inclusive of the cost of input of unskilled labour (which, it was assumed, would be voluntarily forthcoming without payment of wages, though not necessarily from the beneficiaries of the scheme) and the cost of materials, which were to be made available by the state government at no cost to the scheme but obviously not without real cost in terms of the other uses to which they could have been put. The total estimated cost, according to the scheme, was to be covered to the extent of less than one tenth by the beneficiaries through instalment payments, and the bulk of the necessary resources was to be either made available in the form of materials by the state government or raised by voluntary financial contributions from the public (apart from the anticipated voluntary contributions of unskilled labour). In practice the unskilled labour was not available free, except very marginally in some cases, as could have been expected from past experience elsewhere, and the voluntary financial contributions that could be raised were not as large as required. Moreover, prices rose from 1972 onwards, raising the costs of construction. Consequently, only a little over one quarter of the total number of houses to be constructed had been completed by the end of 1974, and the costs involved were borne mainly by the central and state governments.

In drawing attention to and highlighting the importance of housing for the poor the scheme served a useful purpose. However, analytically, what the experience has shown is that a programme to provide housing on an expanding scale can be successfully implemented only if (a) more exploratory work is done on the scope for building houses which make smaller demand on the relatively scarce materials in the economy, such as cement and timber, and (b) more important, a larger element of saving requirement is built into it (without making unrealistic assumptions, such as that all the required unskilled labour would be forthcoming without being paid for), so that the programme could be self-financing to a greater degree, and induce more saving instead of becoming another source of demand for the existing limited volume of saving. If these two conditions are achieved, housing programmes—in addition to meeting one of the most essential needs—could also generate productive employment on a large scale.

The need for housing is so deeply and widely felt that it should not be difficult to devise imaginative schemes which would encourage broad sections of society, including even those belonging to the low-income groups, to save more and acquire ownership of this highly desired asset over a period of time. (Subsidy in varying degrees would of course be wholly justified in the case of low-income groups, but such subsidy will naturally tend to be limited by resource constraints.) It should also be possible through experimentation to devise building techniques which make only

limited demands on scarce resources and absorb resources available in greater abundance including labour and local materials with a high labour content. Annex V presents the results of some of the preliminary studies that have been conducted on the choices available in regard to building technology in the context of Kerala, and how such choices are affected by the prevailing market prices for labour and scarce materials (which, in the case of labour, are well above their social opportunity cost and, in the case of the latter, often below it.)

### **Labour-cum-Development Bank: concept and actual functioning since July 1973**

It was in the light of the experience with the crash programme for rural employment, and the kind of problems being posed by the One Lakh Houses Scheme, that the proposal for experimenting with a Labour-cum-Development Bank took shape. It originated at the level of district administration, though some marginal technical assistance in formulating the details of the approach to be adopted and in choosing between the different schemes which the Bank might take up was given by the Centre for Development Studies.

The essential features of the approach, as it evolved in the course of 1972, will be evident from the following extracts from a brochure setting out certain perspectives on planning and development in Kerala in the context of the fifth five-year plan:

“The proposed Labour-cum-Development Bank is essentially very simple in its conception. It is a credit institution set up to meet the short and medium-term financial requirements of a group of panchayats that are entrusted with the responsibility of devising schemes which would offer employment opportunities for idle labour and at the same time help to increase output and income in the area concerned. The panchayats are required to identify the beneficiaries of each scheme and be responsible for their paying to the Bank in instalments an amount that is considered reasonable in relation to the benefits secured. The labour absorbed in the schemes will be paid wages at the rates prevailing in the area, but it will be required to accept a part of it in the form of 3-year fixed deposits in the Bank carrying a rate of interest of 12½ per cent per annum on the average. Only schemes on which the wage cost is more than two-thirds of the total cost, and in addition meets the above conditions, will be approved and financed by the Bank. The initial financial requirements of the Bank are to be met by loans from the Government (out of the funds available for ‘crash employment programmes’), but once a Bank proves its ability to become reasonably self-reliant by choosing the right kind of schemes and recovering from the beneficiaries the amounts due from them these loans would be regarded as part of the Government’s contribution to the Bank’s share capital; further financial assistance from the Government needs to be made available only to the extent that the Bank’s scale of activity requires such assistance and to the extent that

the mobilization of idle labour and of savings achieved by it calls for a legitimate degree of subsidy.

*“The success of this experiment depends essentially on effective and purposive organization at the level of the panchayats for organizing investment and productive activity designed to meet local requirements. Since the population even in the rural areas of Kerala has achieved a high degree of literacy, and is capable of taking an enlightened approach to the problems they face (as has been amply demonstrated in their response to the family planning programmes), there are good chances of the experiment proving to be reasonably successful. The degree of political consciousness and organization which exists in the State at this level is another factor that could contribute to its success. At any rate, these are the ways in which experiments need to be conducted for ensuring that public works programmes help to mobilize local resources for meaningful developmental activity and do not deteriorate into wasteful forms of dole distribution organized by an over-burdened and highly centralized bureaucratic machinery.*

*“About 8 or 9 schemes have been identified for this initial experiment of which 4 or 5 are lift irrigation schemes and the rest are schemes for the construction of bunds on the backwaters for prawn culture. It also appears that the popular response to the scheme is quite encouraging. If the experiment shows reasonably good results very much more could be built into it. For instance, instead of paying the deferred component of wages in cash after three years with the interest payments due on it, they could be converted into insurance policies of the kind that appear attractive to poor people. Alternatively, they could be given the choice of receiving the payment in the form of houses constructed for them. There are now available in the State various techniques of low-cost building that could be drawn upon for this purpose, and which in turn would generate additional demand for local labour and other locally-available resources.*

*“Labour-cum-Development Banks can also be utilized, with adequate support from the Government or other financial institutions, to build up the overheads required for creating agro-industrial market centres all over the State. In a region that is as commercialized as Kerala the development potentialities of such centres—offering facilities for storage of products, supply of credit, fertilizer, and other such inputs, technical consultancy services, and for processing of various kinds—is obvious. Similarly they could be made an important agency for financing the setting up of retail shops organized by panchayats to make available rationed supplies of essential commodities at fixed prices. But, as emphasized earlier, all these possibilities depend on the ability to organize such activity with reasonable competence and efficiency and on public vigilance at the local level to minimize the scope for wastage and corruption. They also depend to a considerable degree on the political leadership being willing to accept and promote the use*



of democratic institutions for constructive purposes of this kind even while seeking to change the content and direction of social and economic development in the directions they believe in."<sup>25</sup>

A preliminary evaluation of the working of the Labour-cum-Development Bank in the Ernakulam district, since its beginning in July 1973 up to the end of May 1974, has been prepared by the State Planning Board.<sup>26</sup> The Centre for Development Studies has also been keeping in touch with the progress of the experiment and some of the relevant data relating to the period up to March 1975 have been collected. Nevertheless, it is still too early to attempt an adequate evaluation.

Some of the general features of the Bank and its working since July 1973 may however be noted. It was registered in March 1973 as a co-operative with the whole of the Ernakulam district as its area of operation. The bye-laws of the Bank provide for three categories of membership: (a) beneficiaries of the schemes undertaken by the Bank (excluding those for whom the benefit is only in the form of employment provided at the stage of construction); (b) labourers who wish to be considered for employment on schemes undertaken by the Bank; and (c) institutions such as panchayats, other co-operatives, social welfare agencies and individuals interested in the working of the bank.

The authorized share capital of the Bank was fixed for the time being at Rs 2 million (with 8,000 shares of Rs 25 each for the first category of membership, 20,000 shares of Rs 5 each for the second category, and 13,000 shares of Rs 100 each for the third). The total amount collected from the three categories up to June 1974 amounted, however, to only Rs 15,300 (with 301 members of the first category, 741 members of the second, and 21 members of the third, some buying more than one share each); the state government made a contribution of Rs 50,000 towards the share capital, thus making a total of Rs 65,300. In addition, up to March 1975, the state government made available to the Bank an amount of a little over Rs 0.65 million, Rs 0.26 million as loan and Rs 0.39 million as grant. However, taking everything into account, the total financial resources the Bank has been able to raise up to the present amount to less than one half of the allotment of Rs 1.5 million given by the state government to each district in 1971/72 for the crash programme.

Even before the Bank was registered, detailed investigation was undertaken by the district administration of nine schemes (in two development blocks within the district) which could be considered for implementation by

<sup>25</sup>K. N. Raj, P. G. K. Panikar and T. N. Krishnan, *Some Perspectives on Planning and Development with particular reference to Kerala: A Preliminary Paper on the Approach to the Fifth Five Year Plan* (Trivandrum, Centre for Development Studies, September 1972). Some of the earlier papers relating to the formulation of the proposal for setting up a Labour-cum-Development Bank have since been published. See K. N. Raj, "Employment creation through a Labour and Development Bank: a note" (January 1972), and S. Krishna Kumar, "Labour-cum-Development Bank" (February 1972), *The Indian Journal of Labour Economics*, vol. XIV, October 1972-January 1973, Nos. 3-4.

<sup>26</sup>Kerala, State Planning Board, Evaluation Division, *A Report on the Working of the Labour-cum-Development Bank, Ernakulam*, Evaluation Series No. 21 (November 1974).

the Bank. The schemes were of three kinds: (a) pure lift irrigation schemes, (b) lift irrigation-cum-navigation and land development schemes, and (c) schemes for construction of fish ponds in shallow backwaters for prawn culturing. A preliminary evaluation of these schemes was carried out by the Centre for Development Studies on the basis of the information then available and by applying some rules of thumb. As a result, five of the nine schemes were initially selected for inclusion in a pilot project under the Labour-cum-Development Bank proposed by the district administration.<sup>27</sup> On the basis of the report on this pilot project (submitted in September 1972) the state government decided to experiment with the Labour-cum-Development Bank. Considerable effort, it should be noted, had gone into the preparation and evaluation of the schemes to be taken up even before the decision to set up the Bank was made.

Soon after the Bank was registered in March 1973 some questions arose as to how the schemes selected were to be financed and, more pointedly, to what extent it would be necessary and/or appropriate for the Bank to subsidize them by not recovering from the beneficiaries concerned the full costs incurred on each scheme. These questions were examined and analysed in the Centre for Development Studies and some suggestions made to the district administration in a paper<sup>28</sup> published here as annex VI. The solutions offered were essentially in the nature of an attempt to reconcile practical considerations with analytically justifiable investment criteria, criteria, in fact, which could be applied at the district level with personnel given some minimal training in project evaluation.

The total cost of the five schemes recommended in the report on the pilot project was Rs 2.2 million. The state government agreed to provide initial financial support for only the four lift irrigation schemes, estimated to cost a little under Rs 0.8 million.

After the Bank was set up it was found that the area that would be benefited by one of the lift irrigation schemes was smaller than had been estimated earlier; this scheme was therefore abandoned. A second lift irrigation scheme had to be abandoned after some initial expenditure due to what has been described as "factional strife" among the beneficiaries. The reasons, however, go deeper and, as will be evident from the following observation in the Evaluation Report of the State Planning Board, were very similar to what might be expected in schemes for development of agricultural land to which reference has been made earlier.<sup>29</sup>

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<sup>27</sup>*Labour cum Development Bank Scheme: Pilot Project for Rural Employment Campaign in Alengad and Parur Blocks of Ernakulam District* (September 1972), prepared by S. Krishna Kumar, District Collector, Ernakulam. Four of these five schemes belonged to the first two categories mentioned above and were basically lift irrigation schemes; their total estimated cost was a little less than Rs 0.8 million. The fifth, for the construction of a fish pond, was estimated to cost over Rs 1.4 million.

<sup>28</sup>N. Krishnaji, T. N. Krishnan and K. N. Raj, "Guidelines to financing of the schemes under the proposed Labour cum Development Bank" (April 1973).

<sup>29</sup>See in particular foot-note 20 to this chapter.

"There are some influential farmers in this project area who own pumpsets with surplus capacity. These farmers extend irrigation to the small farmers of the adjoining plots also and collect charges at the rate of Rs 100 to 140 per acre per crop. It is this vested interest that resulted in the non-cooperation of beneficiaries in this project area. Even those who had signed the beneficiary agreement refused to take shares in the Bank with the result that the Bank could not legally contract with them".<sup>30</sup>

There were thus only three schemes left which, according to revised estimates made towards the middle of 1974, were estimated to cost about Rs 0.3 million.<sup>31</sup> Work on two was started in January 1974 and on the other towards the end of March of the same year.

By the end of February 1975 the expenditure incurred on these schemes amounted to a little over Rs 0.26 million, the wage component of which was nearly 80 per cent of the total. One of the schemes was completed in October 1974, another in December 1974, and the third is expected to be completed by April 1975. The area benefited by the first two has been estimated at about 175 acres and by the third at just over 100 acres (in all cases according to the returns submitted by the beneficiaries of these schemes).

If the mid-1974 cost estimates are not exceeded, the capital cost per acre of benefited area would work out to a little over Rs 1,200 for the three

<sup>30</sup>A Report on the Working of the Labour cum Development Bank. Data on land distribution among the beneficiaries of this scheme had been collected earlier by the Centre for Development Studies to assess its likely effect on distribution of income in the area. According to these data, as then processed, there appeared to be 145 households possessing in all about 155 acres of land distributed as follows:

| Size of holding<br>(acres) | Number of<br>households | Total area<br>(acres) |
|----------------------------|-------------------------|-----------------------|
| 0.00-0.25. . . . .         | 30                      | 4.05                  |
| 0.25-0.50. . . . .         | 28                      | 10.79                 |
| 0.50-1.00. . . . .         | 32                      | 22.41                 |
| 1.00-2.50. . . . .         | 39                      | 58.92                 |
| 2.50-5.00. . . . .         | 14                      | 45.58                 |
| Above 5.00 . . . . .       | 2                       | 13.00                 |
|                            | 145                     | 154.75                |

However, when the obstacles created by "influential farmers" were reported and the information collected earlier was closely scrutinized, it was found that the residential addresses given by several holders of land were the same in a number of cases. There is reason to believe that these holdings, reported separately by different individuals belonging to the same household, were really being managed as single operational holdings. When these individual holdings were aggregated the number of holdings was reduced to 100 and the data revealed a somewhat different pattern of land distribution, as will be evident from the estimates below:

| Households<br>(percentiles)  | Share in total area (percentage)    |                                   |
|------------------------------|-------------------------------------|-----------------------------------|
|                              | Unadjusted data<br>(145 households) | Adjusted data<br>(100 households) |
| Bottom 10 per cent . . . . . | 0.97                                | 1.29                              |
| Bottom 25 per cent . . . . . | 3.92                                | 8.75                              |
| Top 5 per cent . . . . .     | 21.93                               | 27.61                             |
| Top 10 per cent . . . . .    | 36.42                               | 45.65                             |

<sup>31</sup>The cost of these schemes had gone up by more than two fifths compared to the earlier estimates, the increase being attributed partly to price rises and partly to improvements made in the design of the schemes.

schemes together—below the limit of Rs 1,300 per acre fixed for minor irrigation works by the Public Works Department. It seems likely, however, that costs will be higher due to the rise in prices and wages in the intervening period, if for no other reason.

Most of the areas covered by the three schemes were hitherto growing two crops of paddy a year. Completion of the schemes has already enabled an additional crop to be grown in the area covered by one of them, and a similar increase in the intensity of use of land is expected in the area covered by the other two schemes in the course of the current year. In some areas it has only stabilized supplies of irrigation water for a second crop. In other areas only one crop was being grown earlier, and completion has made possible the growing of three crops. It is therefore clear that all these schemes have been not only *productive but quick-maturing*. Moreover, apart from the employment generated in the process of construction, additional employment of a more permanent nature has been created through the additional crops that could be grown annually.

Of the total expenditure of Rs 0.09 million incurred on the three schemes up to the end of May 1974, nearly one third (to be precise, 32.4 per cent) was accepted by workers as deferred payment in the form of fixed deposits carrying a rate of interest of 9 per cent per annum. However, as prices rose rapidly in the course of 1974, pressures began to mount for release of these deferred deposits, and it became necessary to relax the original condition that these deposits should be held for a period of three years. Instead, workers were required to hold them for a period of only six months. Consequently, Rs 0.03 million, held already for six months or more, is reported to have been released in December 1974.

A special feature of the Labour-cum-Development Bank was a device for inducing some saving at the margin on the part of workers receiving higher incomes through employment. To the extent that such saving could be induced, it would be possible obviously to minimize the potential inflationary effects of a massive employment programme, particularly a rise in the prices of the most essential consumer goods an effect most generally feared. But the practicality of this device has seldom been demonstrated and, despite theoretical hypotheses about the social cost of labour being zero, or close to zero, in labour-surplus economies, it has not been found possible to induce workers to accept employment at anything less than the prevalent wage rate, or even to contribute to the investment programmes out of their savings from the incomes so created.

One way in which this rather crucial problem was tackled was by not offering anything less than the going wage rate, and even perhaps raising it if the creation of additional employment itself raised the wage level in the area. The predisposition in favour of slack-season wage rates—wage rates generally reflecting only distress conditions created in rural areas by seasonal contraction in employment opportunities—was therefore avoided (contrary to what happened in the crash programmes for rural employment proposed earlier by the Central Government and in several other schemes of this nature). The intention was rather to see whether workers could be

induced to save a part of their additional income. For if it was possible to demonstrate that workers would be willing to save more given appropriate incentives, the economic reasoning behind the case generally put forward for not offering high enough wages to those offered supplementary employment would cease to be compelling; in fact the higher the rate of such saving at the margin found feasible, the weaker would become the rationale for inequality of income distribution stated in terms of the need for raising the saving rate in economies of this kind.

Three ways were tried to make additional saving by workers at the margin easier. First, the work offered in the schemes taken up by the Labour-cum-Development Bank was to be so phased that it would be available on a larger scale when there were no other employment opportunities in the area. It was also to be made clear that workers would not be bound to work continuously on the schemes if they should find more attractive employment in the meantime; the idea here being to ensure that the incomes generated would be, and also clearly recognized by the workers concerned to be, additional to what they could otherwise have earned. Secondly, according to the original conception, a rate of interest of 12.5 per cent per annum was to be offered to workers on their deferred wage payments held as three-year fixed deposits in the Bank. The rate was deliberately fixed at a level higher than the prevailing rates offered by commercial banks to depositors in general; this was intended to be not only an incentive to the holding of such deposits by the workers but a device for redistributing incomes in their favour. Thirdly, as indicated earlier, it was hoped that further inducement could be given to workers, and the distribution of wealth and income shifted a little more in their favour, by linking the accumulation of such fixed deposits to specified levels in the Labour-cum-Development Bank with attractive schemes for their conversion into desired assets, such as insurance policies, residential housing and even machinery and equipment of the kind needed by workers for creating self-employment through small-scale industries.

From this point of view it is unfortunate that the rate offered on fixed deposits by the Labour-cum-Development Bank was only 9 per cent per annum. It is also unfortunate that it became necessary to release the deposits of deferred wage payments after no more than six months. The latter was perhaps unavoidable in the special circumstances created by the rapid rise in prices of essential consumer goods in the course of 1974. It is just possible that a higher rate of interest offered on these deposits and the linking of other attractive schemes with the achievement of specified levels of such deposit accumulation might have helped in reducing the pressure for outright release. In any case, when the inflationary forces in the economy are checked, one must hope that experimentation along these lines can be pursued.

The evaluation on the working of the Labour-cum-Development Bank by the State Planning Board (which was completed before the release of the deferred wage payments) noted the following positive achievements of the project:

“Those who enlisted for the project work was reported to be mainly seasonally unemployed and under-employed hands. With the result, during periods of agricultural activities these labourers have shown a preference for work in the farms where they were able to earn higher cash wages. However, this has not adversely affected the progress of work as during off seasons more number of people were employed and more work turned out. The workers have accepted the retention of  $\frac{1}{3}$  wages as they are able to earn wages equal to or slightly more than the prevailing Public Works Department wage rates since payments are made on piece rate basis enabling them to earn more by turning out more quantum of work.”<sup>32</sup>

“Local enthusiasm both on the part of the workers and beneficiaries have been noticed in the three projects under implementation. But the most striking aspects of popular involvement in the programme is the free surrender of land for the extension of the canal system mostly by non-beneficiaries of the Kadungallur scheme. It is specially noteworthy that the schemes could be executed without any land acquisition charges as the beneficiaries and even non-beneficiaries concerned have willingly surrendered land free of charge in the case of these three projects. The credit for this partly goes to the good extension work which preceded the initiation of the programme in these project areas and partly to the overall involvement of the District Collector supported by the District Development Machinery.”<sup>33</sup>

Evidently, given the necessary inducements and safeguards, the workers had no difficulty in accepting the deferred wage system; and even donations of land were forthcoming from the community, though the contribution of the earlier land reforms in the state to the creation of such positive attitudes should not be ignored in this context. Perhaps for other fortuitous reasons, even the district development machinery proved to be more effective than usual and the district collector became, as the late Arthur Cotton had suggested in 1885, in effect a director of public works!<sup>34</sup>

There are, however, a number of less reassuring aspects of the experience to date which should not be overlooked. The serious implications of withdrawals from the fixed deposits of deferred wages have already been mentioned. The next most serious question posed is whether the beneficiaries of the schemes already completed will recoup the Bank for part of the

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<sup>32</sup>It has been reported that, though the average rate paid for unskilled male labour (including the deferred component) has been only Rs 7 per day (which is not above the prevalent wage rate in the area) much higher wages have been earned by some workers through the piece-rate system. The measurement of the quantum of work done, in the case of the piece-rate system, has been carried out by the Public Works Department. All this, however, needs to be investigated more fully.

<sup>33</sup>The finding that land was donated by non-beneficiaries is apparently not wholly correct. In the case of the Kadungallur scheme, some of the land needed was already in the hands of the government. In other cases, beneficiaries who owned only small plots of land were compensated at a flat rate and the sums paid out treated as part of the cost of the schemes.

<sup>34</sup>See foot-note 5 to this chapter.

costs incurred, as earlier agreed. So far only one of the beneficiaries has paid the instalment due out of the proceeds of the additional crop raised recently. Though it is too early yet to draw any firm inferences, in part because not even a year has elapsed since the completion of any of the schemes and in part on account of the exceptional conditions created by the partial drought earlier in 1975, this is a matter that clearly needs serious attention from the beginning so that undesirable precedents and attitudes are not allowed to develop. Informal investigations in the area indicate that some of the beneficiaries, especially those with the larger land holdings, nurture the hope that it would be possible to pressure the Bank and the state government to write off the amounts due from them.

One way of dealing with this kind of problem might be to make clear that further financial assistance to the Bank will be conditional on its performance, judged in terms of all the criteria laid down earlier including its ability to recoup from the beneficiaries the costs incurred. Since it has been reported that the workers in the area are also keen on more schemes being taken up by the Bank in order that they can secure more employment, it should be possible (particularly in the relatively favourable conditions in which Kerala is placed due to extensive literacy and the existence of strong trade unions among agricultural labourers) to resolve issues of this kind through the normal administrative, social and political institutions.

The Evaluation Report of the State Planning Board draws attention also to the dearth of technically sound, economically feasible and adequately processed schemes available for adoption without delay by the Bank even though it is evident such schemes might not be lacking in the district as a whole.<sup>35</sup> The importance of preparing schemes well in advance, scrutinizing and evaluating them carefully and extending as necessary the territorial coverage of the Bank's effective operations cannot be over-emphasized. There is in fact no reason why all this cannot be done, provided the need for such preparatory work in advance is clearly recognized. Once the schemes are prepared with adequate technical assistance, simple methods of project evaluation (such as can be left even to "bare-foot" evaluators supervised by some kind of sample check) can be fairly easily devised and the appropriate organizations also created for undertaking such evaluation. If, on the other hand, these aspects are ignored, irrational social and political pressures and vested interests of various kinds are likely to dominate the decision-making processes of the Bank, and over a period of time reduce its effectiveness as

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<sup>35</sup> Having completed work on two schemes, and with work on the third nearing completion, the Labour-cum-Development Bank in Ernakulam has already taken up the fish pond scheme which had been earlier held in abeyance. Apparently the Bank has divided the original scheme into two parts and is taking up in the first instance only a part of it at an estimated cost of Rs 0.6 million. Since this scheme, when implemented, will permit the culturing of prawns, some of which could be exported, it has important foreign exchange considerations in its favour, apart from the additional employment opportunities offered in the process of construction. The flow of additional income from the completion of the first part of the scheme—likely to be high relative to the capital cost due to the high value of prawns—is proposed to be used by the Bank itself (the direct beneficiary in this case) for taking up later the second part of the scheme as planned, so that the state government does not have to be approached for additional funds.

an agency for the promotion of development-oriented employment. Some evidence for this already exists and therefore the need for taking immediate action along the lines indicated above is clear. Social and political pressures cannot be avoided, but they can be channelled into worth-while directions through imaginative building up of institutions and practices.





## Chapter IX

### STRUCTURE OF EDUCATION AND THE MARKET FOR THE EDUCATED

It was pointed out in chapter VI that the quantum and terms of contractual employment are important factors governing inequality in income distribution. It was in this context that trends in wage rates of agricultural labour and the role of public works programmes were examined in the preceding two chapters. The most important form of contractual employment, apart from wage employment, is that which is salaried. The present chapter is devoted to a discussion of some aspects of salaried employment. The analysis is restricted to the market for certain categories of the educated but has more general validity since the categories covered account for a significantly high proportion of the educated unemployed.

Kerala stands in marked contrast to the rest of India in respect of a number of features of the market for the educated. But the contrast itself is the result of the structure of education in Kerala being widely different from that in other parts of the country. For example, the rates of unemployment among the educated are generally higher in Kerala than elsewhere but also so are the levels of educational attainment. In 1968 matriculates constituted 51 per cent of those on the live registers of employment exchanges in Kerala but only 27 per cent in the country as a whole,<sup>1</sup> but the number of persons completing school education and matriculating in a year per 1,000 population was 4.75 in Kerala and only 1.72 in India as a whole.<sup>2</sup> It thus becomes necessary to analyse the structure of education in order to understand the nature of the market for the educated.

#### Some features of the structure of education in Kerala

It is well known that Kerala has the highest rate of literacy in India. According to the 1971 Census, literate persons constituted 60.2 per cent of the population in Kerala; in the country as a whole this percentage was only 29.3. In fact the magnitude of the difference between Kerala and the rest of India in this respect has widened since 1961, for even during the 1960s Kerala made more progress than the other states.<sup>3</sup> The wide difference in the literacy rates cannot therefore be attributed entirely to Kerala's pre-eminent position in the past. In other words, it is not only the stock of literates but

<sup>1</sup>These figures are based on data given in Government of India, Planning Commission, *Report of the Committee of Experts on Unemployment Estimates* (1970), pp. 127-128, table 40.

<sup>2</sup>These figures refer to the year 1965/66, the latest for which such data are available. The data are taken from Government of India, Ministry of Education, *Education in India, 1965-66*. In Kerala the equivalent of matriculation is the secondary school leaving certificate (SSLC).

<sup>3</sup>For 1961 the literacy rates were 47 per cent for Kerala and 24 per cent for India as a whole. The rate thus increased by 13 points in Kerala but only by 5 points in the country.

also the current flows of the educational system that contribute to a higher rate of literacy in Kerala. Accordingly, the difference will be explained, at least in part, by the present structure of education.

Kerala is distinguished from other parts of the country not in higher rates of initial enrolment but in better performance—in a particular sense to be explained below—of the school educational system. For example, in 1965/66 enrolment in class I as a percentage of the population in the age group 6-7 years was 142 in Kerala; this was not very much higher than the corresponding percentage for India as a whole, which was 139. In Uttar Pradesh the percentage was 182, the highest among the different states.<sup>4</sup> But if enrolment in all primary classes, i.e., classes I to V, is considered, the picture is entirely different (see table 46).

TABLE 46. INDIAN STATES: ENROLMENT IN CLASSES I TO V AS A PERCENTAGE OF THE POPULATION IN THE AGE GROUP 6-11 YEARS

|                         | 1960/61 | 1965/66 | 1968/69 |
|-------------------------|---------|---------|---------|
| Kerala . . . . .        | 108     | 116     | 119     |
| Uttar Pradesh . . . . . | 45      | 74      | 84      |
| All-India . . . . .     | 62      | 75      | 78      |

SOURCE: Government of India, Planning Commission, *Selected Educational and Related Statistics at a Glance* (June 1969), p. 32, table XIX.

Thus it can be seen that, although in terms of enrolment in the first year of the primary stage Kerala is not much ahead of other parts of the country, a much larger proportion of the pupils remain within the primary stage of the educational system in Kerala than elsewhere; consequently the rates of enrolment in the primary stage as a whole are higher in Kerala. Direct evidence of this phenomenon is provided by estimates of the rates of drop-out from the educational system given in table 47.

The difference in the rates of drop-out are sharper in respect of the first three years of primary schooling. This difference is reflected in the rates of functional literacy, i.e., the number of students successfully completing three years of school education out of an initial cohort of 100 enrolled in class I. These rates are given in table 48. Since the rates of drop-out, particularly in the first few years of schooling, are significantly lower in Kerala, the average level of educational attainment of the school-leaving population there is correspondingly higher than in the rest of the country. In terms of the number of years of successful completion of schooling this

<sup>4</sup>These percentages are estimated on the basis of data given in National Council of Educational Research and Training, *Second All-India Education Survey, 1965-66*.

The percentages are higher than 100 presumably because of the enrolment of children belonging to higher age groups in class I. For a fuller discussion of enrolment ratios see J. P. Naik, "Enrolment policies in Indian education", *Manpower Journal*, vol. I, April 1965. The enrolment ratios are biased upwards for another reason. "These data are collected by State Ministries in the same complex of activities which include giving grants to schools. The grants depend on the number of students enrolled, which provides a built-in bias in the process of reporting enrolment . . .". Amartya Sen, "The crisis in Indian education", Lal Bahadur Sastri Memorial Lectures delivered on 10 and 11 March 1970 (mimeographed).

TABLE 47. INDIAN STATES: NUMBER OF STUDENTS DROPPING OUT BEFORE COMPLETING SEVEN YEARS OF SCHOOLING OUT OF A COHORT OF 100 ENROLLED IN CLASS I, 1967-1969

|                         | Boys | Girls | Boys and girls |
|-------------------------|------|-------|----------------|
| Kerala . . . . .        | 46.0 | 48.5  | 47.2           |
| Uttar Pradesh . . . . . | 73.4 | 89.0  | 79.0           |
| All-India . . . . .     | 68.2 | 78.1  | 71.9           |

SOURCE: These estimates are taken from a dissertation entitled "Education and economic development in Kerala", in preparation by P.R. Gopinathan Nair of the Department of Economics, University of Kerala, Trivandrum, who is also an Associate Fellow of the Centre for Development Studies.

average, for boys and girls who leave school before completing seven years of education, is 3.63 and 4.07, respectively, in Kerala, 1.88 and 2.06, respectively, in Uttar Pradesh and 2.23 and 2.33, respectively, in India as a whole.<sup>5</sup> Thus, not only a greater proportion reaches class VII in Kerala but also the average level of attainment of those who do not is higher than in other parts of the country.

TABLE 48. INDIAN STATES: RATES OF FUNCTIONAL LITERACY, <sup>a</sup> 1967-1969

|                         | Boys | Girls |
|-------------------------|------|-------|
| Kerala . . . . .        | 80.7 | 89.2  |
| Uttar Pradesh . . . . . | 37.0 | 28.1  |
| All-India . . . . .     | 46.6 | 41.5  |

SOURCE: As for table 47.

<sup>a</sup>See the text for the definition of functional literacy.

Kerala's progress in the field of literacy must therefore be attributed to the broad base of its educational system. Apart from the characteristic performance of the primary school system, Kerala is also distinguished from other states by the difference in the structure of education at the other end of the pyramid, namely, higher education. This is illustrated in table 49.

TABLE 49. INDIAN STATES: STRUCTURE OF ENROLMENT IN GENERAL EDUCATION, <sup>a</sup> (1970/71)

| Level of education       | Enrolment (thousands) |               |           | Enrolment at each level of education as ratio of enrolment in previous stage (percentage) |               |           |
|--------------------------|-----------------------|---------------|-----------|---|---------------|-----------|
|                          | Kerala                | Uttar Pradesh | All-India | Kerala  | Uttar Pradesh | All-India |
| Primary school . . . . . | 3,321.1               | 10,828.0      | 57,569.2  | —   | —             | —         |
| Middle school . . . . .  | 1,062.4               | 1,868.0       | 12,930.0  | 31.99   | 17.25         | 22.46     |
| High school . . . . .    | 416.0                 | 743.0         | 6,634.9   | 39.16   | 39.94         | 51.30     |
| Graduate . . . . .       | 156.5                 | 440.5         | 2,368.7   | 37.63   | 59.28         | 33.69     |
| Post-graduate . . . . .  | 5.4                   | 30.7          | 136.8     | 3.42  | 6.97          | 5.78      |

SOURCE: Government of India, Ministry of Education and Social Welfare, *Selected educational statistics, 1969-70 and 1970-71*.

<sup>a</sup>General education excludes professional education such as engineering, medicine etc.

<sup>5</sup>P. R. Gopinathan Nair, *op. cit.*

That the distribution of students within the educational system in Kerala is weighted in favour of school education is obvious from table 49. The distribution in Uttar Pradesh is markedly different in two respects: middle school enrolment as a percentage of primary school enrolment is significantly lower, and collegiate enrolment, both in degree and higher courses as a percentage of enrolment in the previous stage is very much higher.

This comparative analysis of the structure of education in Kerala and Uttar Pradesh shows to a certain extent why the former is characterized by high rates of literacy and educational attainment and the latter by low rates.<sup>6</sup> In general there is greater equality in the levels of education in Kerala since not only a larger proportion of those entering the primary stage remain within the school system and ultimately complete school (passing matriculation) but also a smaller proportion go on to higher education than in other states such as Uttar Pradesh, where the structure places greater emphasis on higher education. This contrast is clearly reflected in the patterns of expenditure on education given in table 50.

TABLE 50. INDIAN STATES: AVERAGE ANNUAL COST PER PUPIL, BY LEVEL OF EDUCATION, 1965/66  
(Rupees)

| State                   | Primary school | Secondary school | General education |                            | Professional education |                            |
|-------------------------|----------------|------------------|-------------------|----------------------------|------------------------|----------------------------|
|                         |                |                  | Under-graduate    | Graduate and post-graduate | Under-graduate         | Graduate and post-graduate |
| Kerala . . . . .        | 39.2           | 81.5             | 188.0             | 274.7                      | 277.9                  | 966.7                      |
| Uttar Pradesh . . . . . | 18.5           | 106.0            | ...               | 386.3                      | 693.8                  | 1,206.9                    |
| All-India . . . . .     | 34.6           | 111.1            | 249.0             | 346.1                      | 508.9                  | 1,061.6                    |

SOURCE: Government of India, Ministry of Education, *Education in India, 1965-66*.

The fact that the percentage of matriculates on the live registers of the employment exchanges is much higher in Kerala than in India as a whole—a topic referred to in the second paragraph of this chapter—is easily explained in terms of the structure of education in Kerala just described.

The tendency towards greater equality in levels of education is of course the result of policies followed consistently by successive governments of Kerala, particularly during the past few decades. Kerala has had a long tradition of free primary schooling. This has since been strengthened by the extension of free schooling facilities to the high school stage, but not beyond. Another supplementary policy measure which has helped promotion of school education at the primary stage has been the provision of free meals at school to some categories of students.<sup>7</sup>

That policies followed during the past few decades have not only helped in raising the levels of education in general but also resulted in a

<sup>6</sup>The over-all literacy rate in Uttar Pradesh was only 22 per cent of the population in 1971 compared to over 60 per cent in Kerala.

<sup>7</sup>This is discussed at greater length in chapter IV.

certain evenness in these levels is clearly reflected in the data on educational attainment by age groups (see table 51). These data show that graduates and post-graduates form a very tiny proportion of the population.

TABLE 51. KERALA: EDUCATIONAL ATTAINMENT OF THE POPULATION, 1965/66

|  | Percent-<br>age of<br>total<br>popula-<br>tion | Percentage share of each age group in<br>total population belonging to each of<br>the specified categories |       |       |       |       |                 | Total |
|--|--|--|-------|-------|-------|-------|-----------------|-------|
|  |  | Below<br>15  | 15-19 | 20-29 | 30-39 | 40-59 | 60 and<br>above |       |
| <b>Males</b>                                     |  |  |       |       |       |       |                 |       |
| Illiterate . . . . .                             | 31.1   | 48.4   | 4.2   | 9.1   | 10.4  | 18.0  | 9.9             | 100.0 |
| Literate but below<br>middle school . . . . .    | 51.6   | 37.3   | 9.6   | 15.1  | 14.6  | 17.7  | 5.7             | 100.0 |
| Middle school but<br>below matriculate . . . . . | 11.8   | 29.7   | 28.9  | 18.2  | 8.3   | 11.1  | 3.8             | 100.0 |
| Matriculate . . . . .                            | 5.4  | 5.5  | 26.3  | 36.6  | 16.2  | 12.8  | 2.6             | 100.0 |
| Graduate . . . . .                               | 0.7  | —  | 16.7  | 36.3  | 26.9  | 15.6  | 4.5             | 100.0 |
| Post-graduate . . . . .                          | 0.1  | —  | —     | 42.9  | 35.2  | 17.1  | 4.8             | 100.0 |
| TOTAL, MALES                                     | 100.0  | 41.3   | 10.8  | 14.1  | 11.9  | 15.5  | 6.4             | 100.0 |
| <b>Females</b>                                   |  |  |       |       |       |       |                 |       |
| Illiterate . . . . .                             | 43.1   | 41.6   | 5.1   | 11.3  | 12.5  | 18.7  | 10.8            | 100.0 |
| Literate but below<br>middle school . . . . .    | 46.7   | 42.0   | 11.5  | 16.8  | 13.6  | 12.5  | 3.6             | 100.0 |
| Middle school but<br>below matriculate . . . . . | 7.2  | 23.0   | 41.3  | 21.4  | 7.9   | 5.5   | 1.0             | 100.0 |
| Matriculate . . . . .                            | 2.7  | 1.4  | 35.3  | 45.4  | 12.0  | 4.8   | 1.1             | 100.0 |
| Graduate . . . . .                               | 0.2  | —  | 8.0   | 61.2  | 21.0  | 8.9   | 0.9             | 100.0 |
| Post-graduate . . . . .                          | —  | —  | —     | 48.2  | 24.3  | 12.6  | 14.9            | 100.0 |
| TOTAL, FEMALES                                   | 100.0  | 39.3   | 11.5  | 15.6  | 12.7  | 14.5  | 46.4            | 100.0 |

SOURCE: Kerala, Bureau of Economics and Statistics, "Sample survey on employment and unemployment" (mimeographed, 1966).

What is still more significant is that, though nearly one third of the male and more than two fifths of the female population were illiterate, the bulk of them were either below 15 or above 40 years of age; the illiterate formed much smaller proportions of the population in the age groups in between.

The low levels of illiteracy in the age groups 15-40 years are indicative of the long-term nature of the policies followed.<sup>8</sup> It must be added that a

<sup>8</sup>"Kerala's high literacy rates cannot be attributed to the effect of British educational policy since this State . . . is made up primarily of former princely States of Travancore and Cochin (plus Malabar in the north, an area formerly in Madras Presidency). These rates are related, rather, to the effect of a variety of earlier penetrations going back to the *pre-Christian era*. Not least among these influences is that of Christianity, which claims almost a fourth of Kerala's population as adherents" (italics added for emphasis). See Lloyd I. Rudolph and Susanne Hoeber Rudolph, "Regional patterns of education: rimland and heartland in Indian education", *Economic and Political Weekly*, vol. 4, No. 26 (1969), pp. 1039-1049. Even in modern times successive rulers of the region took considerable interest in education. For example, Rani Gouri Parvati Bayi (of Travancore) issued a rescript in 1817 directing "that the State shall defray the entire cost of the education of its people in order that there may be no backwardness in the spread of enlightenment among them, that by diffusion of education they may become better subjects and public servants . . .". See *Census of India*, 1941, vol. XXV, Travancore, p.155.

large proportion of those belonging to the age group 0-15 years reported as illiterate actually belong to the pre-school age group, 0-4 years. The data given in table 51 imply that illiterate persons below 15 years of age constituted about 16.5 per cent of the total population in 1965/66. According to census estimates, the population in the age group 0-4 years constituted about 16 per cent of the total in 1961.<sup>9</sup> This clearly shows that illiteracy among the young, i.e., those belonging to the age group 5-15 years, has been practically eliminated.

The limits to achievement, at least in terms of ensuring a minimum level of education to a great majority of the population, thus appear to have been reached in Kerala. Scope for further progress lies in improving the quality of education, particularly in terms of what is being taught at the primary school and beyond, and in strengthening it with respect to its vocational content. The importance of this aspect of the entire educational system cannot be over-emphasized. However, we have not dealt with it here.<sup>10</sup>

### **Growth of employment opportunities**

The structure of education in Kerala described above gives the market for the educated a special character: a significant proportion of the educated work seekers come from the lower strata of society as a consequence of universal primary education and low rates of drop-out. In a sample survey of registrants at employment exchanges in two districts of Kerala (conducted by the Centre for Development Studies) it has been found that, among those of education at least as high as matriculation, about 30 per cent belonged to families with a household income of less than Rs 100 per month and about 15 per cent were from households whose main source of income was wage labour.<sup>11</sup>

But while the scope for vertical mobility, implied in the high rates of participation of the lower strata of society in the market for the educated, is a factor that promotes equality there are others that are likely to have worked in the opposite direction. In particular, inadequacy in the growth of employment opportunities and a possible differential advantage enjoyed by those belonging to the higher strata of society could be two important factors working against the reduction of inequalities. The remainder of this chapter deals with these aspects of the market for the educated.

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<sup>9</sup>Kerala, State Planning Board, *Statistics for Planning, Series No. 2, Manpower*, p. 1, table 1.3.

<sup>10</sup>According to J. P. Naik, the equalization of educational opportunities at the elementary stage has two main aspects: "the quantitative aspect of enrolling every child in the age-group 6-7 (or 5-6) in Class I and ensuring that he remains in school till the age of 14; and the qualitative aspect of maintaining such standards in elementary schools so that the objectives of elementary education may be realised in practice". See J. P. Naik, "Objectives of educational development", *Manpower Journal*, vol. 1, No. 2, July-September 1965, p.118. The whole question of the nature and extent of the qualitative changes needed in education needs much deeper analysis and exploration.

<sup>11</sup>Annex VI is devoted to a detailed description of the results of the survey. The survey results are described at greater length in a later section of the present chapter.

It has already been mentioned in chapter VI (see table 38) that the incidence of unemployment is higher among the educated, particularly among the matriculates. This phenomenon is explained in part by the widened scope for vertical mobility and the resulting increase in the number of matriculates. But what is equally relevant is that employment opportunities for the educated do not seem to have been expanding at a rate fast enough to catch up with the increase in the numbers of educated. As a consequence the stock of the educated unemployed as a percentage of the annual flow of this category has increased over time (see table 52).

TABLE 52. KERALA: STOCK OF EDUCATED WORK SEEKERS AS A PERCENTAGE OF ANNUAL FLOW OF EDUCATED

|                              | 1966 | 1972 |
|------------------------------|------|------|
| Matriculates . . . . .       | 88   | 250  |
| Pre-degree holders . . . . . | 170  | 55   |
| Graduates . . . . .          | 30   | 90   |
| Post-graduates . . . . .     | 33   | 120  |

SOURCE: P. R. Gopinathan Nair, *op. cit.* (see foot-note 12 for further details).

Thus, in 1972, for every 100 new matriculate entrants into the labour market there were already 250 similarly educated persons already waiting for jobs. In this respect the situation has worsened considerably since 1966, particularly for the matriculates.<sup>12</sup>

No estimates of the rate of expansion of salaried jobs are available, but there is no doubt that it was insufficient to provide jobs even to the new entrants into the market for the educated. According to employment exchange data, the number of registrants whose level of education was at least as high as matriculation swelled from 86.2 thousand at the end of 1966 to 259.1 thousand at the end of 1972. Matriculates constitute as much as 90 per cent of the category of educated unemployed.<sup>13</sup>

<sup>12</sup>Stock data used in deriving figures in table 52 refer to numbers on the live registers of employment exchanges and are collected from issues of the annual *Economic Review* issued by the government of Kerala. Flow data are collected from the Directorate of Employment, Directorate of Public Instruction and the University of Kerala. Since not all the unemployed are registered with the exchanges and some of the registrants are actually employed, comparability of the stock data at the two points of time—with respect to their representativeness of the unemployed population—may be questioned. The data given in the "Sample survey on employment and unemployment" (conducted by the Bureau of Economics and Statistics of the government of Kerala in 1965/66) indicate that about 45 per cent of the educated unemployed registered themselves with the employment exchanges towards the end of 1965; the survey conducted by the Centre for Development Studies reveals that this percentage was about 43 in early 1973. It would appear thus that, although the stock data in table 51 refer to "work seekers" on the live registers, the magnitude of change in the stock flow ratio would reflect fairly accurately the change that has taken place in the ratio of the stock of educated unemployed to the annual flow of the educated. See annex VI for a fuller discussion of the nature of employment exchange data.

<sup>13</sup>Kerala, State Planning Board *Economic Review*, 1974 (1975).



## Some characteristics of the market for the educated and their consequences

Although the lower strata are well represented in the market for the educated, thanks to the evolution of an educational system favouring reduction in inequality of educational attainment, the inadequacy of opportunities for employment prevents in two ways any significant gains being achieved by these strata in the labour market: (a) while the average waiting period for salaried jobs is very long as a consequence of the growing stock of the unemployed, it is longer still for those whose levels of education are relatively low (e.g., matriculation) compared to those who are able to attain higher levels (e.g., graduate and post-graduate education). The ability to secure higher levels of education is determined mainly by levels of income, since a higher family income gives greater scope for higher education—which is not free unlike school education (and offers only a limited number of scholarships for the talented and the poor)—and consequently the average waiting period tends to be longer for the poorer sections of society even in the absence of direct discrimination in the labour market; and (b) the incomes secured on placement by the educated, after long periods of waiting, are generally not much higher than those of unskilled labour, except of course in the case of those who are able to specialize in high-income fields. This implies that education does not contribute significantly to the reduction of income inequalities.

The following tables give data in support of these conclusions. These data are based on the sample survey conducted by the Centre for Development Studies referred to earlier.

Table 53 shows that the average waiting period<sup>14</sup> involved in getting a salaried job is about three years. But the waiting periods are closely related to level of education. For graduates, the average is only 15 months, but it is much longer for those whose levels of education are relatively lower. The table also shows that the average monthly pay received on placement by the educated is less than Rs 150 per month.

How high is the average monthly pay received on placement by the educated in relation to the earnings of unskilled labour? According to a report on the wage structure in Kerala,<sup>15</sup> the monthly wage rate for shop assistants and shop attendants in urban areas varied between Rs 90 and Rs 150 in 1969/70 in all but the "trade and commerce sector" where the range was from Rs 150 to Rs 175.

During the same year, i.e., 1969/70, the wage rate for agricultural labourers (men) was Rs 4.90 per day and for unskilled labourers in the construction sector it was Rs 5.52, but it is difficult to make an estimate of the corresponding monthly earnings due to lack of reliable data on the average quantum of employment per month for these categories of labour. A comparison of the wages of unskilled labour with the monthly pay received

<sup>14</sup>The concept of waiting period and the problems involved in its estimation are discussed in annex VI.

<sup>15</sup>Kerala, Bureau of Economics and Statistics, "Report on the wage structure survey in Kerala" (mimeographed 1972).

TABLE 53. KERALA: AVERAGE WAITING PERIOD FOR THE FIRST JOB AND INCOME SECURED ON PLACEMENT, BY LEVEL OF EDUCATION

| Level of education  | Trivandrum district     |                      | Calicut district        |                      |
|---|-------------------------|----------------------|-------------------------|----------------------|
|   | Waiting period (months) | Monthly pay (rupees) | Waiting period (months) | Monthly pay (rupees) |
| Matriculation . . . . .                                   | 45.4                    | 132                  | 43.5                    | 118                  |
| Pre-degree course . . . . .                               | 17.4                    | 160                  | 21.4                    | 161                  |
| Degree and above (graduates and post-graduates) . . . . . | 15.0                    | 190                  | 14.4                    | 227                  |
| All levels . . . . .                                      | 36.6                    | 146                  | 33.4                    | 149                  |

by the educated is also difficult to make since the estimate of the latter given in table 53 is based on the initial earnings of different persons securing jobs at different points of time prior to the date of the survey, i.e., April 1973, whereas the wage date of unskilled labour refer to the year 1969/70.

However, the average pay received by those whose level of education was only matriculation was about Rs 120, and most of them secured salaried jobs in 1971 or 1972. Agricultural wage rates have risen since 1969/70. Although no wholly satisfactory estimate of the wage rate for agricultural labour is available for the state as a whole, the published data<sup>16</sup> indicate that it was in the neighbourhood of Rs 5.50 per day in 1972. At this rate, 20 days of employment in a month would have given an agricultural labourer an income of Rs 110 per month. Thus a comparison of the pay received by matriculates, who are by far the most numerous category among the educated, with the estimated earnings of shop assistants and agricultural labourers suggests that education does not confer a significant advantage with respect to pay.

The discussion thus far brings out the fact that waiting periods tend to be inversely related to levels of education: the higher the education the lower the waiting period. But educational attainment itself would depend on family income because higher incomes offer greater scope for higher education. As a consequence, poorer people have lower levels of educational attainment; the result is that they have not only longer waiting periods but also fare worse in terms of pay received (see table 54).

TABLE 54. KERALA: AVERAGE WAITING PERIOD AND PAY SECURED ON PLACEMENT, BY FAMILY INCOME

| Family income per month (rupees) | Trivandrum district     |                      | Calicut district        |                      |
|----------------------------------|-------------------------|----------------------|-------------------------|----------------------|
|                                  | Waiting period (months) | Monthly pay (rupees) | Waiting period (months) | Monthly pay (rupees) |
| Less than 100 . . . . .          | 32.9                    | 109                  | 40.5                    | 135                  |
| 101-200 . . . . .                | 41.8                    | 132                  | 37.2                    | 112                  |
| 201-350 . . . . .                | 40.8                    | 150                  | 29.6                    | 153                  |
| 351-500 . . . . .                | 32.4                    | 184                  | 23.1                    | 183                  |
| More than 500 . . . . .          | 21.3                    | 192                  | 24.4                    | 215                  |

<sup>16</sup>Agricultural Situation in India, September 1972 and May 1973.

TABLE 55. KERALA: PERCENTAGE DISTRIBUTION OF REGISTRANTS WITHIN EACH INCOME GROUP, BY  
LEVEL OF EDUCATION AND OCCUPATION OF MAIN EARNER IN FAMILY

| <i>Family<br/>income<br/>per month<br/>(rupees)</i> | <i>Occupation of main earner in family</i> |                                    |              |                        |                                       |                           |  |   | <i>Total</i> |
|---|--|------------------------------------|--------------|------------------------|---------------------------------------|---------------------------|--|---|--------------|
|   | <i>Matri-<br/>culate</i>                   | <i>Above<br/>matri-<br/>culate</i> | <i>Total</i> | <i>Wage<br/>labour</i> | <i>Salaried<br/>white-<br/>collar</i> | <i>Salaried<br/>other</i> | <i>Self-<br/>employed<br/>in agri-<br/>culture</i> | <i>Self-<br/>employed<br/>else-<br/>where</i> |              |
| 1-50 . . . . .                                      | 89.5                                       | 10.5                               | 100.0        | 31.6                   | 5.3                                   | 2.6                       | 42.1   | 18.4  | 100.0        |
| 51-100 . . . . .                                    | 82.4                                       | 17.6                               | 100.0        | 34.1                   | 7.3                                   | 8.8                       | 34.1   | 15.6  | 100.0        |
| 101-200 . . . . .                                   | 75.0                                       | 25.0                               | 100.0        | 12.1                   | 15.5                                  | 17.2                      | 36.2   | 19.0  | 100.0        |
| 201-350 . . . . .                                   | 62.6                                       | 37.4                               | 100.0        | 4.6                    | 44.6                                  | 21.0                      | 12.8   | 16.9  | 100.0        |
| 351-500 . . . . .                                   | 61.2                                       | 38.8                               | 100.0        | 2.3                    | 54.1                                  | 11.8                      | 14.1   | 17.6  | 100.0        |
| 501+ . . . . .                                      | 40.4                                       | 59.6                               | 100.0        | —                      | 82.4                                  | 3.5                       | —  | 5.3   | 100.0        |

That low levels of family income are associated with low levels of education is clearly brought out by table 55. It can be seen that the proportion of registrants whose educational attainment was no higher than *matriculation* was as high as 89.5 per cent of the total in the lowest-income group but declined to 40.4 per cent in the highest-income group. Low incomes are associated not only with low levels of education but also with some other social characteristics: income levels have a certain occupational specificity. Table 55 shows that even among the registrants the low-income groups are dominated by persons belonging to wage labour and cultivator households and high-income groups by those belonging to the salaried class of households. In the highest-income group 82.4 per cent of the registrants belonged to households in which the main earner had "salaried white-collar" employment.

In much the same way, low incomes have also a caste-specificity. In general, higher-caste families have higher incomes and better levels of educational attainment. These interrelations between income, educational attainment and social status—as reflected in caste and in the occupation of the head of the household—hold not only among the unemployed but also in the population as a whole.

TABLE 56. KERALA: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS, BY PER CAPITA INCOME IN SOME CASTES AND COMMUNITIES, 1968

| Per capita income (rupees per month) | Caste or community |        |         |                  |         |                  |                  |                            |
|--------------------------------------|--------------------|--------|---------|------------------|---------|------------------|------------------|----------------------------|
|                                      | Brahmins           | Nairs  | Ezhavas | Syrian Catholics | Muslims | Scheduled castes | Scheduled tribes | All castes and communities |
| 0-5 . . . . .                        | 0.00               | 0.18   | 0.38    | 0.25             | 1.23    | 3.47             | 0.02             | 0.76                       |
| 6-10 . . . . .                       | 0.92               | 4.04   | 7.06    | 4.93             | 15.79   | 15.67            | 7.52             | 8.62                       |
| 11-25 . . . . .                      | 16.93              | 40.07  | 53.08   | 46.81            | 53.92   | 52.97            | 53.72            | 49.45                      |
| 26-50 . . . . .                      | 33.60              | 36.34  | 31.20   | 33.08            | 23.65   | 24.23            | 35.11            | 30.32                      |
| 51-100 . . . . .                     | 30.90              | 14.68  | 6.74    | 10.51            | 4.53    | 3.28             | 3.35             | 8.25                       |
| 101+ . . . . .                       | 17.65              | 4.69   | 1.54    | 4.42             | 0.88    | 0.38             | 0.28             | 4.60                       |
| TOTAL                                | 100.00             | 100.00 | 100.00  | 100.00           | 100.00  | 100.00           | 100.00           | 100.00                     |

SOURCE: Kerala, Bureau of Economics and Statistics, *Report on the Socio-economic Survey on Castes/Communities, Kerala, 1968* (1969).

It can be seen from table 56 that there are wide disparities in income between different caste groups in Kerala. The differences between high-caste Brahmins, on the one hand, and communities such as Muslims and the scheduled castes and tribes, on the other, are particularly sharp. These income disparities result in differences in levels of educational attainment, as can be seen from table 57, which gives data in respect of some of the caste groups.

The interrelations between caste, income and level of education are explored further in annex VI. But the data given here are sufficient to show that it is difficult to say how far such factors as caste tend to determine the level of education independently of income. But there is no doubt that, at very low levels of income, poverty is the decisive factor and, to the extent

TABLE 57. KERALA: PERCENTAGE DISTRIBUTION OF PERSONS, BY LEVEL OF EDUCATION IN SOME CASTE AND COMMUNITY GROUPS, 1968

| <i>Level of education</i>            | <i>Brahmins</i> | <i>Scheduled castes</i> | <i>Scheduled tribes</i> | <i>All castes and communities</i> |
|--------------------------------------|-----------------|-------------------------|-------------------------|-----------------------------------|
| Illiterate . . . . .                 | 15.09           | 52.88                   | 63.90                   | 33.75                             |
| Literate but below primary . . . . . | 21.16           | 28.52                   | 22.68                   | 31.96                             |
| Primary . . . . .                    | 19.20           | 11.90                   | 9.55                    | 19.00                             |
| Middle . . . . .                     | 17.95           | 5.14                    | 3.27                    | 9.76                              |
| Matriculation . . . . .              | 17.09           | 1.34                    | 0.57                    | 4.22                              |
| Pre-degree . . . . .                 | 5.15            | 0.16                    | 0.03                    | 0.77                              |
| Graduate . . . . .                   | 3.72            | 0.06                    | —                       | 0.46                              |
| Post-graduate . . . . .              | 0.64            | —                       | —                       | 0.08                              |
| TOTAL                                | 100.00          | 100.00                  | 100.00                  | 100.00                            |

SOURCE: As for table 56.

that incidence of poverty is higher among certain socio-economic groups such as wage labour households, the educated who belong to these strata of society fare worse than the others in the market for the educated; those at the other end of the socio-economic scale enjoy a differential advantage not only through shorter waiting periods but also through higher pay.

These facts clearly demonstrate the limited role that education can play as a catalyst for promoting social and economic inequality, in the absence of adequate growth of employment opportunities all round. The educational system in Kerala enables even the poor to acquire levels of education up to matriculation. Those who reach this level but cannot go beyond have to wait for a long time before being employed and the pay they ultimately receive is not very high compared to the earnings of unskilled labour. If the period spent on education is included as a part of the waiting time, the differential advantage gained by acquiring higher education appears to be more social than economic, i.e., in securing "white-collar" jobs with security attached rather than in securing higher incomes.

## Chapter X

### HEALTH INDICATORS AND DEMOGRAPHIC TRENDS

Levels of nutrition and health are generally considered to be closely related: the lower the level of nutrition, the poorer the health and vice versa. Prevalence of undernourishment must be expected to make the population more prone to disease and lead to higher rates of mortality, especially child and infant mortality, and a shorter life-span. If this assumption is correct, levels of food intake should be reflected in the levels of health of a population. If Kerala's food intake was as low as indicated by the evidence presented in chapter I, then Kerala should also show higher rates of mortality and shorter life expectancy. On the other hand, the fact that Kerala has the lowest mortality rates and the longest expectation of life among the different states in India should lend further support to the findings of chapters II and III. In this context, since Kerala has apparently higher levels of food intake than hitherto believed, and also better levels of health, one would be tempted to relate causally these two factors.

It is necessary however at the outset to add a word of caution. There are other states in India with higher levels of food intake than Kerala, but the mortality rates in those states are none the less higher. Thus it appears that achievement of better levels of health requires something more than fulfilling the nutritional norms laid down by the Indian Council of Medical Research. The present chapter, therefore, attempts to identify the most important factors that could have significantly influenced mortality rates in Kerala. While the nutritional norm is obviously a necessary condition, the chapter seeks to demonstrate that the norm would not by itself create sufficient conditions for a decline in mortality beyond a certain point. It will be shown that the most important single factor to which the better levels of health in Kerala could be attributed might well be the spread and accessibility of medical care in the state. For this reason the medical care system developed in the state operates perhaps with less discrimination against lower-income groups than do those in other states.

#### Indicators of the level of health

The general and infant mortality rates and the expectation of life at birth are usually considered the most important and easily available indicators of health. The Sample Registration System,<sup>1</sup> introduced in 1964/65, has provided comparatively more reliable estimates of birth, death and infant mortality rates for the rural and urban sectors in the different states and in the country as a whole.

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<sup>1</sup>The results of these surveys are published regularly by the Government of India, Ministry of Home Affairs, Registrar-General, in *Sample Registration Bulletin*.

According to estimates based on the Sample Registration System the crude death rate for all-India was 16.9 per 1,000 population in 1972. The corresponding rates in the rural and urban sectors were 18.9 and 10.2, respectively. Infant mortality for all-India in 1971 was 122 per 1,000 live births and 131 and 81, respectively, in the rural and urban sectors.

The estimates of crude death and infant mortality rates in the rural and urban sectors of various states, presented in table 58, show the comparative position of Kerala. The data on crude death-rates indicate that these are lowest in Kerala. Estimates available for the first half of 1973 show further declines in the crude death-rates in Kerala to 7.9 and 6.3, respectively, in the rural and urban sectors. These rates imply a weighted average of 7.6 deaths per 1,000 population in the state in 1973. It will also be seen from table 58 that rural-urban difference in the death-rate is the smallest for Kerala among all the states in India. The level of the death-rate in Kerala compares favourably even with the rates prevailing in industrially advanced countries, though for a stricter comparison one should really standardize the death-rates with reference to age groups.

### Decline in death-rates

Infant mortality, considered a more reliable index of the levels of nutrition and of health, is also lowest in Kerala compared to other states, whether for the rural or urban sector. In fact, infant mortality in the rural sector in Kerala is even lower than in the urban sector of all other states except Haryana and Jammu and Kashmir. The low levels of general and infant mortality recorded recently in Kerala appear to have been the result of declines achieved over a much longer period of time. Estimates of crude

TABLE 58. INDIA: ESTIMATES OF GENERAL AND INFANT MORTALITY IN DIFFERENT STATES

| State                       | General mortality rate, 1972<br>(per 1,000 population) |                   | Infant mortality rate, 1971<br>(per 1,000 live births) |                   |
|-----------------------------|--|-------------------|--|-------------------|
|                             | Rural  | Urban             | Rural  | Urban             |
| Andhra Pradesh . . . . .    | 17.0   | 11.6              | 112.6  | 63.7              |
| Assam . . . . .             | 18.6   | 10.0              | 131.4  | 72.6              |
| Bihar . . . . .             | 19.0   | 9.7               | ...  | 69.5 <sup>a</sup> |
| Gujarat . . . . .           | 16.4   | 11.0              | 145.1  | 108.7             |
| Haryana . . . . .           | 12.3   | 8.8               | 64.0   | 52.0              |
| Jammu and Kashmir . . . . . | 12.0   | 6.5               | 74.1   | 49.4              |
| Karnataka . . . . .         | 14.3   | 8.7               | 96.5 <sup>a</sup>                                      | 64.9 <sup>a</sup> |
| Kerala . . . . .            | 9.4  | 7.8               | 58.1   | 45.0              |
| Madhya Pradesh . . . . .    | 15.1   | 11.4              | 141.3  | 75.6              |
| Maharashtra . . . . .       | 14.5   | 9.0               | 107.1  | 82.2              |
| Orissa . . . . .            | 20.4   | 12.1              | 132.9  | 79.1              |
| Punjab . . . . .            | 13.4   | 9.5               | 108.0  | 71.7              |
| Rajasthan . . . . .         | 18.3   | 10.1              | 112.8  | 74.2              |
| Tamil Nadu . . . . .        | 17.9   | 8.9               | 127.0  | 91.0              |
| Uttar Pradesh . . . . .     | 27.1   | 14.8              | 100.5  | 121.4             |
| West Bengal . . . . .       | 12.0 <sup>a</sup>                                      | 10.5 <sup>a</sup> | 173.4  | 68.9              |

SOURCES: Government of India, Office of the Registrar-General, *Sample Registration Bulletin* (New Delhi), vol. 7, No. 1 (January-March 1973), and vol. 8, No. 1 (April 1974).

<sup>a</sup> 1970.

TABLE 59. KERALA AND INDIA: DEATH-RATES FOR DIFFERENT PERIODS  
(Per 1,000 population)

| Period                | Kerala | India |
|-----------------------|--------|-------|
| 1931-1940. . . . .    | 29.1   | 31.2  |
| 1941-1950. . . . .    | 22.3   | 27.4  |
| 1951-1960. . . . .    | 16.9   | 22.8  |
| 1968 (rural). . . . . | 10.4   | 16.8  |
| 1970 (rural). . . . . | 9.2    | 17.3  |
| 1972 (rural). . . . . | 9.4    | 18.9  |

SOURCE: Kerala, State Planning Board, *Economic Review*, 1974 (1975), p. 35.

death-rate are available also for certain years and periods prior to 1972 and are given in table 59.

Though the difference in the crude death-rates between Kerala and all-India was insignificant during 1931-1940, the death-rate in Kerala had declined to half the all-India rate by 1972. For a clearer understanding of the factors responsible for such a dramatic decline it is helpful to analyse the regional differences and changes within Kerala itself.

In 1966, when the Sample Registration System was first introduced in the state, the crude death-rate was estimated at 11 per 1,000. As shown in table 59, the estimated average crude death-rate in Kerala was 16.9 over the period 1951-1960. There was therefore a significant decline over these 15 years.

The Census Report of 1951 for the integrated state of Travancore-Cochin had estimated the death-rate in the territory during the period 1941-1950.<sup>2</sup> The Census Report also cited the results of a health survey conducted by the Department of Health in Travancore in 1948 when the death-rate was estimated at 11.4 per 1,000 population. If therefore it is assumed that the crude death-rate in Travancore-Cochin was about 12 during the period 1951-1960, it should be evident that the death-rate in the Malabar districts of Kerala (hitherto part of Madras state) must have been higher than the prevailing rate in Travancore at the time of the formation of Kerala state. Since the death-rate for Kerala as a whole has been estimated at 16.9 for the period 1951-1960, it would imply that the death-rate in Malabar was probably around 23 for the same period. It may be pointed out in this context that the estimated death-rate for Madras state, of which Malabar was a part until 1956, was 22.5 for the period 1951-1960.

Available data on death-rate for Travancore indicate that as far back as 1920 it was already lower than the figure estimated in the present chapter for Malabar at about the time Kerala state was formed. Special vital statistics inquiries were organized in Travancore to collect reliable information along with the population censuses of 1931 and 1941. The death rate was estimated at 20 in 1930,<sup>3</sup> and this declined to 15 by 1941.<sup>4</sup>

<sup>2</sup>*Census of India, 1951, Travancore-Cochin*, vol. XIII, part IA, Report, p. 21.

<sup>3</sup>*Census of India, 1931, Travancore*, vol. XXVIII, part I, Report, p. 33.

<sup>4</sup>*Census of India, 1941, Travancore*, vol. XXV, p. 182.



TABLE 60. KERALA AND INDIA: EXPECTATION OF LIFE AT BIRTH, VARIOUS DECADES

| Decade          | Kerala  |         | India   |         |
|-----------------|---------|---------|---------|---------|
|                 | Males   | Females | Males   | Females |
| 1911-1920. .... | 25.49   | 27.41   | ...     | ...     |
| 1921-1930. .... | 29.54   | 32.70   | 26.91   | 26.56   |
| 1931-1940. .... | 33.19   | 35.00   | ...     | ...     |
| 1941-1950. .... | 39.89   | 42.34   | 32.45   | 31.66   |
| 1951-1960. .... | 46.17   | 50.00   | 41.89   | 40.55   |
| 1971. ....      | (60.57) | (61.16) | (48.20) | (46.00) |

SOURCES: For Kerala, R. S. Kurup, "A note on the trend in life expectancy in Kerala over the years", Demographic Research Centre, Bureau of Economics and Statistics, 1973; for India, B. B. Lal, "Length of life in India", *Sample Registration Bulletin*, April 1974.

Similar differences also existed between Malabar and the Travancore areas of Kerala in the matter of infant mortality rates. Infant mortality in Kerala was estimated at 210 per 1,000 live births for the period 1921-1930,<sup>5</sup> while the vital statistics inquiry found it to be only 120 in Travancore in 1930.<sup>6</sup> This implies that the infant mortality rate in the Malabar districts must have been even higher than 210 during that period. The infant mortality rate in India as a whole was about 240 for the decade 1921-1930.<sup>7</sup>

### Length of life expectation in Kerala

A consequence of the decline in general and infant mortality rates is a lengthening of the expectation of life at birth. A higher expectation of life is often associated with better nutritional standards among the population, even if the two are not uniquely related. The expectation of life at birth, estimated on the basis of the mortality rates provided by the Sample Registration System, is 61 years for Kerala and 47 years for India as a whole in 1971. Table 60 presents data indicating the progress in this regard in Kerala and in India during the 50 years 1921 to 1971.

It is seen that life expectancy doubled in Kerala between the period 1921-1930 and 1971. A comparison of life expectancy in Kerala with that in India as a whole shows that the difference has widened over this period. Another interesting feature is that Kerala has higher life expectancy for females than for males, as in the developed industrial countries.

However, the estimates of life expectancy for Kerala as a whole conceal regional differences within the state as between the southern districts (corresponding to the earlier native states of Travancore and Cochin) and the northern districts (which were part of the Madras province under direct British administration). A life table calculated for the first time for Travancore state after the Census of 1931 found that the expectation of life was

<sup>5</sup>Kerala, State Planning Board, *Economic Review*, 1974, p. 37.

<sup>6</sup>*Census of India, 1931, Travancore*, vol. XXVIII, part I, Report, p. 30.

<sup>7</sup>Government of India, Registrar-General, *Infant Mortality in India*, Sample Registration System Analytical Series, No. 1, 1971, p. 4.

43.80 years for males and 44.55 years for females.<sup>8</sup> These levels of life expectancy were reached in Kerala as a whole only at the beginning of the 1950s. This situation must obviously have been the result of a much lower life expectancy in the Malabar districts. It is also interesting to note that the length of life in India even in 1961 was lower than the level attained in Travancore by 1931.

### Basic questions

The following facts have emerged sharply from the above analysis of the available data. First, Kerala has attained the lowest mortality rates and the highest life expectancy among the various states in India. Secondly, the levels of health attained in Travancore-Cochin and Malabar, judged by such indices, were quite disparate at the time of formation of Kerala state. Thirdly, these health indicators suggest that much higher levels were attained in Travancore even in the earlier decades prior to the formation of Kerala state. However, the more recent statistics on mortality rates seem to indicate that the differences in health levels between the northern and southern districts of Kerala have been almost eliminated within a period of about a decade and a half.

In the light of the above findings, answers to a number of questions appear to be necessary in order to understand the process of health development in the state of Kerala. First, what is the role of the levels of nutrition in bringing about these changes in Kerala? What factors were responsible for the differences in health levels between Malabar and Travancore? What factors helped Travancore to get an earlier start on health development?

### Improvement of health and *per capita* income

The analysis of food balance-sheets for Kerala given in chapter II indicated that there was some improvement in nutritional levels between 1961/62 and 1970/71. The analysis of mortality rates undertaken in the present chapter indicates that these were already low in Travancore-Cochin and that the major improvement took place in Malabar during this period. However, the improvement in calorie intake was largely the result of higher production of tapioca; and tapioca being mainly cultivated in the southern districts and costly to transport over long distances, it is to be assumed that the increased consumption of tapioca is also likely to have taken place mainly in the southern districts. Though production of rice and tapioca rose in the Malabar districts also and some tapioca may have moved into this area from the southern districts, no adequate evidence can be found that there has been a significant increase in calorie intake in the Malabar districts.

Nor does a comparison by state of the data on mortality rates with calorie intake (or *per capita* income) support the hypothesis that mortality

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<sup>8</sup>It is interesting to compare life expectancy in Travancore with that attained in Japan. Life expectancy in Japan during 1926-1930 was 44.8 for males and 46.5 for females. By 1968, these figures had risen to 69.05 for males and 74.30 for females.

rates are strongly correlated to calorie intake and *per capita* income. For instance, Madhya Pradesh, Rajasthan and Uttar Pradesh have higher calorie intake than Kerala, but mortality rates are lowest in Kerala. Similarly, Gujarat, Maharashtra and West Bengal have not only higher *per capita* income but also higher mortality rates. Thus it is evident that mortality rates are not determined by calorie intake (or *per capita* income) alone and that other factors must play at least an equal if not more important role.

### Expansion in health facilities

It will be shown that the major factor which brought about the decline in mortality rates in Kerala was the expansion and spread of health facilities. The total number of persons treated in hospitals, primary health centres and dispensaries in Kerala was 21.6 million in 1970—only slightly higher than the population of about 21 million in that year. This does not include the number of persons who had visited the *ayurveda* hospitals and dispensaries (practising the Indian system of medicine) and an unknown number visiting private health clinics. There were 37 *ayurveda* hospitals and 207 *ayurveda* dispensaries in Kerala in 1967/68 and they treated 2.4 million patients during this period. The proportion of the total population treated in hospitals, however, would depend on the average number of illnesses for which the same person visited the hospital in the course of the year. In the absence of information on this, one may assume that the percentage of total population treated in hospitals ("the utilization ratio") would be a reasonably dependable indicator of the availability and utilization of medical care, and can therefore be used like other indicators such as the bed/population ratio and the population/hospital ratio. Table 61 gives these ratios for a number of states for the year 1965.

These data bring out certain interesting features on the availability and utilization of medical care in Kerala compared to some other states in India. A comparison of the figures for Kerala and West Bengal, in particular, shows clearly the differences in the pattern of development of medical facilities in these two states. A hospital or dispensary appears to cover on average a smaller population in West Bengal than in Kerala, though the number of beds per 100,000 population is almost identical in both states. An interstate comparison of these ratios alone would lead to the conclusion that medical facilities had perhaps wider coverage in West Bengal than in Kerala. However, a comparison of the proportion of the population which annually received treatment in hospitals and dispensaries in the two states indicates that the utilization ratio in Kerala was nearly three and a half times that of West Bengal. It will be seen that Kerala has the highest utilization ratio of all the states in India.

### Spatial accessibility of medical care

The factors responsible for such differences in the utilization ratio of medical facilities have not been studied, but apparently an important reason appears to be the spatial allocation of such facilities. Even though medical care might be free, a person using the facility would still incur some direct and indirect costs in connexion with travel to the facility. For those who

TABLE 61. INDIAN STATES: POPULATION PER HOSPITAL, BED/POPULATION RATIO AND POPULATION TREATED IN HOSPITALS, 1965

| State                       | Population served by |              | Number of<br>beds per<br>100,000<br>population | Per capita<br>expenditure on<br>health,<br>1972/73<br>(rupees) | Percentage<br>of total<br>population<br>treated in<br>hospitals |
|-----------------------------|----------------------|--------------|--|--|---|
|                             | Hospitals            | Dispensaries |  |  |   |
| Andhra Pradesh . . . . .    | 106,541              | 51,448       | 66.4   | 6.38   | ...   |
| Assam . . . . .             | 174,682              | 18,578       | 44.0   | 5.64   | 7.8   |
| Bihar . . . . .             | 326,622              | 72,022       | 33.5   | 4.89   | ...   |
| Gujarat . . . . .           | 196,588              | 17,145       | 58.6   | 9.17   | ...   |
| Jammu and Kashmir . . . . . | 151,232              | 7,546        | 92.5   | 11.51  | ...   |
| Kerala . . . . .            | 186,371              | 92,272       | 84.7   | 8.64   | 80.2  |
| Madhya Pradesh . . . . .    | 243,426              | 95,310       | 40.3   | 7.26   | 8.2   |
| Maharashtra . . . . .       | 113,854              | 44,531       | 81.2   | 11.21  | ...   |
| Karnataka . . . . .         | 146,411              | 39,971       | 80.9   | 8.88   | ...   |
| Orissa . . . . .            | 105,473              | 63,913       | 44.5   | 6.77   | 47.0  |
| Punjab . . . . .            | 129,453              | 49,407       | 66.5   | 11.29  | 46.4  |
| Rajasthan . . . . .         | 58,961               | 75,807       | 61.9   | 8.97   | 45.0  |
| Tamil Nadu . . . . .        | 113,470              | 55,069       | 47.9   | 9.05   | 53.7  |
| Uttar Pradesh . . . . .     | 98,258               | 243,727      | 34.7   | 4.87   | ...   |
| West Bengal . . . . .       | 148,065              | 75,895       | 84.5   | 8.68   | 23.8  |

SOURCE: Government of India, Ministry of Health, *Health Statistics in India*, 1965.

work on daily wages, a visit to the hospital might also mean giving up a day's pay. In such cases, if the hospital or dispensary is not easily accessible, advantage will not be taken of the medical facilities unless the sickness is serious enough to risk loss of employment. For persons located near hospitals, such direct and indirect costs would be low and they would use the available medical facilities more. Thus, for any specific location-matrix of the health system, there will be associated a given utilization ratio determined largely by the catchment area of that matrix.<sup>9</sup> The objective of the health care system should be to enlarge the real catchment area so that the utilization ratio would rise.

The higher utilization ratio in Kerala appears to be due to a location-matrix that has provided the widest catchment area for its health system. In order to get an idea of the spread of hospitals, the total area of a taluk<sup>10</sup> has been divided by the number of hospitals and the average catchment area of a hospital within a taluk thus estimated. The average catchment area may differ from an actual or real catchment area to the extent that persons most distant from the hospitals do not make use of them. The taluks of Kerala have been grouped by size of catchment area. The smaller the average catchment area catered to by a hospital the greater the expected accessibility and the higher the utilization ratio. It will be seen from table 62 that, in 28 out of a total of 56 taluks in the state, the average catchment area is less than

<sup>9</sup>See, for a similar analysis, Oscar Gish, "Resource allocation, equality of access, and health", *World Development*, vol. 1, No. 12, p. 37.

<sup>10</sup>A taluk is a further subdivision of a district for revenue collection.

TABLE 62. KERALA: SPATIAL DISTRIBUTION OF HEALTH FACILITIES,  
1970/71

| Average catchment area<br>(square kilometres per<br>medical centre) | Number of<br>taluks | Percentage<br>of total<br>population |
|---|---------------------|--------------------------------------|
| Less than 50 . . . . .  | 28                  | 51.97                                |
| 50-100 . . . . .  | 13                  | 24.81                                |
| More than 100 . . . . .   | 15                  | 23.22                                |

50 square kilometres and that these taluks contain 52 per cent of the total population of the state. However, the catchment area is over 100 square kilometres in 15 taluks whose population forms 23 per cent of the total population of the state.

That accessibility is an important factor is also brought out clearly by the data on the distribution of hospitals according to natural regions in the state. Kerala state is often divided into three natural regions, the coastal lowland, the midland at slightly higher elevation and the hilly, even mountainous, highland. From table 63 it will be seen that the lowland, which has also the highest population density, is characterized both by the highest number of beds per 100,000 population and the smallest average area to be covered by a hospital or dispensary. On the other hand, in the highland region, which has the lowest population density of the three natural regions, the number of beds per 100,000 population is lowest and the area to be covered is largest. The midland region falls between in all these respects. An examination of the death and infant mortality rates shows that they are highly correlated to these variables. The number of deaths per 1,000 population, as well as of infant deaths per 1,000 live births, appears to be smaller in the lowland and very much more in the highland. The rates for the midland lie in between. These facts clearly demonstrate that accessibility to medical care is one of the important variables determining the level of health in a region or state.

#### Factors responsible for interregional differences in Kerala

From the foregoing analysis, it becomes clear that accessibility of the medical care system has been primarily responsible for the higher utilization

TABLE 63. KERALA: ACCESSIBILITY OF MEDICAL CARE AND MORTALITY RATES IN THE NATURAL  
REGIONS

|   | Lowland | Midland | Highland |
|---|---------|---------|----------|
| Number of beds per 100,000 population (1970/71) . . . .                 | 142.0   | 87.0    | 46.0     |
| Average area covered by medical centres<br>(square kilometres). . . . . | 29.4    | 65.4    | 101.9    |
| Death rate per 1,000 population (rural, 1971) . . . . .                 | 8.5     | 9.2     | 10.4     |
| Infant deaths per 1,000 live births (rural, 1971) . . . . .             | 34.4    | 61.3    | 98.6     |

SOURCES: Kerala, *Administration Report, Health Department, 1970-71*. Bureau of Economics and Statistics, *Sample Registration Scheme, Annual Report 1971*, No. 8.

ratio in Kerala. It also appears that the decline in mortality rates is closely related to the same factor. It should therefore be possible to explain inter-regional differences in mortality rates within Kerala, and the lower rates that existed in Travancore, in terms of the differential levels of development of medical facilities and the consequent differences in accessibility to the system in the two regions.

Of a total of 230 medical institutions (including grant-in-aid institutions) in Kerala in 1951-1962, only 30 institutions were located in the Malabar districts. This distribution is reflected in the availability of beds per 100,000 population in the two regions. While the number of beds was only 33 in the Malabar districts, it was as high as 67 in Travancore-Cochin. These disparities still existed at the time of the formation of Kerala state in 1956.

It was mentioned earlier that while the death-rate in Travancore-Cochin was about 12 per 1,000 population, it could have been about 23 per 1,000 population in Malabar at the time Kerala state was formed. Since then greater attention has been paid to the development of medical facilities, and public health facilities in general, in Malabar, so that interregional differences in medical facilities were eliminated as quickly as possible. Under these circumstances, with the elimination of the disparities in the availability of the health system, if the analysis presented earlier in this chapter is correct, the differences in mortality rates between the two regions would also have disappeared.

Table 64 gives the number of beds per 100,000 population in the Malabar districts and in the Travancore-Cochin areas for different periods of time. The number more than doubled in the Malabar area between 1956/57 and 1970/71. In 1956/57 the number of beds per 100,000 population was 2.4 times greater in Travancore-Cochin than in Malabar, but this ratio reflecting the interregional difference declined to 1.5 in 1970/71. During the same period, the death-rate declined from about 23 to 10.4. However, in Travancore-Cochin area the death-rate in 1970/71 was only 7.9 as against the estimated figure of 12 in the mid-1950s. Thus, differences in mortality rates still reflect differences in the extent of, and accessibility to, medical care facilities in these two regions.

### **Reasons for lower death-rate in Travancore**

The same relationship would also explain the lower death-rate noted in Travancore as early as 1920 and its subsequent decline in that region.<sup>11</sup> The state of Travancore paid much attention to the development of health facilities from an early date. By 1905/06, the number of beds per 100,000 population in Travancore was 47; the number did not increase in the

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<sup>11</sup> "The European system of medical aid was first introduced in the State during the reign of Her Highness Gouri Lakshmi Bhayi in 986 M.E. (1811 A.D.). The first hospital was opened about six years later and the appointment of a Durbar Physician also dates back to this period. The department was gradually developed and in 1036 M.E. (1860 A.D.) there were seven medical institutions in the State. In 1060 M.E. (1885 A.D.) the number of institutions rose to 31."

*Travancore Administration Report for 1106 M.E. (1930-1931 A.D.), p. 170.*

TABLE 64. KERALA: NUMBER OF BEDS AND DEATH-RATES IN MALABAR AND TRAVANCORE-COCHIN AREAS

|                             | Number of beds<br>per 100,000 population |         |         |          | Death-rate |         |
|-----------------------------|--|---------|---------|----------|------------|---------|
|                             | 1951/52                                  | 1956/57 | 1960/61 | 1970/71* | 1956/57*   | 1970/71 |
| Malabar . . . . .           | 33                                       | 32      | 49      | 76       | 23         | 10.4    |
| Travancore-Cochin . . . . . | 67                                       | 78      | 94      | 117      | 12         | 7.9     |

\* Estimated as explained in the text.

following two decades proportionately to the growth of population and was therefore slightly lower at 41 in 1920/21. (These data, it must be emphasized, do not include the facilities provided by grant-in-aid institutions.) The number of persons treated in hospitals formed 21.5 per cent of the total population of Travancore in 1920/21. This percentage rose subsequently to 35 by 1934/35 and to 43 by 1951. On the other hand, the number of beds per 100,000 population in Malabar was less than 25 even in 1951. Thus, the early development of medicine and the spread of the health system to all areas of Travancore seems likely to have been mainly responsible for mortality rates starting to decline earlier in this state. The following state policy enunciated by the Maharajah in 1865 had clearly paid off:

"One of the main objects of my ambition is to see that good medical aid is placed within the reach of all classes of my subjects. It is a blessing which it is not at present in the power of individuals generally to secure how much soever they may desire it. It is hence the obvious duty of the state to render its assistance in this direction."<sup>12</sup>

The indigenous system of medicine was widely prevalent in Travancore as well as in the rest of this region. The government of Travancore encouraged the *ayurvedic* system by extending financial support through a system of grants-in-aid. Side by side with expansion of medical institutions the government of Travancore also paid attention to preventive measures: improvement of public health and sanitation, eradication of contagious diseases, public health education, school health inspection etc. Timely detection and preventive and curative steps brought most of the communicable diseases such as cholera and smallpox under control in Travancore by the early decades of this century. More than anything else, the expansion of education made the people accept more readily the medical and public health programme of the government. However, in the present chapter attention has been focused mainly on the study of the expansion in medical facilities.

### Impact of health services on birth-rates

More recently there has been evidence of a sharp decline in birth-rates in Kerala. However, it is not clear to what extent this is the result of the extension of family planning and health services or is due to other factors reflecting societal adjustment, such as the rise in the age of marriage, and how far they have both been affected by the spread of education, particularly among women.

<sup>12</sup>V. Nagam Aiya, *The Travancore State Manual*, vol. II (Trivandrum, 1966), p. 537.

TABLE 65. KERALA AND INDIA: BIRTH-RATES  
(Per 1,000 population)

| Period                | Kerala | India |
|-----------------------|--------|-------|
| 1931-1940. . . . .    | 40.0   | 45.2  |
| 1941-1950. . . . .    | 39.8   | 39.9  |
| 1951-1960. . . . .    | 38.9   | 41.7  |
| 1968 (rural). . . . . | 33.2   | 39.0  |
| 1970 (rural). . . . . | 31.9   | 38.8  |
| 1972 (rural). . . . . | 31.5   | 38.4  |

SOURCES: Kerala, Registrar-General, *Economic Review*, 1974, Sample Registration Bulletin, vol. VIII, No. 1 (April 1974), p. 35.

Available evidence shows that birth-rates did not change to the same extent as mortality rates. In table 65 birth-rates in Kerala are compared with those in India as a whole for the period 1931 to 1970.

During the period 1931-1960 the birth-rate in Kerala declined by only 1.1 points but, between 1961 and 1972, it declined by 7.4 points. Another interesting feature in Kerala is that the rural-urban difference in birth-rate was negligible in contrast to other states. The factors responsible for this sizable fall in birth-rate in the 1960s have not yet been fully elucidated. One study<sup>13</sup> has suggested that the continuous and significant decline in the birth-rate in Kerala began in the early 1960s even before the full-scale launching of the family planning programme and that it is traceable to the cumulative impact of the health and educational facilities developed in the state. Birth-rates would ultimately decline due to the possible effects of declining mortality rates—child and infant mortality rates particularly—and increasing life expectation on the desired number of children. The study derived support for this hypothesis from data on enrolment in the first year of primary school.<sup>14</sup> The study hypothesized in fact that decline in birth-rates was determined mainly by socio-economic variables such as health, education, age at marriage of women etc., rather than by income levels, degree of industrialization or the extent of urbanization.

Though this is not the occasion to analyse the above hypothesis in great detail, some available evidence for Kerala indicates that it might be true and relevant. First, there are considerable disparities in levels of education in different districts of Kerala even though considerable effort has been exerted to eliminate such differences. These differences are especially apparent in the matter of female education. There could be valid explanations for this, such as the concentration of Muslims in the northern districts of Kerala,

<sup>13</sup>P. R. Gopinathan Nair, "Decline in birth-rate in Kerala: a hypothesis about the interrelationship between demographic variables, health services and education", *Economic and Political Weekly*, Annual Number, February 1974.

<sup>14</sup>*Ibid.* The following data show the changes in school enrolment in the first year.

| Period                       | Annual rate of growth<br>(percentages) |
|------------------------------|--|
| 1956/57 to 1961/62 . . . . . | 3.1                                    |
| 1961/62 to 1965/66 . . . . . | 4.0                                    |
| 1965/66 to 1971/72 . . . . . | 1.0                                    |



TABLE 66. KERALA: FEMALE LITERACY RATE AND BIRTH-RATE IN THE RURAL SECTOR, 1970/71

|   | <i>Female literacy rate</i> | <i>Birth-rate</i> |
|---|-----------------------------|-------------------|
| Southern districts <sup>a</sup> . . . . . | 60.1                        | 26.9              |
| Northern districts <sup>b</sup> . . . . . | 45.6                        | 34.8              |

<sup>a</sup>Trivandrum, Quilon, Alleppey, Kottayam and Ernakulam.

<sup>b</sup>Trichur, Malappuram, Palghat, Kozhikode and Cannanore.

among whom female education has yet to be accepted. Table 66 shows the female literacy rates and the birth-rates in the southern and northern districts of Kerala. From these it appears that birth-rates are lower in the southern districts where female literacy is higher. These relationships can be firmly stated only after undertaking detailed studies on female education at community levels.

Female education could reduce fertility and birth-rates by raising the age at marriage and also by enhancing the proportion of family planning acceptors in the married population. There is some evidence to indicate that age-specific fertility rates are declining in Kerala. Table 67 gives the age-specific fertility rates for Travancore in 1941, Kerala in 1972 and India in 1969.

The age-specific fertility rate is defined as the number of births that occur to 1,000 women of a given age group. A comparison of the Kerala figure for the age group 15-19 years with those of Travancore for 1941, and of India as a whole, shows that the fertility rate has declined in Kerala for this age group. How much of this is due to the effect of family planning and how much due to a change in the age of marriage is indeed difficult to determine at present. A recent study on the effect of a family-planning programme concludes that both these factors may be important in reducing the birth-rates in Kerala. This study states:

“Estimates of birth-rates and population after accounting for births averted and assuming a linear decline in death-rate from 16.1 in 1951-60 to 10.1 in 1971 as estimated by the sample registration scheme, have been worked out. The birth-rate estimated for 1972 is 31.8 per 1,000 assuming a death-rate of 9.7 per 1,000. This birth-rate

TABLE 67. AGE-SPECIFIC FERTILITY RATES

| <i>Age group (years)</i> | <i>Kerala, 1972</i> | <i>Travancore, 1941</i> | <i>India, 1969</i> |
|--------------------------|---------------------|-------------------------|--------------------|
| 15-19 . . . . .          | 50.0                | 230                     | 97.91              |
| 20-24 . . . . .          | 210.5               | 247                     | 261.91             |
| 25-29 . . . . .          | 235.6               | 222                     | 266.92             |
| 30-34 . . . . .          | 172.9               | 167                     | 266.02             |
| 35-39 . . . . .          | 177.5               | 141                     | 158.28             |
| 40-44 . . . . .          | 45.2                | ...                     | 77.06              |
| 45-49 . . . . .          | 6.2                 | ...                     | 35.50              |

SOURCES: Kerala, the State Planning Board, *Economic Review*, 1972, p. 36; *Census of India 1941, Travancore*, vol. XXV, p. 175.

is higher than the birth-rate of 31 per 1,000 estimated by the sample registration scheme of 1971 and 30 for 1972. The difference may be due to the procedure of estimation followed in the two schemes of calculation and also due to the changes in marriage rate and age at marriage."<sup>15</sup>

### Conclusion

The analysis in the present chapter has shown that improvement in the levels of health of the population of Kerala is closely related to the pattern of the medical care system developed in the state. This system, by ensuring its accessibility to the largest number of persons, has resulted in the highest utilization ratio achieved by any state in India. The Kerala pattern of development has resulted in less discrimination by the medical care system on the basis of income or of location than has been achieved elsewhere in India. First, the health care system in many states is concentrated in urban areas, thus denying equality of access to the bulk of the rural population. In Kerala, on the other hand, by spreading the health care system to all areas, equality of access has been ensured to the rural population as well (see map\*). This has naturally resulted in raising the percentage of total population treated by the health care system, resulting in a higher utilization ratio. Further, the *per capita* expenditure on health in Kerala, while similar to that in some other states such as West Bengal, is actually lower per person treated by the hospital (see table 61). Thus, by spreading "thinly" the total expenditure on health over a larger number of persons, not only is the return in terms of health indicators very high but a more equal distribution of health expenditure is also achieved in Kerala.<sup>16</sup>

\*Inserted at end of volume.

<sup>15</sup>R. S. Kurup, "On the effect of the family-planning programme on the birth-rate in Kerala," Paper No. 77, Demographic Research Centre, Bureau of Economics and Statistics (Trivandrum, September 1972), pp. 3-4.

<sup>16</sup>It is interesting to note that an analysis by state of major causes of death in order of rank indicates that Kerala is the only state which does not fit in with the pattern observed in other states. In most states, "cough" and "fever" diseases top the list. However, in Kerala, the "swelling" group claimed first place as a major cause of death. The "swelling" group consists of "ulcerated malignant neoplasm", "congestive heart diseases" and "cirrhosis of the liver". These are the causes which account for the highest percentage of deaths in developed countries. When mortality declines, these causes acquire more importance in mortality composition. The implications of this situation for the future pattern of development of health care in Kerala will need examination. This may call for some changes in the "quality" of medical care to be provided in future so that the number of deaths due to these factors is brought down. See Government of India, Registrar-General, *Report on Survey of Causes of Death, 1970*, Series 3, No. 4.



## Chapter XI

### CONCLUSIONS

As indicated in the preface, the scope of this study was initially limited to a few selected questions on the experience of Kerala in regard to nutrition, public works programmes, education and unemployment. It was only as the work progressed that the need to examine a number of other related questions became evident.

Thus the problems posed by the massive scale of undernourishment in the state made it necessary to investigate in some depth why average *per capita* food intake in Kerala was so much lower than in the rest of India, how far land reforms were successful in redistributing income in favour of the poor, to what extent public distribution of food-grains helped to protect the vulnerable sections of the population and why more could not be done through such public distribution. Similarly, it was clear that it was difficult to assess policies and programmes with a bearing on unemployment in the state without analysing the reasons for the rapid proletarianization of labour and the reported rise in the real wage rates of unskilled labour amidst large-scale unemployment. Still other findings, such as the association between female education and levels of nutrition in different families, the phenomenal reduction in infant and over-all mortality rates despite the markedly low average food intake in the state, and the striking downward trend in birth-rates from the mid-1960s, not to mention the apparent links between extension of education, growth of organization among the working class, and the pressures from below for radical legislation in regard to land and labour, raised a variety of other issues on the interrelationship between social and economic policies and the potentialities of both for promoting development.

While pursuing some of these questions the scope of the study grew considerably. An attempt has been made to examine tentatively the factors which basically determine the level of food intake in agrarian societies and, arising from such an examination, the case for promoting local production for local consumption; the potentialities of and the constraints on a comprehensive system of public distribution of food-grains; the social and political forces which help and hinder radical land reform under different conditions even within a region of the dimensions of Kerala; the possibility of raising the real wage rate per unit of work in order to defend the consumption levels of the poor in the face of massive unemployment; the lines along which public works programmes could be organized to absorb idle labour at prevailing or even higher wage rates without necessarily generating inflationary pressures and the nature of the institutional obstacles to be overcome to this end; and, finally, the contribution that free schooling, nutritional programmes for children, and the extension of public health facilities could

make to the promotion of social mobility, demographic transformation, and the organizational power and bargaining strength of the underprivileged sections of the population. The particular features of Kerala's experience—such as the extreme pressure of population on land, the sharp contrasts in the policy of land tenure followed in different parts of the state until independence, the comprehensive system of public distribution of food-grains that has been in operation there for over a decade, the systematic extension of educational and health facilities over several decades, and the radical political movements that have grown in the state in the course of its recent history—have all helped to provide material for a case study of these questions relating to development.

However, precisely because interest in many of these questions developed only as other findings directed attention to them, and also because the constraints imposed by lack of time and of data made it difficult to go into them exhaustively, the study should be regarded only as a first attempt at certain preliminary findings and hypotheses. In fact the questions it has raised deserving more intensive study are more than those it has helped to answer.

Subject to this very important qualification, a brief indication is given in the following paragraphs of the more important findings and policy issues relating to development which the study has helped to bring sharply into focus.

A common assumption made in development planning is that the choice of products in agriculture should maximize the value of output and that, if this results in shortages of an essential commodity such as food-grain in any region, the shortfall is best made good by imports. It is presumed that the operation of the free market will induce the necessary quantum of imports. This explains why the strategy of agricultural development in India (as in many other countries) is based on the selection of particular regions for increasing production of food-grains through intensive application of inputs; such regions being identified as areas in which increases in production can be secured at least cost. The presumption is that these regions are the best sources of supply of food-grains and that, left to market forces, the required supplies will in fact become available to food-deficit regions.

This line of reasoning does not take into account a very important factor, namely, the limited power of relatively poor and scattered rural communities to attract supplies of food-grains from a distance after covering the marketing costs and distributive margins. Only comparatively prosperous urban areas are able to secure such supplies to any significant degree. One of the major findings and policy conclusions of the study is that, since the availability of food in rural areas depends largely on what is grown in the vicinity and if as a consequence *per capita* food intake is much below the nutritional requirements, then special measures are necessary to raise food production locally and/or to import and distribute food in the countryside through a public distribution system on a non-commercial basis.

For the same reason a public distribution system of food-grains can be considered adequate only if it is able to meet the minimum consumption requirements of the poorest sections of the rural population. The system, as practised elsewhere, is geared largely, if not wholly, to the requirements of the urban population, not necessarily as being more vulnerable but possibly because urban dwellers are more influential socially and politically. The system in Kerala is more equitable in the sense that the rural population is also comprehensively covered, though supplies have been all too inadequate, particularly when the need for them has been most acute.

A system of public distribution of food-grains adequate to meet the minimum nutritional needs of the poorest sections of the population in both urban and rural areas can be operated without excessive dependence on imports only if supplies can be secured from farmers on a systematic basis through a progressively graded producers' levy. Such a levy exists in Kerala, but the lack of up-to-date records of land holdings and, probably, ineffective collection are the two major factors responsible for considerable avoidance as well as evasion. There can be little doubt that evasion takes place largely through splitting up of holdings to reduce the rate of levy or to avoid it altogether. Civil Supplies Directorate will not and cannot admit that levy records (records of land holdings under paddy) are not up-to-date. In fact, the holders are very keen on registering the fragmentation of their holdings so that levy can be reduced or avoided altogether. An even more serious limitation has been the lack of a more effective system of procurement of food-grains based on progressive producer levy elsewhere in India.

Since a progressively graded producers' levy is usually in effect a mode of taxation (as when market prices are higher than procurement prices) a system which ensures minimum supplies of food-grains to the poor at prices they can afford cannot generally be operated effectively without a supporting system of taxation of the more affluent sections of the population. Procurement prices need not of course be lower than market prices, and taxation of food-grain producers in this way can be avoided if the margin between the prices at which the supplies are secured and the lower prices at which they are sold through the public distribution system can be covered from other sources. However, in an economy that is largely agrarian, taxation of land is essential in order to secure surpluses for development, and a system of taxation that is not only linked to the procurement of food-grains but is progressive in its incidence—being based on the size of holdings and their potential productivity—has much to recommend it.

Apart from measures of this kind to supplement supplies of food to the rural poor, an obvious way of improving their position is to make more land available to them and to promote its more intensive use. This is basically the economic rationale for radical land reform. Any such land reform implies, however, major shifts in the balance of social and economic power in the countryside, and such shifts can be seldom brought about without political alignments and other conditions favourable to them.

It is of particular interest to observe in this context that, while fairly radical land reform was initiated even a century ago in the southern part of

Kerala by a local monarchy interested in weakening the hold of feudal and semi-feudal elements, more oppressive systems of land tenure were allowed to continue in the north under a British rule which depended heavily on such elements for political support. For this reason the political movements that gathered strength from agrarian discontent in more recent times have been more prominent in the northern than in the southern part of Kerala—apart from certain pockets in the south in which conditions were favourable for the mobilization of the rural poor. The impact of the radical land legislation of the last decade and a half has also been confined largely to the north.

Land reform effected through the political processes of a parliamentary democracy tends to leave a number of loop-holes which vested interests are able to exploit. Between the intent of the proposed legislation, the form in which it is finally placed on the statute book, and the manner in which it is implemented there are invariably striking gaps. Kerala is no exception, though the degree of political organization and consciousness in the state has helped somewhat to reduce the scale of evasion. Radical politics, supported by mass organization at the grass-roots, is obviously a necessary condition for radical and effective land reform.

It is evident that, despite evasion, land reform in Kerala has been effective enough in bringing about a perceptible change in the distribution of income from agriculture, particularly in the northern part of the state. There is also suggestive evidence that land reform has promoted more intensive use of land there. This is reflected particularly in the phenomenal expansion in the production of tapioca in the course of the last decade and a half, a factor which has contributed in no small measure to meeting the minimum nutritional requirements of the poor in the face of population growth and the more or less stagnant supplies of food-grains from outside the state.

That land reform in Kerala, together with the extension of the public distribution system of food-grains to cover the entire population, has helped the rural poor is therefore beyond doubt. It seems even probable that levels of consumption among parts of the population in the lower strata have gone up during this period, that the percentage of the total population below the poverty line has been somewhat reduced, and that, for some of those still below it, the intensity of poverty could have been slightly lessened.

This is not an altogether insubstantial achievement when viewed within the larger context of the rapid growth in population and in the labour force and considering the very limited effort made until recently to accelerate development in the state through public investment. In fact, even the rise in real wage rates of agricultural labourers recorded in Kerala during this period could be in part a reflection of an improvement in the position of the rural poor following land reform, the extension of education, growth of trade union organization and the gaining of a foothold within the existing social and economic power structure made possible as a result. These are, however, matters which require much closer investigation, since there are considerable variations in conditions in different parts of the state, and any generalization could be misleading.

The most serious adverse development has been the rapid growth in unemployment during the period. Up to a point, increase in daily wage rates and reduction in working hours help both to increase the share of labour in total income and to allocate the available employment among those available for work, particularly when the demand for wage labour happens to be inelastic. There is some evidence that this is the main function performed by trade unions of agricultural labourers in Kerala, where such unions are relatively strong. But, beyond a certain point, the growth of unemployment becomes a serious obstacle to effective organization of labour and, if the real wage rate per unit of work also tends to slide down, the income and consumption levels of the lower strata of rural society could well decline significantly. This could be taking place in some parts of Kerala. Under conditions of a massive excess supply of labour, legislation of the kind that has been passed in Kerala to protect and improve the conditions of work of agricultural labourers can become infructuous.

It is therefore self-evident that without effective measures to combat mass unemployment most of the gains secured through land reforms, public distribution of food-grains, increased production of tubers as a substitute for cereals and the organization of trade unions among agricultural labourers can be gradually eroded. The record of public works programmes has to be viewed in this wider context to judge the potentiality of such programmes as instruments for the expansion of rural employment.

In general, the experience with public works programmes in Kerala has been almost as disappointing as elsewhere, the works selected tending to be largely of an unproductive nature and their impact on employment too small and erratic. An experiment has however been made recently to create an organizational framework for the promotion of programmes designed to ensure that the schemes selected are productive and quick-maturing, that the mode of wage fixation is such as to attract labour and provide incentive for raising productivity, that the workers employed save part of their additional incomes, and above all that those who gain more permanently from the schemes implemented are required to contribute to their cost and thus help to provide a revolving fund out of which more such schemes can be undertaken and financed without depending excessively on external sources. Though this experiment has shown some encouraging results it is too early to make a final judgement, particularly since several institutional impediments have to be overcome in order to select and execute schemes involving large numbers of people with, not infrequently, conflicting interests. The pattern of distribution of land holdings, and the extent to which it is favourable or unfavourable to co-operative effort on the part of the holders, is a major factor determining the scope for productive public works programmes in the rural sector.

Construction of houses for the rural poor using mainly local resources could be another way of creating more employment in the countryside and at the same time raising standards of living. There is a sufficiently wide range of building technology available to enable such housing to be offered at relatively low cost. It is clear, however, that a housing programme based on



technology appropriate to the resources available locally has to have a saving requirement built into it even more prominently than is the case for programmes designed to raise agricultural production. Choice of the appropriate technology will also depend either on the relevant shadow prices being used to calculate the costs involved or at least on the market prices of the scarcer materials such as cement and steel being raised so as to reflect their true social cost.

The scale of unemployment in Kerala, and the open manifestations of it, have tended to reduce and obscure the benefits of the educational policies followed in the state. Unlike in most other parts of India, the accent in Kerala has been more on extending free schooling to all strata of the population than on enlarging the facilities for higher education to privileged minorities, though such facilities have also been expanded. Supporting programmes, such as one for providing midday meals in primary schools, have also clearly helped to reduce the number of dropouts. A fairly high proportion of students from the lower strata are now able to reach the final year of school education, and this factor should ordinarily have helped to promote considerable vertical social mobility. The scale of unemployment in the state has however been an obstacle to such mobility. Education itself has naturally come to be regarded in these circumstances primarily as a means of achieving competitive advantage over others in the rather limited market for jobs, while the main effect of the greater availability of workers with school education has been to reduce the income differentials between unskilled manual workers and those who have acquired such education, prolong the waiting periods involved for the educated in securing gainful employment, and encourage the more privileged to extend needlessly the duration of their education.

This does not mean, however, that the investment in such education has been infructuous. As indicated earlier, there is evidence that, even in groups of comparable income, levels of nutrition are higher where the female head of the household is educated (female literacy in Kerala is nearly as high as male literacy); that education is possibly an important factor governing the utilization of public health services, thereby reducing infant and over-all mortality rates and raising life expectation, helping to postpone the age of marriage of girls, changing their attitudes to family size and promoting the effectiveness of family planning programmes. It has also been an important input in the growth of social and political movements which have played a not inconsiderable part in bringing about changes that are essential to development (in a fundamental sense) in any society weighed down by traditional values, relationships and institutions. Further, it appears likely that investment in education in Kerala has promoted the mobility of its population in search of employment elsewhere and, by helping it to acquire other skills, enabled it to secure such employment in more rapidly developing areas in the country. Such skill formation could prove to be a major factor in the next stage of development in Kerala, particularly for the growth of skill-intensive industries, some of which require relatively small amounts of capital for creation of additional employment, such as in electronics,

optics and printing. These different dimensions of educational progress and their potentialities for the future require further study and exploration, but it would be a serious error to allow the phenomenon of the educated unemployed to overshadow the many positive gains resulting from education.

If the hypothesis advanced in this study proves to be correct, that is, that the significant downward trend in birth-rates evident in Kerala during the last decade is the indirect outcome of societal changes in attitude to family size arising from longer life expectation, reduction in infant and child mortality and female education, then the importance attached to the development of health and educational services will not only have fully justified itself but will provide fresh insights into the process of what has been described as 'the demographic transition'. The observed decline in birth-rates in the now advanced industrial countries has been generally attributed to rise in *per capita* incomes, urbanization and industrialization. It could be the case that the more proximate factors responsible for the decline were the development of health and educational services, and that in these countries such development happened to take place simultaneously with rise in *per capita* income, urbanization and industrialization, but that much the same results could be achieved in less industrialized and urbanized societies by giving higher priority and precedence to the development of these services.

As indicated earlier, this study is incomplete because the questions it raises are more numerous than those it has helped to answer. Also, the study has not touched upon certain important issues relating to the development process, such as those concerning saving, investment and patterns of industrial growth. The focus throughout has been mainly on factors that have, or are likely to have, influenced disparities in income and consumption, on the impact that various development policies could have had on these factors and on the inferences that could be drawn from Kerala's experience about strategies of development in which attention is given from the outset to redistributive policies to ensure the minimum essentials of life to the poor.

The study does, however, suggest very clearly that there is much to be said in favour of a pattern of development which gives attention to these minimum essentials of life, particularly if these are interpreted to include items such as educational and health services which help to build up human capital and make important qualitative differences to the whole process of development. This is not to imply that measures to create the other overheads of development are not important or should be given lower priority. But the tendency to view such other measures as competitive rather than as complementary demands in development planning becomes less justifiable and meaningful when the gains that can be secured from balanced social and economic transformation are evident from actual experience. The fact that Kerala is a relatively poor state in India when judged by conventional norms such as *per capita* income; that the average *per capita* availability of food is lower in Kerala than in most parts of India; but that nevertheless it has been possible for the state to make fairly impressive advances in the spheres of health and education, and hence bring about improvements that have made a perceptible difference to the quality of life—as also to the acquisition of

attitudes and skills that could help to accelerate development at the next stage—has certainly some lessons for similar societies seeking social and economic advance.

It is evident that for Kerala itself, the tasks ahead are no doubt still considerable. In particular, creation of employment opportunities of an adequately gainful nature on the required scale calls for measures that would not only raise the productivity of land but promote rapid industrialization. This raises a number of issues and problems which need to be studied; no attempt has however been made in this study to go into them.

## **Annexes**



## Annex I

### FOOD BALANCE-SHEETS (KERALA)

The food balance-sheets presented in the present annex were prepared with secondary data contained in several publications of the State Planning Board, Bureau of Economics and Statistics of the government of Kerala, such as, *Statistics for Planning*, *Fact Book on Agriculture*, *Agricultural Statistics of Kerala*, *Season and Crop Reports*, *Kerala Economic Review*, *State Income of Kerala* covering the years 1961/62 to 1968/69 etc. These sources are supplemented by the administration reports of the concerned departments of the state government.

#### NATURE AND LIMITATIONS OF THE DATA

Estimates of area and production of rice and tapioca are based on regular crop-cutting experiments. As regards coconuts, a series of sample surveys was conducted by the Bureau of Economics and Statistics from 1959/60 to 1965/66, in order to estimate the area and production of this crop. Current production estimates are based on the estimated number of coconut palms per hectare, the proportion of bearing trees, and the average yield of nuts per tree estimated on the basis of "conventional yield rate adjusted to declining trend". Estimates of production of other cereals and millets, pulses, oil-seeds such as sesame and ground-nuts, fruits and sweet potatoes, sugar cane etc., are derived from forecast reports, which are themselves based on land utilization surveys for areas under different crops and conventional crop estimates for yield rates. Production figures relating to the latter group of crops are likely to contain a large margin of error.

Estimates of the production of fish, milk and eggs are published regularly. Figures for marine fish landings are furnished by the Central Marine Fisheries Research Station; production figures for milk and eggs are based on data from the quinquennial Livestock Census. In the case of animal products also the estimates may contain a certain margin of error.

Data on exports of tapioca, coconuts, copra, coconut oil and fish are published regularly. However, coverage is incomplete. For instance, in official statistics full account is not taken of exports other than through seaports. In certain cases such exports could be significant. Thus, estimates of exports of coconuts, copra, coconut oil, tapioca, fish etc., are only approximations. Data on the imports of major food-grains, rice and wheat, brought in on government account for distribution through fair price shops are available, but there are gaps in the data on their imports through private trade channels. Reliable estimates are not available in the case of imports of a number of items such as oil-seeds, pulses, sugar, vegetable oil etc. Thus, there are gaps in our information relating to exports and imports of all food items.

The norms underlying the estimates regarding the proportion of output going by way of seed, feed, waste, extraction rates etc., are similar to the ratios used by the Food and Agriculture Organization of the United Nations in the preparation of the food balance-sheets for India. We shall now discuss the estimation procedures with respect to individual food items.

#### RICE

Paddy is converted into rice at the rate of 66.7 per cent. Data relating to carry-over stocks are not available; however, it is assumed that for a fairly long period, such as a decade, changes in stocks would not make any significant difference to the annual average. An allowance of 12.5 per cent of total production of paddy is made for seed, feed, waste etc. Perhaps this is a little on the high side compared to the 7.5 per cent allowed by the Directorate of Economics and Statistics of the Government of India, when estimating the net availability of rice in India. Imports of rice by the Government for the period have been derived from data on sales of rice through fair price shops and internal procurement. Data on imports of rice by private traders for the years 1961/62 to 1964/65 and 1970/71, when such imports were permitted, are available in the administration reports of the Sales Tax Department. Only fragmentary data on the inflow

through private trade channels are available for the remaining period, 1965/66 to 1969/70, when imports by private traders were officially prohibited.

#### OTHER CEREALS

The entire wheat consumption of Kerala is met from imports. For the years 1961/62-1963/64 data regarding only coastal imports of wheat mainly through Cochin and other ports, are available. For the remainder of the period the only data available regarding wheat imports is the total off-take of wheat from ration shops. To the total imports of wheat are added imports of wheat flour and maida by rail for the years 1961/62 to 1963/64. Allowance for waste at the rate of 5 per cent of available supply is made. No allowance is made for feed. As regards jowar, ragi and other cereals and millets, net food is taken to be equal to domestic production adjusted for seed, feed, waste etc., since data on imports and exports are not readily available. In the case of jowar allowance is made for seed, feed and waste at the rate of 1.1 per cent, 3.4 per cent and 6 per cent, respectively, of supply. For ragi a seed rate of 14.5 kilograms per hectare and a waste of 2 per cent of supply are assumed. Extractions rate is taken to be 90 per cent. In respect of other cereals and millets a seed rate of 9.6 kilograms per hectare and a waste of 2 per cent of supply are assumed.

#### TAPIOCA

Crop-cutting experiments were introduced to estimate the yield rate and production of tapioca from 1963/64 onwards. However, published data for the earlier years had not taken into account the results of these crop-cutting surveys. The reported figures have been revised upwards for the previous two years in the light of the findings of these surveys.

Total availability of tapioca for local consumption is taken as 80 per cent of total production. The basis for this assumption follows. It is assumed that, on average, 10 per cent of production is exported. Tapioca exports from Kerala go mainly to Salem in Tamil Nadu for the production of sago. The installed capacity of sago plants in Salem is 400,000 tons, which if fully utilized would require 1,600,000 tons of raw tuber, sago yield being 25 per cent of raw tuber by weight. Tamil Nadu, with 72,000 acres under tapioca and an average yield of 8 tons per acre, is estimated to produce 560,000 tons of tapioca. The import requirements would therefore be 1,040,000 tons of tapioca if capacity is fully utilized. But installed capacity is not fully utilized, the production of sago being in the range of 175,000 to 250,000 tons, for which the amount of raw tuber required works out to, say, 800,000 tons. This implies that imports of raw tuber from Kerala would be 240,000 tons. Manufacturing units within Kerala need 547,000 tons of tapioca annually if the installed capacity is to be fully utilized. But the present rate of utilization is known to be 40 per cent. Hence raw tuber processed within the state would be 220,000 tons. Thus, exports plus manufacturing of tapioca products within Kerala, assuming capacity utilization, could add up to 1,590,000 tons; at the present rate of utilization of installed capacity within Kerala and Tamil Nadu the tuber requirement would be only 460,000 tons. In other words, the figures fall in the range of 10 to 30 per cent of total production of the crop in Kerala. We have deducted 20 per cent of production for exports and industrial use within Kerala, and the balance is taken to be available for human consumption.

#### SWEET POTATOES

Published data on production during 1969/70 are not available. Averages for the previous years have therefore been used. An allowance of 5 per cent is made for waste.

#### PULSES

In the case of internal production, a seed rate of 40 kilograms per hectare and 5 per cent waste are allowed. Data on imports of pulses are incomplete; figures for the years following 1968/69 are not available, and even for the period for which data are available, the figures cover only rail-borne imports. The nutrient content has been calculated by estimating the average for all pulses.

#### COCONUTS

Production figures are given in thousands. Following local conventional rates, a seed rate of 2 per cent and waste of 1 per cent are deducted. It is assumed that 50 per cent of production is converted to copra for the manufacture of coconut oil. Exports of coconuts have been deducted from the remainder. Figures for net food are derived by converting nuts into coconut kernel at

the rate of 250 grams per nut. A certain proportion of the output is used for religious and ceremonial purposes, but ultimately this quantity also finds its way into human consumption.

#### BANANAS, PLANTAIN AND MANGOES

Data on production of these fruits are lacking for some years; in such cases, the average for the previous years is used. An allowance of 20 per cent is made for waste. No statistics on exports are available.

#### FISH

Production figures cover only marine fish landings. The omission of inland fish catch is a serious one, for Kerala has extensive inland fisheries in its lakes, backwaters, rivers and numerous household tanks and ponds. Figures for net food are derived after deducting exports. The *nutrient value* has been estimated by applying the average for all types of fish.

#### MILK

Data on the production of milk for the two years 1969/70-1970/71 are missing. The figures used for these two years are the *average for the previous years*.

#### EGGS

Production figures for the years 1969/70-1970/71 are not available; data for the preceding period have been used. Allowance is made for waste and hatching at the *rate of 5 per cent and 15 per cent*, respectively. Figures for food are derived assuming an average weight of 35 grams for hen eggs and 50 grams for duck eggs. Data are not readily available on the export of eggs. A significant proportion of domestic production leaves the state and estimates of *per capita* availability are apt to be a little on the high side.

#### OILS AND FATS

As mentioned above, 50 per cent of coconuts produced in the state is assumed to be converted into copra. Exports of copra are deducted from this figure and imports added in order to estimate the actual amount of copra used to produce coconut oil. It is assumed that it takes 6,775 nuts to make 1 ton of copra and that the extraction rate of oil is 62 per cent by weight of copra. Exports of oil are deducted to obtain net food.

#### SESAME OIL

Net availability of sesame seed is estimated after making an allowance of 6 kilograms per hectare for seed. Sesame oil production is calculated by applying an extraction rate of 40 per cent.



TABLE 68. KERALA:<sup>a</sup>  
(Average for 10 years.)

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports    | Exports   | Available<br>supply | Feed     | Seed      |
|--|--|--------------|------------|-----------|---------------------|----------|-----------|
| <b>Cereals</b>                         |  |              |            |           |                     |          |           |
| Rice . . . . .                         | Thous. tons  | 990.73       | 864.63     |           |                     |          |           |
| Wheat . . . . .                        |  |              | 181,978.00 | 9,849.63  |                     |          |           |
| Jowar . . . . .                        |  | 558.00       |            |           |                     | 6.14     | 18.97     |
| Ragi . . . . .                         |  | 7,886.50     |            |           |                     |          | 74.17     |
| Other cereals<br>and millets . . . . . |  | 3,210.40     |            |           |                     |          | 64.14     |
| <b>Roots and tubers</b>                |  |              |            |           |                     |          |           |
| Tapioca . . . . .                      | Thous. tons  | 3,486.43     |            | 348.64    |                     |          |           |
| Sweet potatoes . . . . .               |  | 41,765.77    |            |           |                     |          |           |
| <b>Pulses and nuts</b>                 |  |              |            |           |                     |          |           |
| Pulses . . . . .                       |  | 16,602.30    | 28,134.05  | 408.76    |                     |          | 1,715.88  |
| Ground-nuts . . . . .                  |  | 20,285.70    |            |           |                     |          | 1,217.29  |
| Coconuts . . . . .                     | Thousands  | 3,516,900.00 | 333.20     | 66,338.60 |                     |          | 70,338.00 |
| <b>Fruits</b>                          |  |              |            |           |                     |          |           |
| Bananas . . . . .                      |  | 70,689.88    |            |           |                     |          |           |
| Plantain . . . . .                     |  | 279,492.60   |            |           |                     |          |           |
| Mangoes . . . . .                      |  | 360,202.00   |            |           |                     |          |           |
| <b>Fish</b>                            |  |              |            |           |                     |          |           |
| Fish . . . . .                         |  | 279,516.70   | 3,708.50   | 13,424.80 |                     |          |           |
| <b>Milk</b>                            |  |              |            |           |                     |          |           |
| Cow . . . . .                          |  | 159,066.50   |            |           |                     |          |           |
| Buffalo . . . . .                      |  | 27,709.25    |            |           |                     |          |           |
| Goat . . . . .                         |  | 19,843.12    |            |           |                     |          |           |
| <b>Eggs</b>                            |  |              |            |           |                     |          |           |
| Hen . . . . .                          |  | 14,018.75    |            |           |                     | 2,102.81 |           |
| Duck . . . . .                         |  | 1,503.00     |            |           |                     | 225.45   |           |
| <b>Meat</b>                            |  |              |            |           |                     |          |           |
| Beef . . . . .                         |  | 19,145.12    |            |           |                     |          |           |
| Buffalo . . . . .                      |  | 7,106.75     |            |           |                     |          |           |
| Mutton . . . . .                       |  | 2,870.75     |            |           |                     |          |           |
| Pork . . . . .                         |  | 1,754.13     |            |           |                     |          |           |
| Poultry . . . . .                      |  | 3,074.13     |            |           |                     |          |           |
| <b>Oils and fats</b>                   |  |              |            |           |                     |          |           |
| Coconut oil . . . . .                  |  | 159,351.35   | 290.23     | 30,560.25 |                     |          | 71.21     |
| Sesame seed oil . . . . .              |  | 2,926.00     |            |           |                     |          |           |
| <b>Sugar</b>                           |  |              |            |           |                     |          |           |

<sup>a</sup> Estimated population, 19.11 million.

FOOD BALANCE-SHEET  
1961/62-1970/71)

| Waste     | Manufacture | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|-------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |             |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
| 8,704.92  |             |              | 1,855.36   | 97.07                 | 265.95           | 17.02                          | 1.06                       | 920.19              |
| 33.48     |             |              | 163,423.45 | 8.55                  | 23.42            | 2.76                           | 0.35                       | 81.03               |
| 157.73    |             |              | 499.41     | 0.03                  | 0.08             | 0.01                           | 0.02                       | 0.28                |
|           |             | 7,654.60     | 6,889.14   | 0.36                  | 0.99             | 0.07                           | 0.01                       | 3.25                |
| 64.21     |             | 3,082.05     | 2,927.95   | 0.15                  | 0.41             | 0.04                           | 0.01                       | 1.35                |
|           |             |              |            |                       | 290.85           | 19.90                          | 1.43                       | 1,006.10            |
| 2,088.29  | 348.64      |              | 2,789.15   | 145.95                | 399.86           | 2.80                           | 0.80                       | 627.78              |
|           |             |              | 39,677.48  | 2.08                  | 5.70             | 0.07                           | 0.02                       | 6.84                |
|           |             |              |            |                       | 405.56           | 2.87                           | 0.82                       | 634.62              |
| 830.12    |             |              | 36,236.54  | 1.90                  | 5.21             | 1.30                           | 0.17                       | 18.17               |
| 1,014.29  |             |              |            | 0.95                  | 2.60             | 0.66                           | 1.04                       | 14.74               |
| 351.69    | 17,584.50   | 1,593,504.76 | 398,376.19 | 20.85                 | 57.12            | 2.57                           | 23.76                      | 253.61              |
|           |             |              |            |                       | 64.93            | 4.53                           | 24.97                      | 286.52              |
| 14,137.66 |             |              | 56,552.22  | 2.96                  | 8.11             | 0.11                           | 0.02                       | 12.41               |
| 50,308.68 |             |              | 229,183.92 | 11.99                 | 32.85            | 0.36                           | 0.03                       | 34.16               |
| 36,020.00 |             |              | 324,182.20 | 16.96                 | 46.47            | 0.28                           | 0.05                       | 23.70               |
|           |             |              |            |                       | 87.43            | 0.75                           | 0.10                       | 70.27               |
| 27,951.60 |             |              | 241,107.01 | 12.62                 | 34.58            | 7.02                           | 0.91                       | 39.30               |
|           |             |              | 159,066.50 | 8.32                  | 22.79            | 0.73                           | 0.93                       | 15.27               |
|           |             |              | 27,709.25  | 1.45                  | 3.97             | 0.17                           | 0.35                       | 4.64                |
|           |             |              | 19,343.12  | 1.04                  | 2.85             | 0.09                           | 0.13                       | 2.05                |
|           |             |              |            |                       | 29.61            | 0.99                           | 1.41                       | 21.96               |
| 700.94    |             |              | 11,215.00  | 0.59                  | 1.62             | 0.22                           | 0.22                       | 2.80                |
| 71.53     |             |              | 1,206.02   | 0.06                  | 0.16             | 0.02                           | 0.02                       | 0.29                |
|           |             |              |            |                       | 1.78             | 0.24                           | 0.24                       | 3.09                |
|           |             |              | 19,145.11  | 1.00                  | 2.74             | 0.62                           | 0.07                       | 3.12                |
|           |             |              | 7,106.75   | 0.37                  | 1.01             | 0.20                           | 0.01                       | 0.87                |
|           |             |              | 2,870.75   | 0.15                  | 0.41             | 0.08                           | 0.05                       | 0.80                |
|           |             |              | 1,754.13   | 0.09                  | 0.25             | 0.05                           | 0.01                       | 0.29                |
|           |             |              | 3,074.13   | 0.16                  | 0.44             | 0.11                           | 0.02                       | 0.48                |
|           |             |              |            |                       | 4.85             | 1.06                           | 0.14                       | 5.56                |
|           |             |              | 132,079.30 | 6.91                  | 18.93            |                                | 18.93                      | 170.37              |
|           | 2,854.79    |              | 1,141.91   | 0.06                  | 0.16             |                                | 0.16                       | 1.44                |
|           |             |              |            |                       | 19.09            |                                | 19.09                      | 171.81              |
|           |             |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
|           |             |              |            | GRAND TOTAL           |                  | 37.39                          | 49.11                      | 2,338.73            |

TABLE 69. KERALA.<sup>a</sup>

| Item                                   | Unit<br>(tons<br>except as<br>otherwise<br>indicated) | Production   | Imports   | Exports    | Available<br>supply | Feed | Seed      |
|--|---|--------------|-----------|------------|---------------------|------|-----------|
| <b>Cereals</b>                         |   |              |           |            |                     |      |           |
| Rice . . . . .                         | Thous. tons   | 878.05       | 1,025.00  |            |                     |      |           |
| Wheat . . . . .                        |   |              | 20,271.00 | 2,077.00   | 18,194.00           |      |           |
| Jowar . . . . .                        |   | 620.00       |           |            | 620.00              | 6.82 | 21.08     |
| Ragi . . . . .                         |   | 8,466.00     |           |            | 8,466.00            |      | 75.54     |
| Other cereals<br>and millets . . . . . |   | 3,350.00     |           |            |                     |      | 64.70     |
| <b>Roots and tubers</b>                |   |              |           |            |                     |      |           |
| Tapioca . . . . .                      | Thous. tons   | 2,845.25     |           | 284.53     |                     |      |           |
| Sweet potatoes . . . . .               |   | 40,756.00    |           |            | 40,756.00           |      |           |
| <b>Pulses and nuts</b>                 |   |              |           |            |                     |      |           |
| Pulses . . . . .                       |   | 17,160.00    | 26,056.30 | 210.10     |                     |      | 1,741.20  |
| Ground-nuts . . . . .                  |   | 13,750.00    |           |            |                     |      | 1,347.11  |
| Coconuts . . . . .                     | Thousands   | 3,247,000.00 | 132.80    | 153,206.00 |                     |      | 64,940.00 |
| <b>Fruits</b>                          |   |              |           |            |                     |      |           |
| Bananas . . . . .                      |   | 56,334.00    |           |            |                     |      |           |
| Plantain . . . . .                     |   | 261,010.00   |           |            |                     |      |           |
| Mangoes . . . . .                      |   | 388,198.00   |           |            |                     |      |           |
| <b>Fish</b> . . . . .                  |   | 256,663.00   | 1,697.00  | 6,889.00   |                     |      |           |
| <b>Milk</b>                            |   |              |           |            |                     |      |           |
| Cow . . . . .                          |   | 144,736.00   |           |            |                     |      |           |
| Buffalo . . . . .                      |   | 26,986.00    |           |            |                     |      |           |
| Goat . . . . .                         |   | 18,933.00    |           |            |                     |      |           |
| <b>Eggs</b>                            |   |              |           |            |                     |      |           |
| Hen . . . . .                          |   | 12,346.00    |           |            |                     |      | 1,851.90  |
| Duck . . . . .                         |   | 1,615.00     |           |            |                     |      | 242.25    |
| <b>Meat</b>                            |   |              |           |            |                     |      |           |
| Beef . . . . .                         |   | 16,688.00    |           |            |                     |      |           |
| Buffalo . . . . .                      |   | 5,627.00     |           |            |                     |      |           |
| Mutton . . . . .                       |   | 2,861.00     |           |            |                     |      |           |
| Pork . . . . .                         |   | 1,344.00     |           |            |                     |      |           |
| Poultry . . . . .                      |   | 2,786.00     |           |            |                     |      |           |
| <b>Oils and fats</b>                   |   |              |           |            |                     |      |           |
| Coconut oil . . . . .                  |   | 157,069.56   | 367.10    | 51,055.50  |                     |      |           |
| Sesame seed oil . . . . .              |   | 2,580.00     |           |            |                     |      | 71.70     |
| <b>Sugar</b> . . . . .                 |   |              |           |            |                     |      |           |

<sup>a</sup> Estimated mid-year population, 17.04 million.

## FOOD BALANCE-SHEET, 1961/62

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
|           |              |              | 1,903.05   | 111.68                | 305.97           | 19.58                          | 1.22                       | 1,058.66            |
| 909.70    |              |              | 17,284.30  | 1.01                  | 2.77             | 0.33                           | 0.04                       | 9.58                |
| 37.20     |              | 554.90       | 554.90     | 0.03                  | 0.09             | 0.01                           | 0.00                       | 0.31                |
| 169.32    |              | 8,221.14     | 7,399.02   | 0.43                  | 1.18             | 0.09                           | 0.02                       | 3.87                |
| 67.00     |              | 3,218.30     | 3,057.39   | 0.18                  | 0.49             | 0.05                           | 0.01                       | 1.61                |
|           |              |              |            |                       | 310.50           | 20.06                          | 1.29                       | 1,074.03            |
|           | 284.53       |              | 2,276.19   | 133.58                | 365.97           | 2.56                           | 0.73                       | 574.57              |
| 2,037.80  |              |              | 38,718.20  | 2.27                  | 6.21             | 0.07                           | 0.02                       | 7.45                |
|           |              |              |            |                       | 372.18           | 2.63                           | 0.75                       | 582.02              |
| 858.00    |              |              | 40,407.00  | 2.37                  | 6.49             | 1.61                           | 0.21                       | 22.63               |
| 687.50    |              |              | 11,715.39  | 0.69                  | 1.89             | 0.48                           | 0.76                       | 10.72               |
| 32,470.00 | 1,623,500.00 | 1,373,016.80 | 343,254.00 | 20.14                 | 55.19            | 2.48                           | 22.96                      | 245.04              |
|           |              |              |            |                       | 63.57            | 4.57                           | 23.93                      | 278.39              |
| 11,266.00 |              |              | 45,068.00  | 2.64                  | 7.23             | 0.09                           | 0.01                       | 11.06               |
| 46,981.80 |              |              | 214,029.00 | 12.56                 | 34.41            | 0.38                           | 0.03                       | 35.78               |
| 38,819.00 |              |              | 349,379.00 | 20.50                 | 56.16            | 0.34                           | 0.06                       | 28.64               |
|           |              |              |            |                       | 97.80            | 0.81                           | 0.10                       | 75.48               |
| 25,666.00 |              |              | 225,805.00 | 13.25                 | 36.30            | 7.37                           | 0.95                       | 41.25               |
|           |              |              | 144,736.00 | 8.49                  | 23.26            | 0.74                           | 0.95                       | 15.58               |
|           |              |              | 26,986.00  | 1.58                  | 4.33             | 0.19                           | 0.38                       | 5.07                |
|           |              |              | 18,933.00  | 1.11                  | 3.04             | 0.10                           | 0.14                       | 2.19                |
|           |              |              |            |                       | 30.63            | 1.03                           | 1.47                       | 22.84               |
| 617.30    |              |              | 9,876.80   | 0.58                  | 1.59             | 0.21                           | 0.21                       | 2.75                |
| 80.75     |              |              | 1,292.00   | 0.08                  | 0.22             | 0.03                           | 0.03                       | 0.40                |
|           |              |              |            |                       | 1.81             | 0.24                           | 0.24                       | 3.15                |
|           |              |              | 16,688.00  | 0.98                  | 2.68             | 0.61                           | 0.07                       | 3.05                |
|           |              |              | 5,627.00   | 0.33                  | 0.90             | 0.18                           | 0.01                       | 0.78                |
|           |              |              | 2,861.00   | 0.17                  | 0.46             | 0.08                           | 0.06                       | 0.89                |
|           |              |              | 1,344.00   | 0.08                  | 0.21             | 0.04                           | 0.01                       | 0.24                |
|           |              |              | 2,786.00   | 0.16                  | 0.45             | 0.12                           | 0.00                       | 0.49                |
|           |              |              |            |                       | 4.70             | 1.03                           | 0.15                       | 5.45                |
|           |              | 2,508.30     | 106,381.16 | 6.24                  | 17.10            |                                | 17.10                      | 153.90              |
|           |              |              | 1,003.32   | 0.06                  | 0.16             |                                | 0.16                       | 1.46                |
|           |              |              |            |                       | 17.26            |                                | 17.26                      | 155.36              |
|           |              |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 37.77                          | 46.14                      | 2,337.47            |

TABLE 70. KERALA:<sup>a</sup>

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports   | Exports    | Available<br>supply | Feed | Seed      |
|--|--|--------------|-----------|------------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |           |            |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 956.12       | 976.00    |            |                     |      |           |
| Wheat . . . . .                        |  |              | 25,194.00 | 3,988.00   | 21,206.00           |      |           |
| Jowar . . . . .                        |  | 620.00       |           |            | 620.00              | 6.82 | 21.08     |
| Ragi . . . . .                         |  | 8,466.00     |           |            | 8,466.00            |      | 75.54     |
| Other cereals<br>and millets . . . . . |  | 3,350.00     |           |            |                     |      | 64.60     |
| <b>Roots and tubers</b>                |  |              |           |            |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 2,664.32     |           | 266.43     |                     |      |           |
| Sweet potatoes . . . . .               |  | 43,579.00    |           |            | 43,579.00           |      |           |
| <b>Pulses and nuts</b>                 |  |              |           |            |                     |      |           |
| Pulses . . . . .                       |  | 17,260.00    | 37,726.40 | 148.70     |                     |      | 1,759.20  |
| Ground-nuts . . . . .                  |  | 13,533.00    |           |            |                     |      | 1,351.33  |
| Coconuts . . . . .                     | Thousands  | 3,305,000.00 | 647.80    | 103,118.00 |                     |      | 66,100.00 |
| <b>Fruits</b>                          |  |              |           |            |                     |      |           |
| Bananas . . . . .                      |  | 77,012.00    |           |            |                     |      |           |
| Plantain . . . . .                     |  | 250,322.00   |           |            |                     |      |           |
| Mangoes . . . . .                      |  | 397,372.00   |           |            |                     |      |           |
| <b>Fish . . . . .</b>                  |  | 216,041.00   | 1,784.00  | 6,727.00   |                     |      |           |
| <b>Milk</b>                            |  |              |           |            |                     |      |           |
| Cow . . . . .                          |  | 148,443.00   |           |            |                     |      |           |
| Buffalo . . . . .                      |  | 27,199.00    |           |            |                     |      |           |
| Goat . . . . .                         |  | 19,242.00    |           |            |                     |      |           |
| <b>Eggs</b>                            |  |              |           |            |                     |      |           |
| Hen . . . . .                          |  | 12,874.00    |           |            |                     |      | 1,931.10  |
| Duck . . . . .                         |  | 1,605.00     |           |            |                     |      | 240.75    |
| <b>Meat</b>                            |  |              |           |            |                     |      |           |
| Beef . . . . .                         |  | 16,874.00    |           |            |                     |      |           |
| Buffalo . . . . .                      |  | 5,601.00     |           |            |                     |      |           |
| Mutton . . . . .                       |  | 2,868.00     |           |            |                     |      |           |
| Pork . . . . .                         |  | 1,334.00     |           |            |                     |      |           |
| Poultry . . . . .                      |  | 2,885.00     |           |            |                     |      |           |
| <b>Oils and fats</b>                   |  |              |           |            |                     |      |           |
| Coconut oil . . . . .                  |  | 157,523.00   | 537.00    | 42,305.86  |                     |      |           |
| Sesame seed oil . . . . .              |  | 2,580.00     |           |            |                     |      | 71.46     |
| <b>Sugar . . . . .</b>                 |  |              |           |            |                     |      |           |

<sup>a</sup> Estimated mid-year population, 17.47 million.

FOOD BALANCE-SHEET, 1962/63

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
|           |              |              | 1,932.12   | 110.60                | 303.01           | 19.39                          | 1.21                       | 1,048.41            |
| 1,060.30  |              |              | 20,145.70  | 1.15                  | 3.15             | 0.37                           | 0.05                       | 10.90               |
| 37.20     |              |              | 554.90     | 0.03                  | 0.08             | 0.01                           | 0.01                       | 0.29                |
| 169.32    |              | 8,221.14     | 7,399.02   | 0.42                  | 1.15             | 0.08                           | 0.01                       | 3.77                |
| 67.00     |              | 3,218.40     | 3,057.48   | 0.18                  | 0.49             | 0.05                           | 0.01                       | 1.61                |
|           |              |              |            |                       | 307.88           | 19.90                          | 1.28                       | 1,064.98            |
|           | 266.43       |              | 2,131.46   | 122.01                | 334.27           | 2.34                           | 0.67                       | 524.80              |
| 2,178.95  |              |              | 41,400.05  | 2.36                  | 6.46             | 0.08                           | 0.02                       | 7.75                |
|           |              |              |            |                       | 340.73           | 2.42                           | 0.69                       | 532.55              |
| 863.00    |              |              | 52,215.50  | 2.99                  | 8.19             | 2.04                           | 0.26                       | 28.56               |
| 676.65    |              |              | 11,505.02  | 0.66                  | 1.81             | 0.46                           | 0.73                       | 10.26               |
| 33,050.00 | 1,652,500.00 | 1,450,879.80 | 362,719.50 | 20.76                 | 56.88            | 2.56                           | 23.66                      | 252.55              |
|           |              |              |            |                       | 66.88            | 5.06                           | 24.65                      | 291.37              |
| 15,402.00 |              |              | 61,610.00  | 3.52                  | 9.64             | 0.13                           | 0.02                       | 14.74               |
| 45,057.96 |              |              | 205,265.00 | 11.74                 | 32.16            | 0.35                           | 0.03                       | 33.44               |
| 39,737.00 |              |              | 357,635.00 | 20.47                 | 56.08            | 0.34                           | 0.06                       | 28.60               |
|           |              |              |            |                       | 97.88            | 0.82                           | 0.11                       | 76.78               |
| 21,604.00 |              |              | 189,494.00 | 10.85                 | 29.73            | 6.04                           | 0.78                       | 33.79               |
|           |              |              |            | 8.50                  | 23.29            | 0.75                           | 0.96                       | 15.60               |
|           |              |              |            | 1.56                  | 4.27             | 0.18                           | 0.38                       | 5.00                |
|           |              |              |            | 1.10                  | 3.01             | 0.10                           | 0.14                       | 2.17                |
|           |              |              |            |                       | 30.57            | 1.03                           | 1.48                       | 22.77               |
| 514.96    |              |              | 10,427.94  | 0.59                  | 1.61             | 0.21                           | 0.21                       | 2.79                |
| 80.25     |              |              | 1,284.00   | 0.07                  | 0.19             | 0.03                           | 0.03                       | 0.35                |
|           |              |              |            |                       | 1.80             | 0.24                           | 0.24                       | 3.14                |
|           |              |              | 16,874.00  | 0.97                  | 2.65             | 0.60                           | 0.07                       | 3.02                |
|           |              |              | 5,601.00   | 0.32                  | 0.88             | 0.17                           | 0.01                       | 0.76                |
|           |              |              | 2,868.00   | 0.16                  | 0.45             | 0.08                           | 0.06                       | 0.87                |
|           |              |              | 1,221.00   | 0.08                  | 0.21             | 0.04                           | 0.01                       | 0.24                |
|           |              |              | 2,885.00   | 0.17                  | 0.45             | 0.12                           | 0.002                      | 0.49                |
|           |              |              |            |                       | 4.64             | 1.01                           | 0.15                       | 5.38                |
|           |              |              | 115,754.54 | 6.63                  | 18.16            |                                | 18.16                      | 163.44              |
|           | 2,508.50     |              | 1,003.41   | 0.06                  | 0.16             |                                | 0.16                       | 1.40                |
|           |              |              |            |                       | 18.32            |                                | 18.32                      | 164.84              |
|           |              |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 36.55                          | 47.70                      | 2,295.10            |

TABLE 71. KERALA:<sup>a</sup>

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports   | Exports   | Available<br>supply | Feed | Seed      |
|--|--|--------------|-----------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |           |           |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 986.55       | 1,004.00  |           |                     |      |           |
| Wheat . . . . .                        |  |              | 24,192.00 | 4,296.00  |                     |      |           |
| Jowar . . . . .                        |  | 590.00       |           |           |                     | 6.49 | 20.06     |
| Ragi . . . . .                         |  | 8,388.00     |           |           |                     |      | 75.69     |
| Other cereals<br>and millets . . . . . |  | 3,240.00     |           |           |                     |      | 64.60     |
| <b>Roots and tubers</b>                |  |              |           |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 2,523.97     |           | 252.40    |                     |      |           |
| Sweet potatoes . . . . .               |  | 48,660.00    |           |           |                     |      |           |
| <b>Pulses and nuts</b>                 |  |              |           |           |                     |      |           |
| Pulses . . . . .                       |  | 17,130.00    | 30,538.50 | 678.10    |                     |      | 1,754.00  |
| Ground-nuts . . . . .                  |  | 20,774.00    |           |           |                     |      | 1,223.19  |
| Coconuts . . . . .                     | Thousands  | 3,262,000.00 | 413.40    | 97,532.00 |                     |      | 65,240.00 |
| <b>Fruits</b>                          |  |              |           |           |                     |      |           |
| Bananas . . . . .                      |  | 74,956.00    |           |           |                     |      |           |
| Plantain . . . . .                     |  | 250,860.00   |           |           |                     |      |           |
| Mangoes . . . . .                      |  | 403,941.00   |           |           |                     |      |           |
| <b>Fish</b> . . . . .                  |  | 167,363.00   | 5,133.00  | 8,249.00  |                     |      |           |
| <b>Milk</b>                            |  |              |           |           |                     |      |           |
| Cow . . . . .                          |  | 153,238.00   |           |           |                     |      |           |
| Buffalo . . . . .                      |  | 27,410.00    |           |           |                     |      |           |
| Goat . . . . .                         |  | 19,528.00    |           |           |                     |      |           |
| <b>Eggs</b>                            |  |              |           |           |                     |      |           |
| Hen . . . . .                          |  | 13,377.00    |           |           |                     |      | 2,006.55  |
| Duck . . . . .                         |  | 1,584.00     |           |           |                     |      | 237.60    |
| <b>Meat</b>                            |  |              |           |           |                     |      |           |
| Beef . . . . .                         |  | 17,274.00    |           |           |                     |      |           |
| Buffalo . . . . .                      |  | 5,691.00     |           |           |                     |      |           |
| Mutton . . . . .                       |  | 2,860.00     |           |           |                     |      |           |
| Pork . . . . .                         |  | 1,334.00     |           |           |                     |      |           |
| Poultry . . . . .                      |  | 2,975.00     |           |           |                     |      |           |
| <b>Oils and fats</b>                   |  |              |           |           |                     |      |           |
| Coconut oil . . . . .                  |  | 150,800.12   | 155.30    | 37,940.22 |                     |      | 71.94     |
| Sesame seed oil . . . . .              |  | 2,600.00     |           |           |                     |      |           |
| <b>Sugar</b> . . . . .                 |  |              |           |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 17.91 million.

## FOOD BALANCE-SHEET, 1963/64

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
|           |              |              | 1,990.55   | 111.14                | 304.49           | 19.49                          | 1.22                       | 1,053.54            |
| 994.80    |              |              | 18,901.20  | 1.06                  | 2.90             | 0.34                           | 0.04                       | 10.03               |
| 35.40     |              |              | 528.05     | 0.03                  | 0.08             | 0.01                           | 0.001                      | 0.28                |
| 167.76    |              | 8,144.55     | 7,330.09   | 0.41                  | 1.12             | 0.08                           | 0.01                       | 3.67                |
| 64.80     |              | 3,110.60     | 2,955.07   | 0.16                  | 0.44             | 0.04                           | 0.01                       | 1.45                |
|           |              |              |            |                       | 309.03           | 19.96                          | 1.28                       | 1,068.67            |
|           | 252.40       |              | 2,019.17   | 112.74                | 308.88           | 2.16                           | 0.62                       | 484.94              |
| 2,433.00  |              |              | 46,227.00  | 2.58                  | 7.06             | 0.08                           | 0.02                       | 8.47                |
|           |              |              |            |                       | 315.94           | 2.24                           | 0.64                       | 493.41              |
| 856.50    |              |              | 44,379.90  | 2.48                  | 6.79             | 1.69                           | 0.22                       | 23.68               |
| 1,038.70  | 1,631,000.00 | 1,436,021.40 | 18,512.11  | 1.03                  | 2.82             | 0.71                           | 1.13                       | 15.99               |
| 32,620.00 |              |              | 359,005.00 | 20.05                 | 54.92            | 2.47                           | 22.85                      | 243.84              |
|           |              |              |            |                       | 64.53            | 4.87                           | 24.20                      | 283.51              |
| 14,991.00 |              |              | 59,965.00  | 3.34                  | 9.15             | 0.12                           | 0.02                       | 13.99               |
| 45,154.80 |              |              | 205,706.00 | 11.48                 | 31.45            | 0.35                           | 0.03                       | 32.70               |
| 40,394.00 |              |              | 363,547.00 | 20.29                 | 55.58            | 0.33                           | 0.06                       | 28.34               |
|           |              |              |            |                       | 96.18            | 0.80                           | 0.11                       | 75.03               |
| 16,736.00 |              |              | 147,511.00 | 8.24                  | 22.58            | 4.59                           | 0.59                       | 25.66               |
|           |              |              |            | 8.56                  | 23.45            | 0.75                           | 0.96                       | 15.71               |
|           |              |              |            | 1.53                  | 4.19             | 0.18                           | 0.37                       | 4.90                |
|           |              |              |            | 1.09                  | 2.99             | 0.10                           | 0.14                       | 2.15                |
|           |              |              |            |                       | 30.63            | 1.03                           | 1.47                       | 22.76               |
| 668.85    |              |              | 10,701.60  | 0.60                  | 1.64             | 0.22                           | 0.22                       | 2.84                |
| 63.36     |              |              | 1,283.04   | 0.07                  | 0.19             | 0.03                           | 0.03                       | 0.35                |
|           |              |              |            |                       | 1.83             | 0.25                           | 0.25                       | 3.19                |
|           |              |              | 17,274.00  | 0.96                  | 2.64             | 0.60                           | 0.07                       | 3.00                |
|           |              |              | 5,691.00   | 0.32                  | 0.87             | 0.17                           | 0.01                       | 0.75                |
|           |              |              | 2,860.00   | 0.16                  | 0.44             | 0.08                           | 0.06                       | 0.84                |
|           |              |              | 1,334.00   | 0.07                  | 0.20             | 0.04                           | 0.01                       | 0.23                |
|           |              |              | 2,975.00   | 0.17                  | 0.46             | 0.12                           | 0.002                      | 0.50                |
|           |              |              |            |                       | 4.61             | 1.01                           | 0.15                       | 5.32                |
|           |              |              | 113,015.08 | 6.31                  | 17.29            |                                | 17.29                      | 155.61              |
|           | 2,528.06     |              | 1,011.22   | 0.06                  | 0.15             |                                | 0.15                       | 1.38                |
|           |              |              |            |                       | 17.44            |                                | 17.44                      | 156.99              |
|           |              |              |            |                       | 0.25             | 0.03                           |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 34.78                          | 46.13                      | 2,234.34            |



TABLE 72. KERALA: <sup>a</sup>

| Item                                   | Unit<br>(tons,<br>except where<br>otherwise<br>indicated) | Production   | Imports    | Exports   | Available<br>supply | Feed | Seed      |
|--|---|--------------|------------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |   |              |            |           |                     |      |           |
| Rice . . . . .                         | Thous. tons   | 980.76       | 838.00     |           |                     |      |           |
| Wheat . . . . .                        |   |              | 240,426.00 | 287.00    |                     |      |           |
| Jowar . . . . .                        |   | 560.00       |            |           |                     | 6.16 | 19.04     |
| Ragi . . . . .                         |   | 8,288.00     |            |           |                     |      | 75.11     |
| Other cereals<br>and millets . . . . . |   | 3,130.00     |            |           |                     |      | 64.51     |
| <b>Roots and tubers</b>                |   |              |            |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons   | 2,763.20     |            | 276.32    |                     |      |           |
| Sweet potatoes . . . . .               |   | 51,582.00    |            |           |                     |      |           |
| <b>Pulses and nuts</b>                 |   |              |            |           |                     |      |           |
| Pulses . . . . .                       |   | 17,060.00    | 21,797.90  | 856.70    |                     |      | 1,744.00  |
| Ground-nuts . . . . .                  |   | 21,838.00    |            |           |                     |      | 1,224.04  |
| Coconuts . . . . .                     | Thousands   | 3,273,000.00 | 425.20     | 89,444.00 |                     |      | 65,460.00 |
| <b>Fruits</b>                          |   |              |            |           |                     |      |           |
| Bananas . . . . .                      |   | 78,135.00    |            |           |                     |      |           |
| Plantain . . . . .                     |   | 263,251.00   |            |           |                     |      |           |
| Mangoes . . . . .                      |   | 401,430.00   |            |           |                     |      |           |
| <b>Fish . . . . .</b>                  |   | 359,500.00   | 3,569.00   | 9,750.00  |                     |      |           |
| <b>Milk</b>                            |   |              |            |           |                     |      |           |
| Cow . . . . .                          |   | 156,391.00   |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 27,627.00    |            |           |                     |      |           |
| Goat . . . . .                         |   | 19,788.00    |            |           |                     |      |           |
| <b>Eggs</b>                            |   |              |            |           |                     |      |           |
| Hen . . . . .                          |   | 13,855.00    |            |           |                     |      | 2,078.25  |
| Duck . . . . .                         |   | 1,552.00     |            |           |                     |      | 232.80    |
| <b>Meat</b>                            |   |              |            |           |                     |      |           |
| Beef . . . . .                         |   | 17,160.00    |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 5,532.00     |            |           |                     |      |           |
| Mutton . . . . .                       |   | 2,792.00     |            |           |                     |      |           |
| Pork . . . . .                         |   | 1,314.00     |            |           |                     |      |           |
| Poultry . . . . .                      |   | 3,058.00     |            |           |                     |      |           |
| <b>Oils and fats</b>                   |   |              |            |           |                     |      |           |
| Coconut oil . . . . .                  |   | 155,257.30   | 121.00     | 38,552.58 |                     |      | 72.06     |
| Sesame seed oil . . . . .              |   | 2,400.00     |            |           |                     |      |           |
| <b>Sugar . . . . .</b>                 |   |              |            |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 18.36 million.

FOOD BALANCE-SHEET, 1964/65

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
| 12,006.95 |              |              | 1,818.76   | 99.06                 | 271.04           | 17.37                          | 1.09                       | 939.04              |
| 33.60     |              |              | 228,132.05 | 12.43                 | 34.05            | 4.02                           | 0.51                       | 117.81              |
| 165.76    |              | 8,047.13     | 501.20     | 0.03                  | 0.07             | 0.01                           | 0.001                      | 0.25                |
|           |              |              | 7,242.41   | 0.39                  | 1.08             | 0.08                           | 0.01                       | 3.54                |
| 62.60     |              | 3,002.89     | 2,852.75   | 0.16                  | 0.44             | 0.04                           | 0.01                       | 1.45                |
|           |              |              |            |                       | 306.68           | 21.52                          | 1.62                       | 1,062.09            |
| 2,579.10  | 276.32       |              | 2,210.56   | 120.40                | 329.86           | 2.31                           | 0.66                       | 517.88              |
|           |              |              | 49,002.90  | 2.66                  | 7.28             | 0.09                           | 0.02                       | 8.74                |
|           |              |              |            |                       | 337.14           | 2.40                           | 0.68                       | 526.62              |
| 853.00    |              |              | 35,404.20  | 1.93                  | 5.29             | 1.32                           | 0.17                       | 18.45               |
| 1,091.90  |              |              | 19,522.06  | 1.06                  | 2.90             | 0.73                           | 1.16                       | 16.44               |
| 32,730.00 | 1,636,500.00 | 1,449,291.20 | 362,322.80 | 19.74                 | 54.07            | 2.43                           | 22.49                      | 240.07              |
|           |              |              |            |                       | 62.26            | 4.48                           | 23.82                      | 274.96              |
| 15,627.00 |              |              | 62,508.00  | 3.40                  | 9.31             | 0.12                           | 0.02                       | 14.24               |
| 47,385.20 |              |              | 215,866.00 | 11.75                 | 32.19            | 0.35                           | 0.03                       | 33.47               |
| 40,143.00 |              |              | 361,287.00 | 19.67                 | 53.89            | 0.32                           | 0.05                       | 27.48               |
|           |              |              |            |                       | 95.39            | 0.79                           | 0.10                       | 75.19               |
| 35,950.00 |              |              | 317,369.00 | 17.29                 | 47.37            | 9.62                           | 1.25                       | 53.84               |
|           |              |              | 156,391.00 | 8.52                  | 23.34            | 0.75                           | 0.96                       | 15.64               |
|           |              |              | 27,627.00  | 1.50                  | 4.11             | 0.18                           | 0.36                       | 4.81                |
|           |              |              | 19,738.00  | 1.08                  | 2.96             | 0.10                           | 0.13                       | 2.13                |
|           |              |              |            |                       | 30.41            | 1.03                           | 1.45                       | 22.58               |
| 692.75    |              |              | 11,084.00  | 0.60                  | 1.64             | 0.22                           | 0.22                       | 2.84                |
| 77.60     |              |              | 1,241.60   | 0.07                  | 0.19             | 0.03                           | 0.03                       | 0.35                |
|           |              |              |            |                       | 1.83             | 0.25                           | 0.25                       | 3.19                |
|           |              |              | 17,160.00  | 0.93                  | 2.55             | 0.58                           | 0.07                       | 2.90                |
|           |              |              | 5,532.00   | 0.30                  | 0.83             | 0.16                           | 0.01                       | 0.71                |
|           |              |              | 2,792.00   | 0.15                  | 0.42             | 0.08                           | 0.06                       | 0.81                |
|           |              |              | 1,314.00   | 0.07                  | 0.19             | 0.04                           | 0.01                       | 0.22                |
|           |              |              | 3,058.00   | 0.17                  | 0.46             | 0.12                           | 0.002                      | 0.50                |
|           |              |              |            |                       | 4.45             | 0.98                           | 0.15                       | 5.14                |
|           |              |              | 116,825.72 | 6.36                  | 17.42            |                                | 17.42                      | 156.78              |
|           |              | 2,327.94     | 931.17     | 0.05                  | 0.14             |                                | 0.14                       | 1.26                |
|           |              |              |            |                       | 17.56            |                                | 17.56                      | 158.04              |
|           |              |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 41.10                          | 46.88                      | 2,281.15            |

TABLE 73. KERALA: <sup>a</sup>

| Item                                   | Unit<br>Items,<br>except as<br>otherwise<br>indicated | Production   | Imports    | Exports   | Available<br>supply | Feed | Seed      |
|--|---|--------------|------------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |   |              |            |           |                     |      |           |
| Rice . . . . .                         | Thous. tons   | 872.41       | 894.12     |           |                     |      |           |
| Wheat . . . . .                        |   |              | 291,558.00 | 166.00    |                     |      |           |
| Jowar . . . . .                        |   | 450.00       |            |           |                     | 4.95 | 15.30     |
| Ragi . . . . .                         |   | 7,866.00     |            |           |                     |      | 73.95     |
| Other cereals<br>and millets . . . . . |   | 3,120.00     |            |           |                     |      | 64.51     |
| <b>Roots and tubers</b>                |   |              |            |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons   | 3,095.66     |            | 309.57    |                     |      |           |
| Sweet potatoes . . . . .               |   | 41,566.00    |            |           |                     |      |           |
| <b>Pulses and nuts</b>                 |   |              |            |           |                     |      |           |
| Pulses . . . . .                       |   | 16,900.00    | 21,412.80  | 614.60    |                     |      | 1,732.40  |
| Ground-nuts . . . . .                  |   | 25,220.00    |            |           |                     |      | 1,283.05  |
| Coconuts . . . . .                     | Thousands   | 3,293,000.00 | 173.80     | 15,178.00 |                     |      | 65,860.00 |
| <b>Fruits</b>                          |   |              |            |           |                     |      |           |
| Bananas . . . . .                      |   | 77,421.00    |            |           |                     |      |           |
| Plantain . . . . .                     |   | 283,701.00   |            |           |                     |      |           |
| Mangoes . . . . .                      |   | 94,456.00    |            |           |                     |      |           |
| <b>Fish</b>                            |   |              |            |           |                     |      |           |
| Fish . . . . .                         |   | 215,600.00   | 2,891.00   | 9,561.00  |                     |      |           |
| <b>Milk</b>                            |   |              |            |           |                     |      |           |
| Cow . . . . .                          |   | 160,624.00   |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 27,740.00    |            |           |                     |      |           |
| Goat . . . . .                         |   | 20,023.00    |            |           |                     |      |           |
| <b>Eggs</b>                            |   |              |            |           |                     |      |           |
| Hen . . . . .                          |   | 14,308.00    |            |           |                     |      | 2,146.20  |
| Duck . . . . .                         |   | 1,509.00     |            |           |                     |      | 226.35    |
| <b>Meat</b>                            |   |              |            |           |                     |      |           |
| Beef . . . . .                         |   | 20,704.00    |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 6,716.00     |            |           |                     |      |           |
| Mutton . . . . .                       |   | 2,993.00     |            |           |                     |      |           |
| Pork . . . . .                         |   | 1,605.00     |            |           |                     |      |           |
| Poultry . . . . .                      |   | 3,133.00     |            |           |                     |      |           |
| <b>Oils and fats</b>                   |   |              |            |           |                     |      |           |
| Coconut oil . . . . .                  |   | 154,215.70   | 196.90     | 27,105.60 |                     |      | 71.70     |
| Sesame seed oil . . . . .              |   | 2,370.00     |            |           |                     |      |           |
| <b>Sugar</b>                           |   |              |            |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 18.82 million.

## FOOD BALANCE-SHEET, 1965/66

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
|           |              |              | 1,766.53   | 93.86                 | 257.15           | 16.46                          | 1.03                       | 889.74              |
| 14,569.60 |              |              | 276,822.40 | 14.71                 | 40.30            | 4.76                           | 0.60                       | 139.44              |
| 27.00     |              |              | 402.75     | 0.02                  | 0.06             | 0.01                           | 0.001                      | 0.20                |
| 157.32    |              | 7,634.73     | 6,871.25   | 0.37                  | 1.00             | 0.07                           | 0.01                       | 3.28                |
| 62.40     |              | 2,993.09     | 2,843.44   | 0.15                  | 0.41             | 0.04                           | 0.01                       | 1.35                |
|           |              |              |            |                       | 298.92           | 21.34                          | 1.65                       | 1,034.01            |
|           | 309.57       |              | 2,476.52   | 131.59                | 360.52           | 2.52                           | 0.72                       | 566.02              |
| 2,078.30  |              |              | 39,487.70  | 2.09                  | 5.72             | 0.07                           | 0.02                       | 6.86                |
|           |              |              |            |                       | 366.24           | 2.59                           | 0.74                       | 572.88              |
| 845.00    |              |              | 35,120.80  | 1.87                  | 5.12             | 1.27                           | 0.16                       | 17.85               |
| 1,261.00  |              |              | 22,675.95  | 1.20                  | 3.29             | 0.83                           | 1.32                       | 18.65               |
| 32,930.00 | 1,646,500.00 | 1,532,705.80 | 383,176.00 | 20.36                 | 55.78            | 2.51                           | 23.20                      | 247.66              |
|           |              |              |            |                       | 64.19            | 4.61                           | 24.68                      | 284.16              |
| 15,484.00 |              |              | 61,937.00  | 3.29                  | 9.01             | 0.12                           | 0.02                       | 13.78               |
| 51,066.18 |              |              | 232,635.00 | 12.36                 | 33.86            | 0.37                           | 0.03                       | 35.21               |
| 9,445.00  |              |              | 85,011.00  | 4.51                  | 12.35            | 0.07                           | 0.01                       | 6.29                |
|           |              |              |            |                       | 55.22            | 0.56                           | 0.06                       | 55.28               |
| 21,560.00 |              |              | 187,370.00 | 9.96                  | 27.29            | 5.54                           | 0.72                       | 31.02               |
|           |              |              | 160,624.00 | 8.53                  | 23.40            | 0.75                           | 0.96                       | 15.68               |
|           |              |              | 27,740.00  | 1.47                  | 4.03             | 0.17                           | 0.36                       | 4.72                |
|           |              |              | 20,023.00  | 1.06                  | 2.90             | 0.10                           | 0.13                       | 2.09                |
|           |              |              |            |                       | 30.33            | 1.02                           | 1.45                       | 22.49               |
| 715.40    |              |              | 11,446.40  | 0.61                  | 1.67             | 0.22                           | 0.22                       | 2.89                |
| 75.45     |              |              | 1,207.20   | 0.06                  | 0.16             | 0.02                           | 0.02                       | 0.30                |
|           |              |              |            |                       | 1.83             | 0.24                           | 0.24                       | 3.19                |
|           |              |              | 20,704.00  | 1.10                  | 3.01             | 0.68                           | 0.08                       | 3.43                |
|           |              |              | 6,716.00   | 0.36                  | 0.98             | 0.19                           | 0.01                       | 0.84                |
|           |              |              | 2,993.00   | 0.16                  | 0.44             | 0.08                           | 0.06                       | 0.84                |
|           |              |              | 1,605.00   | 0.09                  | 0.23             | 0.04                           | 0.01                       | 0.26                |
|           |              |              | 3,133.00   | 0.17                  | 0.46             | 0.12                           | 0.002                      | 0.50                |
|           |              |              |            |                       | 5.12             | 1.11                           | 0.16                       | 5.87                |
|           |              |              | 127,307.00 | 6.76                  | 18.52            |                                | 18.52                      | 166.68              |
|           |              | 2,298.30     | 919.32     | 0.05                  | 0.13             |                                | 0.13                       | 1.21                |
|           |              |              |            |                       | 18.65            |                                | 18.65                      | 167.89              |
|           |              |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 37.05                          | 48.35                      | 2,276.29            |

TABLE 74. KERALA:<sup>a</sup>

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports    | Exports   | Available<br>supply | Feed | Seed      |
|--|--|--------------|------------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |            |           |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 948.12       | 764.78     |           |                     |      |           |
| Wheat . . . . .                        |  |              | 287,094.00 | 365.18    |                     |      |           |
| Jowar . . . . .                        |  | 450.00       |            |           |                     | 4.95 | 15.30     |
| Ragi . . . . .                         |  | 7,900.00     |            |           |                     |      | 74.09     |
| Other cereals<br>and millets . . . . . |  | 3,110.00     |            |           |                     |      | 64.22     |
| <b>Roots and tubers</b>                |  |              |            |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 3,409.67     |            | 340.97    |                     |      |           |
| Sweet potatoes . . . . .               |  | 42,654.00    |            |           |                     |      |           |
| <b>Pulses and nuts</b>                 |  |              |            |           |                     |      |           |
| Pulses . . . . .                       |  | 17,070.00    | 12,275.40  | 39.70     |                     |      | 1,742.00  |
| Ground-nuts . . . . .                  |  | 23,601.00    |            |           |                     |      | 11,159.13 |
| Coconuts . . . . .                     | Thousands  | 3,425,000.00 | 38.60      | 29,746.00 |                     |      | 68,500.00 |
| <b>Fruits</b>                          |  |              |            |           |                     |      |           |
| Bananas . . . . .                      |  | 67,060.00    |            |           |                     |      |           |
| Plantain . . . . .                     |  | 277,836.00   |            |           |                     |      |           |
| Mangoes . . . . .                      |  | 392,928.00   |            |           |                     |      |           |
| <b>Fish</b> . . . . .                  |  | 227,500.00   | 51.73      | 131.75    |                     |      |           |
| <b>Milk</b>                            |  |              |            |           |                     |      |           |
| Cow . . . . .                          |  | 165,047.00   |            |           |                     |      |           |
| Buffalo . . . . .                      |  | 28,034.00    |            |           |                     |      |           |
| Goat . . . . .                         |  | 20,233.00    |            |           |                     |      |           |
| <b>Eggs</b>                            |  |              |            |           |                     |      |           |
| Hen . . . . .                          |  | 14,736.00    |            |           |                     |      | 2,210.40  |
| Duck . . . . .                         |  | 1,455.00     |            |           |                     |      | 218.25    |
| <b>Meat</b>                            |  |              |            |           |                     |      |           |
| Beef . . . . .                         |  | 19,520.00    |            |           |                     |      |           |
| Buffalo . . . . .                      |  | 6,982.00     |            |           |                     |      |           |
| Mutton . . . . .                       |  | 2,858.00     |            |           |                     |      |           |
| Pork . . . . .                         |  | 1,846.00     |            |           |                     |      |           |
| Poultry . . . . .                      |  | 3,197.00     |            |           |                     |      |           |
| <b>Oils and fats</b>                   |  |              |            |           |                     |      |           |
| Coconut oil . . . . .                  |  | 176,981.48   | 78.3       | 33,458.17 |                     |      | 72.42     |
| Sesame seed oil . . . . .              |  | 2,400.00     |            |           |                     |      |           |
| <b>Sugar</b> . . . . .                 |  |              |            |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 19.30 million.

FOOD BALANCE-SHEET, 1966/67

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies |               |                          |                      |                  |
|-----------|--------------|--------------|------------|---------------------|---------------|--------------------------|----------------------|------------------|
|           |              |              |            | Kilograms per year  | Grams per day | Proteins per day (grams) | Fats per day (grams) | Calories per day |
|           |              |              | 1,712.90   | 88.75               | 243.15        | 15.50                    | 0.97                 | 841.30           |
| 12,528.80 |              |              | 258,047.20 | 12.35               | 33.78         | 3.90                     | 0.51                 | 116.88           |
| 27.00     |              |              | 402.75     | 0.02                | 0.06          | 0.00                     | 0.001                | 0.20             |
| 158.00    |              | 7,667.91     | 6,901.11   | 0.36                | 0.98          | 0.07                     | 0.01                 | 3.21             |
| 62.20     |              | 2,983.58     | 2,834.40   | 0.15                | 0.41          | 0.04                     | 0.01                 | 1.35             |
|           |              |              |            |                     | 278.38        | 19.67                    | 1.50                 | 962.94           |
|           | 340.97       |              | 2,727.73   | 141.33              | 387.21        | 2.71                     | 0.77                 | 607.92           |
| 2,132.70  |              |              | 40,521.30  | 2.09                | 5.72          | 0.07                     | 0.02                 | 6.86             |
|           |              |              |            |                     | 392.93        | 2.78                     | 0.79                 | 614.78           |
| 853.50    |              |              | 26,710.20  | 1.38                | 3.78          | 0.94                     | 0.12                 | 13.18            |
| 1,180.05  |              |              | 21,261.82  | 1.10                | 3.01          | 0.76                     | 1.21                 | 17.07            |
| 34,250.00 | 1,712,500.00 | 1,580,042.60 | 395,010.60 | 20.47               | 56.07         | 2.52                     | 23.33                | 248.95           |
|           |              |              |            |                     | 62.86         | 4.22                     | 24.66                | 279.22           |
| 13,412.00 |              |              | 536.48     | 2.77                | 7.58          | 0.10                     | 0.02                 | 11.59            |
| 50,010.48 |              |              | 227,826.00 | 11.80               | 32.32         | 0.36                     | 0.03                 | 33.61            |
| 39,292.00 |              |              | 353,636.00 | 18.32               | 50.19         | 0.30                     | 0.05                 | 25.59            |
|           |              |              |            |                     | 90.09         | 0.76                     | 0.10                 | 70.79            |
| 22,750.00 |              |              | 196,748.00 | 10.19               | 27.90         | 5.67                     | 0.73                 | 31.73            |
|           |              |              | 165,047.00 | 8.55                | 23.42         | 0.75                     | 0.96                 | 15.69            |
|           |              |              | 28,034.00  | 1.45                | 3.97          | 0.17                     | 0.35                 | 4.64             |
|           |              |              | 20,233.00  | 1.05                | 2.88          | 0.10                     | 0.13                 | 2.07             |
|           |              |              |            |                     | 30.27         | 1.02                     | 1.44                 | 22.40            |
| 736.80    |              |              | 12,190.80  | 0.63                | 1.73          | 0.23                     | 0.23                 | 2.99             |
| 72.75     |              |              | 1,164.00   | 0.06                | 2.16          | 0.02                     | 0.02                 | 0.30             |
|           |              |              |            |                     | 1.89          | 0.25                     | 0.25                 | 3.29             |
|           |              |              | 19,520.00  | 1.01                | 2.76          | 0.62                     | 0.07                 | 3.14             |
|           |              |              | 6,982.00   | 0.36                | 0.99          | 0.19                     | 0.01                 | 0.85             |
|           |              |              | 2,858.00   | 0.15                | 0.41          | 0.07                     | 0.05                 | 0.79             |
|           |              |              | 1,846.00   | 0.10                | 0.26          | 0.05                     | 0.01                 | 0.30             |
|           |              |              | 3,197.00   | 0.17                | 0.45          | 0.12                     | 0.002                | 0.49             |
|           |              |              |            |                     | 4.87          | 1.05                     | 0.14                 | 5.57             |
|           |              |              | 143,601.61 | 7.44                | 20.38         |                          | 20.38                | 183.42           |
|           |              | 2,327.58     | 931.03     | 0.05                | 0.13          |                          | 0.13                 | 1.19             |
|           |              |              |            |                     | 20.51         |                          | 20.51                | 184.61           |
|           |              |              |            |                     | 25.00         | 0.03                     |                      | 99.50            |
|           |              |              |            | GRAND TOTAL         |               | 35.45                    | 50.12                | 2,274.81         |

TABLE 75. KERALA: <sup>a</sup>

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports    | Exports   | Available<br>supply | Feed | Seed      |
|--|--|--------------|------------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |            |           |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 982.97       | 523.50     |           |                     |      |           |
| Wheat . . . . .                        |  |              | 587,118.00 | 288.94    |                     |      |           |
| Jowar . . . . .                        |  | 450.00       |            |           |                     | 4.95 | 15.30     |
| Ragi . . . . .                         |  | 7,833.00     |            |           |                     |      | 73.80     |
| Other cereals<br>and millets . . . . . |  | 3,060.00     |            |           |                     |      | 63.07     |
| <b>Roots and tubers</b>                |  |              |            |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 4,198.36     |            | 419.84    |                     |      |           |
| Sweet potatoes . . . . .               |  | 43,545.00    |            |           |                     |      |           |
| <b>Pulses and nuts</b>                 |  |              |            |           |                     |      |           |
| Pulses . . . . .                       |  | 16,740.00    | 13,120.40  | 530.40    |                     |      | 1,705.20  |
| Ground-nuts . . . . .                  |  | 24,675.00    |            |           |                     |      | 1,155.75  |
| Coconuts . . . . .                     | Thousands  | 3,593,000.00 | 60.40      | 54,780.00 |                     |      | 71,860.00 |
| <b>Fruits</b>                          |  |              |            |           |                     |      |           |
| Bananas . . . . .                      |  | 64,008.00    |            |           |                     |      |           |
| Plantain . . . . .                     |  | 310,274.00   |            |           |                     |      |           |
| Mangoes . . . . .                      |  | 408,797.00   |            |           |                     |      |           |
| <b>Fish</b> . . . . .                  |  | 244,100.00   | 5,530      | 15,246.00 |                     |      |           |
| <b>Milk</b>                            |  |              |            |           |                     |      |           |
| Cow . . . . .                          |  | 169,641.00   |            |           |                     |      |           |
| Buffalo . . . . .                      |  | 28,238.00    |            |           |                     |      |           |
| Goat . . . . .                         |  | 20,419.00    |            |           |                     |      |           |
| <b>Eggs</b>                            |  |              |            |           |                     |      |           |
| Hen . . . . .                          |  | 15,138.00    |            |           |                     |      | 2,270.70  |
| Duck . . . . .                         |  | 1,390.00     |            |           |                     |      | 208.50    |
| <b>Meat</b>                            |  |              |            |           |                     |      |           |
| Beef . . . . .                         |  | 22,285.00    |            |           |                     |      |           |
| Buffalo . . . . .                      |  | 9,495.00     |            |           |                     |      |           |
| Mutton . . . . .                       |  | 2,812.00     |            |           |                     |      |           |
| Pork . . . . .                         |  | 2,237.00     |            |           |                     |      |           |
| Poultry . . . . .                      |  | 3,255.00     |            |           |                     |      |           |
| <b>Oils and fats</b>                   |  |              |            |           |                     |      |           |
| Coconut oil . . . . .                  |  | 161,116.30   | 343.0      | 21,374.76 |                     |      |           |
| Sesame seed oil . . . . .              |  | 2,630.00     |            |           |                     |      | 66.96     |
| <b>Sugar</b> . . . . .                 |  |              |            |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 19.79 million.

FOOD BALANCE-SHEET, 1967/68

| Waste       | Manufacture | Gross food   | Net food   | Per capita supplies   |                  |                                |                            |                     |
|-------------|-------------|--------------|------------|-----------------------|------------------|--------------------------------|----------------------------|---------------------|
|             |             |              |            | Kilograms<br>per year | Grams per<br>day | Proteins<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
| 27,911.20   |             |              | 1,506.47   | 76.12                 | 208.55           | 13.35                          | 0.83                       | 721.58              |
| 27.00       |             |              | 530,312.80 | 26.80                 | 73.42            | 8.66                           | 1.10                       | 254.03              |
| 156.66      |             |              | 402.75     | 0.02                  | 0.06             | 0.01                           | 0.001                      | 0.19                |
|             |             | 7,602.54     | 6,842.28   | 0.35                  | 0.95             | 0.07                           | 0.01                       | 3.10                |
| 61.20       |             | 2,935.73     | 2,788.94   | 0.14                  | 0.38             | 0.04                           | 0.01                       | 1.25                |
|             |             |              |            |                       | 283.36           | 22.13                          | 1.95                       | 980.15              |
|             | 419.84      |              | 3,358.68   | 169.72                | 464.99           | 3.25                           | 0.93                       | 730.03              |
| 2,177.25    |             |              | 41,367.75  | 2.09                  | 5.72             | 0.07                           | 0.02                       | 6.86                |
|             |             |              |            |                       | 470.71           | 3.32                           | 0.95                       | 736.89              |
| 837.00      |             |              | 26,787.80  | 1.35                  | 3.70             | 0.92                           | 0.12                       | 12.90               |
| 1,233.75    |             |              | 22,285.50  | 1.13                  | 3.10             | 0.78                           | 1.24                       | 17.57               |
| 35,930      | 1,796,500   | 1,633,990.40 | 408,497.60 | 20.64                 | 56.55            | 2.54                           | 23.52                      | 251.08              |
|             |             |              |            |                       | 63.35            | 4.24                           | 24.88                      | 281.55              |
| 12,801.00   |             |              | 51,207.00  | 2.58                  | 7.06             | 0.09                           | 0.01                       | 10.80               |
| 55,849.32   |             |              | 254,425.00 | 12.35                 | 35.20            | 0.39                           | 0.04                       | 36.60               |
| 40,879      |             |              | 367,918.00 | 18.59                 | 50.93            | 0.31                           | 0.05                       | 25.97               |
|             |             |              |            |                       | 93.19            | 0.79                           | 0.10                       | 73.37               |
| 24,410.00   |             |              | 209,974.00 | 10.61                 | 29.07            | 5.90                           | 0.76                       | 33.04               |
|             |             |              | 169,641.00 | 8.57                  | 23.48            | 0.75                           | 0.96                       | 15.73               |
|             |             |              | 28,238.00  | 1.43                  | 3.92             | 0.17                           | 0.35                       | 4.59                |
|             |             |              | 20,419.00  | 1.03                  | 2.82             | 0.09                           | 0.13                       | 2.03                |
|             |             |              |            |                       | 30.22            | 1.01                           | 1.44                       | 22.35               |
| 756.90      |             |              | 12,488.40  | 0.63                  | 1.73             | 0.23                           | 0.23                       | 2.99                |
| 69.50       |             |              | 1,112.00   | 0.06                  | 0.16             | 0.02                           | 0.02                       | 0.30                |
|             |             |              |            |                       | 1.89             | 0.25                           | 0.25                       | 3.29                |
|             |             |              | 22,285.00  | 1.12                  | 3.06             | 0.69                           | 0.08                       | 3.48                |
|             |             |              | 9,495.00   | 0.48                  | 1.31             | 0.25                           | 0.01                       | 1.13                |
|             |             |              | 2,812.00   | 0.14                  | 0.39             | 0.07                           | 0.05                       | 0.75                |
|             |             |              | 2,237.00   | 0.11                  | 0.31             | 0.06                           | 0.01                       | 0.35                |
|             |             |              | 3,255.00   | 0.16                  | 0.45             | 0.12                           | 0.002                      | 0.49                |
|             |             |              |            |                       | 5.52             | 1.19                           | 0.15                       | 6.20                |
|             |             |              | 140,084.54 | 7.08                  | 19.40            |                                | 19.40                      | 174.60              |
|             | 2,563.04    |              | 1,025.21   | 0.05                  | 0.14             |                                | 0.14                       | 1.28                |
|             |             |              |            |                       | 19.54            |                                | 19.54                      | 175.88              |
|             |             |              |            |                       | 25.00            | 0.03                           |                            | 99.50               |
| GRAND TOTAL |             |              |            |                       |                  | 38.86                          | 50.02                      | 2,412.22            |



TABLE 76. KERALA: <sup>a</sup>

| Item                                   | Unit<br>tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports    | Exports   | Available<br>supply | Feed | Seed      |
|--|---|--------------|------------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |   |              |            |           |                     |      |           |
| Rice . . . . .                         | Thous. tons   | 1,094.43     | 740.92     |           |                     |      |           |
| Wheat . . . . .                        |   |              | 195,501.00 | 2,571.00  |                     |      |           |
| Jowar . . . . .                        |   | 450.00       |            |           |                     | 4.95 | 15.30     |
| Ragi . . . . .                         |   | 7,844.00     |            |           |                     |      | 72.35     |
| Other cereals<br>and millets . . . . . |   | 3,050.00     |            |           |                     |      | 62.97     |
| <b>Roots and tubers</b>                |   |              |            |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons   | 4,081.12     |            | 40,811.00 |                     |      |           |
| Sweet potatoes . . . . .               |   | 36,695.00    |            |           |                     |      |           |
| <b>Pulses and nuts</b>                 |   |              |            |           |                     |      |           |
| Pulses . . . . .                       |   | 16,760.00    | 62,144.70  | 191.80    |                     |      | 1,706.80  |
| Ground-nuts . . . . .                  |   | 24,029.00    |            |           |                     |      | 1,106.02  |
| Coconuts . . . . .                     | Thousands   | 3,834,000.00 | 773.60     | 36,694.00 |                     |      | 76,680.00 |
| <b>Fruits</b>                          |   |              |            |           |                     |      |           |
| Bananas . . . . .                      |   | 71,760.00    |            |           |                     |      |           |
| Plantain . . . . .                     |   | 318,719.00   |            |           |                     |      |           |
| Mangoes . . . . .                      |   | 394,494.00   |            |           |                     |      |           |
| <b>Fish . . . . .</b>                  |   | 356,200.00   | 3,892.00   | 18,482.00 |                     |      |           |
| <b>Milk</b>                            |   |              |            |           |                     |      |           |
| Cow . . . . .                          |   | 174,412.00   |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 28,440.00    |            |           |                     |      |           |
| Goat . . . . .                         |   | 20,579.00    |            |           |                     |      |           |
| <b>Eggs</b>                            |   |              |            |           |                     |      |           |
| Hen . . . . .                          |   | 15,516.00    |            |           |                     |      | 2,327.40  |
| Duck . . . . .                         |   | 1,314.00     |            |           |                     |      | 197.10    |
| <b>Meat</b>                            |   |              |            |           |                     |      |           |
| Beef . . . . .                         |   | 22,656.00    |            |           |                     |      |           |
| Buffalo . . . . .                      |   | 11,210.00    |            |           |                     |      |           |
| Mutton . . . . .                       |   | 2,922.00     |            |           |                     |      |           |
| Pork . . . . .                         |   | 3,019.00     |            |           |                     |      |           |
| Poultry . . . . .                      |   | 3,304.00     |            |           |                     |      |           |
| <b>Oils and fats</b>                   |   |              |            |           |                     |      |           |
| Coconut oil . . . . .                  |   | 141,206.86   | 523.20     | 20,762.60 |                     |      | 72.00     |
| Sesame seed oil . . . . .              |   | 3,960.00     |            |           |                     |      |           |
| <b>Sugar . . . . .</b>                 |   |              |            |           |                     |      |           |

<sup>a</sup> Estimated mid-year population, 20.29 million.

FOOD BALANCE-SHEET, 1968/69

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies |               |                          |                      |                  |
|-----------|--------------|--------------|------------|---------------------|---------------|--------------------------|----------------------|------------------|
|           |              |              |            | Kilograms per year  | Grams per day | Proteins per day (grams) | Fats per day (grams) | Calories per day |
|           |              |              | 1,855.35   | 90.46               | 247.84        | 15.86                    | 0.99                 | 857.53           |
| 9,646.50  |              |              | 183,283.5  | 9.03                | 24.74         | 2.92                     | 0.37                 | 85.60            |
| 27.00     |              |              | 40,275.00  | 0.02                | 0.05          | 0.01                     | 0.001                | 0.18             |
| 156.88    |              | 7,614.77     | 6,853.29   | 0.34                | 0.92          | 0.07                     | 0.01                 | 3.03             |
| 61.00     |              | 2,926.03     | 2,779.73   | 0.14                | 0.38          | 0.04                     | 0.01                 | 1.25             |
|           |              |              |            |                     | 273.93        | 18.90                    | 1.38                 | 947.59           |
|           | 408.11       |              | 3,264.90   | 160.91              | 440.85        | 3.09                     | 0.88                 | 692.13           |
| 11,834.75 |              |              | 34,860.25  | 1.71                | 4.68          | 0.06                     | 0.01                 | 5.62             |
|           |              |              |            |                     | 445.53        | 3.15                     | 0.89                 | 697.75           |
| 838.00    |              |              | 76,168.10  | 3.75                | 10.27         | 2.55                     | 0.33                 | 35.81            |
| 1,201.45  |              |              | 71,821.53  | 1.07                | 2.93          | 0.74                     | 1.17                 | 16.61            |
| 38,340.00 | 1,917,000.00 | 1,766,059.60 | 441,514.50 | 21.76               | 59.62         | 2.68                     | 24.80                | 264.71           |
|           |              |              |            |                     | 72.82         | 5.97                     | 36.30                | 317.13           |
| 14,352.00 |              |              | 57,408.00  | 2.82                | 7.72          | 0.10                     | 0.02                 | 11.81            |
| 57,369.42 |              |              | 261,350.00 | 12.88               | 35.28         | 0.39                     | 0.04                 | 36.69            |
| 39,449.00 |              |              | 355,045.00 | 17.49               | 47.91         | 0.29                     | 0.05                 | 24.43            |
|           |              |              |            |                     | 90.91         | 0.78                     | 0.11                 | 72.93            |
| 35,620.00 |              |              | 305,990.00 | 15.08               | 41.31         | 8.39                     | 1.09                 | 46.95            |
|           |              |              | 174,412.00 | 8.60                | 23.50         | 0.75                     | 0.97                 | 15.79            |
|           |              |              | 28,440.00  | 1.40                | 3.84          | 0.17                     | 0.34                 | 4.49             |
|           |              |              | 20,579.00  | 1.01                | 2.77          | 0.09                     | 0.13                 | 1.99             |
|           |              |              |            |                     | 30.17         | 1.01                     | 0.44                 | 22.27            |
| 775.80    |              |              | 12,412.80  | 0.61                | 1.67          | 0.22                     | 0.22                 | 2.89             |
| 52.56     |              |              | 1,064.34   | 0.05                | 0.14          | 0.02                     | 0.02                 | 0.25             |
|           |              |              |            |                     | 1.81          | 0.24                     | 0.24                 | 3.14             |
|           |              |              | 22,656.00  | 1.11                | 3.04          | 0.69                     | 0.08                 | 3.46             |
|           |              |              | 11,210.00  | 0.55                | 1.51          | 0.29                     | 0.01                 | 1.30             |
|           |              |              | 2,922.00   | 0.14                | 0.39          | 0.07                     | 0.05                 | 0.76             |
|           |              |              | 3,019.00   | 0.15                | 0.41          | 0.08                     | 0.02                 | 0.46             |
|           |              |              | 3,304.00   | 0.16                | 0.45          | 0.12                     | 0.002                | 0.49             |
|           |              |              |            |                     | 5.80          | 1.25                     | 0.16                 | 6.47             |
|           |              |              | 120,967.46 | 5.96                | 16.33         |                          | 16.33                | 146.97           |
|           | 3,888.00     |              | 1,555.20   | 0.08                | 0.21          |                          | 0.21                 | 1.90             |
|           |              |              |            |                     | 16.54         |                          | 16.54                | 148.87           |
|           |              |              |            |                     | 25.00         | 0.03                     |                      | 99.50            |
|           |              |              |            | GRAND TOTAL         |               | 39.72                    | 48.15                | 2,362.60         |

TABLE 77. KERALA:\*

| Item                                   | Unit<br>tons,<br>except as<br>otherwise<br>indicated | Production   | Imports   | Exports   | Available<br>supply | Feed | Seed      |
|--|--|--------------|-----------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |           |           |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 1,072.61     | 763.00    |           |                     |      |           |
| Wheat . . . . .                        |  |              | 87,501.00 |           |                     |      |           |
| Jowar . . . . .                        |  | 550.00       |           |           |                     | 6.05 | 18.70     |
| Ragi . . . . .                         |  | 8,388.00     |           |           |                     |      | 73.08     |
| Other cereals<br>and millets . . . . . |  | 3,520.00     |           |           |                     |      | 64.12     |
| <b>Roots and tubers</b>                |  |              |           |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 4,665.76     |           | 466.58    |                     |      |           |
| Sweet potatoes . . . . .               |  |              |           |           |                     |      |           |
| <b>Pulses and nuts</b>                 |  |              |           |           |                     |      |           |
| Pulses . . . . .                       |  | 15,960.00    |           |           |                     |      | 1,694.00  |
| Ground-nuts . . . . .                  |  | 19,349.00    |           |           |                     |      | 1,106.02  |
| Coconuts . . . . .                     | Thousands  | 3,956,000.00 |           | 17,350.00 |                     |      | 79,120.00 |
| <b>Fruits</b>                          |  |              |           |           |                     |      |           |
| Bananas . . . . .                      |  |              |           |           |                     |      |           |
| Plantain . . . . .                     |  |              |           |           |                     |      |           |
| Mangoes . . . . .                      |  |              |           |           |                     |      |           |
| Fish . . . . .                         |  | 372,300.00   |           | 22,273.00 |                     |      |           |
| <b>Milk</b>                            |  |              |           |           |                     |      |           |
| Cow . . . . .                          |  |              |           |           |                     |      |           |
| Buffalo . . . . .                      |  |              |           |           |                     |      |           |
| Goat . . . . .                         |  |              |           |           |                     |      |           |
| <b>Eggs</b>                            |  |              |           |           |                     |      |           |
| Hen . . . . .                          |  |              |           |           |                     |      |           |
| Duck . . . . .                         |  |              |           |           |                     |      |           |
| <b>Meat</b>                            |  |              |           |           |                     |      |           |
| Beef . . . . .                         |  |              |           |           |                     |      |           |
| Buffalo . . . . .                      |  |              |           |           |                     |      |           |
| Mutton . . . . .                       |  |              |           |           |                     |      |           |
| Pork . . . . .                         |  |              |           |           |                     |      |           |
| Poultry . . . . .                      |  |              |           |           |                     |      |           |
| <b>Oils and fats</b>                   |  |              |           |           |                     |      |           |
| Coconut oil . . . . .                  |  | 157,186.74   |           | 2,487.00  |                     |      | 70.52     |
| Sesame seed oil . . . . .              |  | 3,840.00     |           |           |                     |      |           |
| Sugar . . . . .                        |  |              |           |           |                     |      |           |

\* Estimated mid-year population, 20.81 million.

FOOD BALANCE-SHEET, 1969/70

| Waste     | Manufacture  | Gross food   | Net food   | Kilograms per year | Per capita supplies |                          |                      |                  |
|-----------|--------------|--------------|------------|--------------------|---------------------|--------------------------|----------------------|------------------|
|           |              |              |            |                    | Grams per day       | Proteins per day (grams) | Fats per day (grams) | Calories per day |
| 4,375.05  |              |              | 1,835.61   | 88.21              | 241.67              | 15.47                    | 0.97                 | 836.18           |
| 33.00     |              |              | 83,125.95  | 3.99               | 10.93               | 1.29                     | 0.16                 | 37.82            |
| 167.76    |              |              | 492.25     | 0.02               | 0.06                | 0.01                     | 0.001                | 0.22             |
|           |              | 8,147.16     | 7,332.44   | 0.35               | 0.96                | 0.07                     | 0.01                 | 3.16             |
| 70.40     |              |              |            |                    |                     |                          |                      |                  |
|           |              | 3,385.48     | 3,216.21   | 0.15               | 0.41                | 0.04                     | 0.01                 | 1.35             |
|           |              |              |            |                    | 254.03              | 16.88                    | 1.15                 | 878.73           |
|           | 466.58       |              | 3,732.60   | 179.37             | 491.43              | 3.44                     | 0.98                 | 771.55           |
|           |              |              |            |                    | 5.79                | 0.07                     | 0.02                 | 6.95             |
|           |              |              |            |                    | 497.22              | 3.51                     | 1.00                 | 778.50           |
| 798.00    |              |              | 13,468.00  | 0.65               | 1.78                | 0.44                     | 0.06                 | 6.21             |
| 967.45    |              |              | 17,275.53  | 0.83               | 2.27                | 0.57                     | 0.91                 | 12.87            |
| 39,560.00 | 1,978,000.00 | 1,841,970.00 | 460,492.50 | 22.13              | 60.62               | 2.73                     | 25.22                | 269.15           |
|           |              |              |            |                    | 64.67               | 3.74                     | 26.19                | 288.23           |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              |            |                    | 8.20                | 0.11                     | 0.02                 | 12.54            |
|           |              |              |            |                    | 33.15               | 0.37                     | 0.03                 | 34.47            |
|           |              |              |            |                    | 47.89               | 0.29                     | 0.05                 | 24.42            |
|           |              |              |            |                    | 89.24               | 0.77                     | 0.10                 | 71.43            |
| 37,230.00 |              |              | 312,797.00 | 15.03              | 41.18               | 8.36                     | 1.08                 | 46.80            |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              |            |                    | 23.40               | 0.75                     | 0.96                 | 15.68            |
|           |              |              |            |                    | 4.08                | 0.18                     | 0.36                 | 4.78             |
|           |              |              |            |                    | 2.92                | 0.10                     | 0.13                 | 2.10             |
|           |              |              |            |                    | 30.40               | 1.03                     | 1.45                 | 22.56            |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              |            |                    | 1.66                | 0.22                     | 0.22                 | 2.87             |
|           |              |              |            |                    | 0.18                | 0.03                     | 0.03                 | 0.03             |
|           |              |              |            |                    | 1.84                | 0.25                     | 0.25                 | 2.90             |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              |            |                    | 2.80                | 0.63                     | 0.07                 | 3.19             |
|           |              |              |            |                    | 1.03                | 0.20                     | 0.01                 | 0.89             |
|           |              |              |            |                    | 0.43                | 0.08                     | 0.06                 | 0.82             |
|           |              |              |            |                    | 0.25                | 0.05                     | 0.01                 | 0.29             |
|           |              |              |            |                    | 0.45                | 0.12                     | 0.002                | 0.49             |
|           |              |              |            |                    | 4.96                | 1.08                     | 0.15                 | 5.68             |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              | 154,699.74 | 7.43               | 20.36               |                          | 20.36                | 183.24           |
|           | 3,769.08     |              | 1,507.63   | 0.07               | 0.20                |                          | 0.20                 | 1.77             |
|           |              |              |            |                    | 20.56               |                          | 20.56                | 185.01           |
|           |              |              |            |                    |                     |                          |                      |                  |
|           |              |              |            |                    | 25.00               | 0.03                     |                      | 99.50            |
|           |              |              |            |                    | GRAND TOTAL         | 35.65                    | 51.93                | 2,379.34         |

TABLE 78. KERALA:\*

| Item                                   | Unit<br>(tons,<br>except as<br>otherwise<br>indicated) | Production   | Imports   | Exports   | Available<br>supply | Feed | Seed      |
|--|--|--------------|-----------|-----------|---------------------|------|-----------|
| <b>Cereals</b>                         |  |              |           |           |                     |      |           |
| Rice . . . . .                         | Thous. tons  | 1,135.23     | 1,117.00  |           |                     |      |           |
| Wheat . . . . .                        |  |              | 60,925.00 |           |                     |      |           |
| Jowar . . . . .                        |  | 840.00       |           |           |                     | 9.24 | 28.56     |
| Ragi . . . . .                         |  | 5,426.20     |           |           |                     |      | 72.50     |
| Other cereals<br>and millets . . . . . |  | 3,174.00     |           |           |                     |      |           |
| <b>Roots and tubers</b>                |  |              |           |           |                     |      |           |
| Tapioca . . . . .                      | Thous. tons  | 4,617.00     |           | 461.70    |                     |      |           |
| Sweet potatoes . . . . .               |  | 26,855.00    |           |           |                     |      |           |
| <b>Pulses and nuts</b>                 |  |              |           |           |                     |      |           |
| Pulses . . . . .                       |  | 13,983.00    |           |           |                     |      | 1,580.00  |
| Ground-nuts . . . . .                  |  | 16,088.00    |           |           |                     |      |           |
| Coconuts . . . . .                     | Thousands  | 3,981,000.00 |           |           |                     |      | 79,620.00 |
| <b>Fruits</b>                          |  |              |           |           |                     |      |           |
| Bananas . . . . .                      |  | 69,523.00    |           |           |                     |      |           |
| Plantain . . . . .                     |  | 299,461.00   |           |           |                     |      |           |
| Mangoes . . . . .                      |  |              |           |           |                     |      |           |
| Fish . . . . .                         |  | 379,900.00   |           | 23,896.00 |                     |      |           |
| <b>Milk</b>                            |  |              |           |           |                     |      |           |
| Cow . . . . .                          |  |              |           |           |                     |      |           |
| Buffalo . . . . .                      |  |              |           |           |                     |      |           |
| Goat . . . . .                         |  |              |           |           |                     |      |           |
| <b>Eggs</b>                            |  |              |           |           |                     |      |           |
| Hen . . . . .                          |  |              |           |           |                     |      |           |
| Duck . . . . .                         |  |              |           |           |                     |      |           |
| <b>Meat</b>                            |  |              |           |           |                     |      |           |
| Beef . . . . .                         |  |              |           |           |                     |      |           |
| Buffalo . . . . .                      |  |              |           |           |                     |      |           |
| Mutton . . . . .                       |  |              |           |           |                     |      |           |
| Pork . . . . .                         |  |              |           |           |                     |      |           |
| Poultry . . . . .                      |  |              |           |           |                     |      |           |
| <b>Oils and fats</b>                   |  |              |           |           |                     |      |           |
| Coconut oil . . . . .                  |  | 182,156.00   |           |           |                     |      |           |
| Sesame seed oil . . . . .              |  | 3,900.00     |           |           |                     |      | 70.92     |
| Sugar . . . . .                        |  |              |           |           |                     |      |           |

\* Estimated mid-year population, 21.34 million.

FOOD BALANCE-SHEET, 1970/71

| Waste     | Manufacture  | Gross food   | Net food   | Per capita supplies   |                  |                               |                            |                     |
|-----------|--------------|--------------|------------|-----------------------|------------------|-------------------------------|----------------------------|---------------------|
|           |              |              |            | Kilograms<br>per year | Grams per<br>day | Protein<br>per day<br>(grams) | Fats<br>per day<br>(grams) | Calories<br>per day |
|           |              |              | 2,252.23   | 105.54                | 289.15           | 18.51                         | 1.16                       | 1,000.46            |
| 3,046.25  |              |              | 57,878.75  | 2.71                  | 7.42             | 0.88                          | 0.11                       | 25.67               |
| 50.40     |              |              | 751.80     | 0.04                  | 0.10             | 0.01                          | 0.001                      | 0.33                |
| 108.52    |              | 5,244.98     | 4,720.48   | 0.22                  | 0.61             | 0.04                          | 0.01                       | 1.98                |
| 63.48     |              | 3,110.52     | 2,954.99   | 0.14                  | 0.38             | 0.04                          | 0.01                       | 1.25                |
|           |              |              |            |                       | 297.66           | 19.48                         | 1.29                       | 1,029.69            |
|           | 461.70       |              | 3,693.60   | 173.08                | 474.19           | 3.32                          | 0.95                       | 744.48              |
| 1,342.75  |              |              | 25,512.25  | 1.19                  | 3.26             | 0.04                          | 0.01                       | 3.91                |
|           |              |              |            |                       | 477.45           | 3.36                          | 0.96                       | 748.39              |
| 699.15    |              |              | 11,703.85  | 0.55                  | 1.51             | 0.38                          | 0.05                       | 5.27                |
| 804.04    |              |              | 15,283.50  | 0.72                  | 1.97             | 0.50                          | 0.79                       | 11.17               |
| 39,810.00 | 1,990,500.00 | 1,871,070.00 | 67,767.60  | 21.92                 | 60.05            | 2.70                          | 24.98                      | 266.62              |
|           |              |              |            |                       | 63.53            | 3.58                          | 25.71                      | 283.06              |
| 13,904.00 |              |              | 55,619.00  | 2.60                  | 7.12             | 0.09                          | 0.01                       | 10.89               |
| 53,902.98 |              |              | 245,559.00 | 11.50                 | 31.50            | 0.35                          | 0.03                       | 32.76               |
|           |              |              |            |                       | 47.89            | 0.29                          | 0.05                       | 24.42               |
|           |              |              |            |                       | 86.51            | 0.73                          | 0.09                       | 68.07               |
|           |              |              | 318,014.00 | 14.90                 | 40.82            | 8.29                          | 1.07                       | 46.39               |
|           |              |              |            |                       | 23.40            | 0.75                          | 0.96                       | 15.68               |
|           |              |              |            |                       | 4.08             | 0.18                          | 0.36                       | 4.78                |
|           |              |              |            |                       | 2.92             | 0.10                          | 0.13                       | 2.10                |
|           |              |              |            |                       | 30.40            | 1.03                          | 1.45                       | 22.56               |
|           |              |              |            |                       | 1.66             | 0.22                          | 0.22                       | 2.87                |
|           |              |              |            |                       | 0.18             | 0.03                          | 0.03                       | 0.33                |
|           |              |              |            |                       | 1.84             | 0.25                          | 0.25                       | 3.20                |
|           |              |              |            |                       | 2.80             | 0.63                          | 0.07                       | 3.19                |
|           |              |              |            |                       | 1.03             | 0.20                          | 0.01                       | 0.89                |
|           |              |              |            |                       | 0.43             | 0.08                          | 0.06                       | 0.82                |
|           |              |              |            |                       | 0.25             | 0.05                          | 0.10                       | 0.29                |
|           |              |              |            |                       | 0.45             | 0.12                          | 0.002                      | 0.49                |
|           |              |              |            |                       | 4.96             | 1.08                          | 0.15                       | 5.68                |
|           |              |              | 182,156.00 | 8.54                  | 23.40            |                               | 23.40                      | 210.60              |
|           |              | 3,829.08     | 1,531.63   | 0.07                  | 0.20             |                               | 0.20                       | 1.77                |
|           |              |              |            |                       | 23.60            |                               | 23.60                      | 212.37              |
|           |              |              |            |                       | 25.00            | 0.03                          |                            | 99.50               |
|           |              |              |            | GRAND TOTAL           |                  | 37.83                         | 54.59                      | 2,518.91            |

## Annex II

### A CALORIE NORM FOR KERALA

As explained in chapter III, the calorie norm for Kerala estimated here is based on recommendations made by the Indian Council of Medical Research (ICMR) in 1968.\* These are given in part in table 79.

TABLE 79. KERALA: DAILY CALORIE ALLOWANCE

| Category                    | Calorie allowance |
|-----------------------------|-------------------|
| <b>Men</b>                  |                   |
| Sedentary worker . . . . .  | 2,400             |
| Moderate worker . . . . .   | 2,800             |
| Heavy worker . . . . .      | 3,900             |
| <b>Women</b>                |                   |
| Sedentary worker . . . . .  | 1,900             |
| Moderate worker . . . . .   | 2,200             |
| Heavy worker . . . . .      | 3,000             |
| <b>Children</b>             |                   |
| 1 to 3 years . . . . .      | 1,200             |
| 4 to 6 years . . . . .      | 1,500             |
| 7 to 9 years . . . . .      | 1,800             |
| 10 to 12 years . . . . .    | 2,100             |
| <b>Adolescents</b>          |                   |
| 13-15 years, boys . . . . . | 2,500             |
| girls . . . . .             | 2,200             |
| 16-18 years, boys . . . . . | 3,000             |
| girls . . . . .             | 2,200             |

SOURCE: Indian Council of Medical Research, *op.cit.*

The average requirement is calculated by taking the distribution of workers and non-workers by age and sex group and applying a calorie norm for each age-sex group. Tables 80 to 82 give these details.

TABLE 80. KERALA: DISTRIBUTION OF NON-WORKERS, BY AGE, SEX GROUP AND CORRESPONDING CALORIE ALLOWANCE, 1961

| Age group<br>(years) | Males<br>(per 1,000) | Females<br>(per 1,000) | Daily calorie allowance |         |
|----------------------|----------------------|------------------------|-------------------------|---------|
|                      |                      |                        | Males                   | Females |
| 0-14 . . . . .       | 808                  | 509                    | 1,650                   | 1,650   |
| 15-34 . . . . .      | 133                  | 269                    | 2,400                   | 1,900   |
| 35-59 . . . . .      | 22                   | 159                    | 2,400                   | 1,900   |
| 60+ . . . . .        | 37                   | 64                     | 2,400                   | 1,900   |
| All ages . . . . .   | 1,000                | 1,000                  | 1,794                   | 1,773   |

\* Indian Council of Medical Research, Nutrition Expert Group, *Recommended Daily Allowances of Nutrients and Balanced Diets* (Hyderabad, 1968).

TABLE 81. KERALA: DISTRIBUTION OF WORKERS, BY AGE GROUP AND SEX AND CORRESPONDING CALORIE ALLOWANCE, 1961

| Age group (years) | Males (per 1,000) | Females (per 1,000) | Daily calorie allowance |         |
|-------------------|-------------------|---------------------|-------------------------|---------|
|                   |                   |                     | Males                   | Females |
| 0-14              | 20                | 41                  | 2,300                   | 2,100   |
| 15-34             | 484               | 530                 | 3,900                   | 3,000   |
| 35-59             | 417               | 384                 | 2,800                   | 2,200   |
| 60+               | 79                | 45                  | 2,400                   | 1,900   |
| All ages          | 1,000             | 1,000               | 3,290                   | 2,606   |

TABLE 82. KERALA: AVERAGE CALORIE NORM

| Category                | Population (millions) | Calorie allowance per capita per day |
|-------------------------|-----------------------|--------------------------------------|
| <b>Workers</b>          |                       |                                      |
| male                    | 3.946                 | 3,290                                |
| female                  | 1.685                 | 2,606                                |
| <b>Non-workers</b>      |                       |                                      |
| male                    | 4.415                 | 1,794                                |
| female                  | 6.859                 | 1,773                                |
| <b>TOTAL POPULATION</b> | <b>16.903</b>         | <b>2,215</b>                         |

SOURCES (for tables 80 to 82): Calorie allowances are taken from Indian Council of Medical Research, *op. cit.* All other data are from Kerala, State Planning Board, *Statistics for Planning, 2, Manpower* (1972).

#### ASSUMPTIONS ABOUT CALORIE ALLOWANCES

##### Non-workers

For those over 14 years allowance is made on the assumption that a non-worker would need as many calories as a worker corresponding to the lowest activity level. i.e., sedentary work (2,400 and 1,900 calories *per capita* per day for males and females, respectively).

For those below 14 years, since the calorie requirements vary widely with age, the average allowance is worked out on the basis of the distribution of children in the age groups given in table 83. The population figures are compiled from the single-year age distribution.

TABLE 83. KERALA: DISTRIBUTION OF CHILDREN, BY AGE AND CALORIE ALLOWANCE

| Age group (years) | Population (hundreds) | Daily per capita calorie allowance |
|-------------------|-----------------------|------------------------------------|
| 0-4               | 26,703                | 1,200                              |
| 5-6               | 9,434                 | 1,500                              |
| 7-9               | 13,262                | 1,800                              |
| 10-12             | 12,247                | 2,100                              |
| 13-14, males      | 3,737                 | 2,500                              |
| 13-14, females    | 3,895                 | 2,200                              |
| All groups        | 69,278                | 1,641                              |

SOURCE: Population figures are taken from Kerala, State Planning Board, *Statistics for Planning, 2 Manpower, 1972*, p. 9, table 1.20.



### Workers

As explained in chapter III, workers in the age group 15-34 years are assumed to do heavy work while those in the groups 35-59 and 60 years or above are assumed to do moderate and sedentary work, respectively.

Workers in the age group 0-14 years are assumed to belong to the age group 10-14 years and the allowance is worked out for the two sexes separately according to the needs of this group.

### A COMPARISON WITH ALL-INDIA DATA

The age and sex distribution of workers and non-workers in the country as a whole is given in table 84.

TABLE 84. INDIA: DISTRIBUTION OF WORKERS AND NON-WORKERS,  
BY AGE AND SEX, 1961  
(Per thousand)

| Age group<br>(years) | Workers |        | Non-workers |        |
|----------------------|---------|--------|-------------|--------|
|                      | Male    | Female | Male        | Female |
| 0-14 . . . . .       | 67      | 67     | 864         | 533    |
| 15-34 . . . . .      | 486     | 508    | 88          | 255    |
| 35-59 . . . . .      | 373     | 348    | 17          | 149    |
| 60 + . . . . .       | 74      | 47     | 30          | 63     |
| All groups . . . . . | 1,000   | 1,000  | 1,000       | 1,000  |

SOURCE: *Census of India, 1961*, vol 1, part II B, "General economic tables."

It can be seen that these distributions are not widely different from those relating to Kerala given in tables 80 and 81. Thus, the average norm of Kerala of 2,200 calories *per capita* per day is significantly lower than the all-India norm of 2,400 mainly because of differences in work participation rates. These rates are shown in table 85.

TABLE 85. KERALA AND ALL-INDIA: PERCENTAGES OF MALES AND  
FEMALES IN THE WORK FORCE, 1961

|                   | Kerala | All-India |
|-------------------|--------|-----------|
| Males . . . . .   | 47.2   | 57.0      |
| Females . . . . . | 19.7   | 38.7      |
| TOTAL POPULATION  | 33.3   | 42.9      |

SOURCE: As for table 84.

### Annex III

#### RESULTS OF A DIET SURVEY

A diet survey was conducted by the Centre for Development Studies in the first week of 1973 in a region close to the city of Trivandrum comprising two villages and two urban areas. These areas constituted a part of the sample selected by the National Sample Survey for its twenty-fifth round. Complete lists of households within each of the four areas were readily available, from which random samples of 30 households each were drawn. There were some cases of no response and hence the effective sample size was reduced to a certain extent. The number of households in each area and the corresponding number of sampled households is given in table 86.

TABLE 86. TRIVANDRUM: DIET SURVEY, 1973

| Area                  | Total<br>Number of<br>households | Number of<br>households<br>sampled |
|-----------------------|----------------------------------|------------------------------------|
| Rural                 |                                  |                                    |
| Pattuvilakam. . . . . | 90                               | 24                                 |
| Chenchery . . . . .   | 105                              | 23                                 |
| Urban                 |                                  |                                    |
| Poojapura . . . . .   | 152                              | 22                                 |
| Jagathy . . . . .     | 92                               | 19                                 |

#### PROCEDURE OF DATA COLLECTION

The reference period for the survey was the first week of 1973. Investigators interviewed members of households in order to ascertain the food intake on the first day of the week for all households. To collect information relating to the remaining six days the head of each household was asked to keep a diary itemizing food intake. Wherever such diaries could not be kept investigators collected each day the information relating to the previous day. For households where diaries were kept visits by investigators were less frequent but the head of the household in each case was interviewed at the end of the week to verify the entries in the diary.

Tables 87-98 give the main results of the survey. For the purposes of tabulation the number of persons within each household was converted to standardized equivalents. A standard person was defined as a male adult who does moderate work. The daily requirements of such a person are, according to ICMR recommendations,<sup>a</sup> 2,800 calories and 55 grams of protein, respectively. The number of standardized persons in each household is obtained by taking the requirements of each person (which depends on the age, sex and occupation of that person) and comparing them with the requirements of the standard person. This has been done separately for calories and proteins. For example, a child whose caloric requirement is 1,400 per day, according to ICMR recommendations, is taken as one half of a standard person.

<sup>a</sup>ICMR, *op. cit.*

TABLE 87. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY HOUSEHOLD INCOME

|   | Monthly household income (rupees) |          |          |              |                |
|---|-----------------------------------|----------|----------|--------------|----------------|
|   | Below<br>100                      | 100-250  | 250-500  | 500<br>Above | All<br>classes |
| Number of families . . . . .  | 17                                | 32       | 24       | 15           | 88             |
| Total number of persons . . . . .   | 88                                | 232      | 179      | 122          | 621            |
| <i>Number of standardized persons</i>                                     |                                   |          |          |              |                |
| Proteins . . . . .  | 71.8                              | 188.8    | 140.0    | 102.7        | 503.3          |
| Calories . . . . .  | 70.3                              | 187.8    | 146.6    | 101.2        | 505.4          |
| <i>Average protein intake per<br/>standardized person per day (grams)</i> |                                   |          |          |              |                |
| Cereals, pulses, nuts, roots,<br>tubers and other vegetables . . . . .    | 27.73                             | 34.02    | 42.86    | 55.88        | 40.05          |
| Flesh food, fish and eggs . . . . .                                       | 12.60                             | 11.74    | 10.57    | 17.61        | 12.73          |
| Milk and milk products . . . . .  | 0.92                              | 1.42     | 3.06     | 7.72         | 3.09           |
| Sugar and confectionery . . . . .   | 0.13                              | 0.41     | 0.75     | 1.97         | 0.78           |
| TOTAL INTAKE  | 41.38                             | 47.59    | 57.24    | 83.18        | 56.65          |
| <i>Average calorie intake per<br/>standardized person per day</i>         |                                   |          |          |              |                |
| Cereals, pulses, nuts, roots,<br>tubers and other vegetables . . . . .    | 1,700.75                          | 1,896.20 | 2,097.52 | 2,568.62     | 2,062.07       |
| Flesh food, fish and eggs . . . . .                                       | 65.15                             | 65.43    | 63.50    | 111.46       | 74.05          |
| Milk and milk products . . . . .  | 20.12                             | 29.81    | 61.63    | 158.76       | 63.51          |
| Sugar and confectionery . . . . .   | 54.69                             | 96.95    | 175.61   | 239.37       | 142.39         |
| Fats and oils . . . . .   | 53.01                             | 92.52    | 151.63   | 210.89       | 127.87         |
| TOTAL INTAKE  | 1,893.72                          | 2,180.91 | 2,549.89 | 3,289.10     | 2,469.89       |
| <i>Average intake per person per day</i>                                  |                                   |          |          |              |                |
| Proteins . . . . .  | 33.76                             | 38.73    | 44.77    | 70.02        | 45.91          |
| Calories . . . . .  | 1,512.82                          | 1,760.71 | 2,088.34 | 2,728.33     | 2,010.12       |

TABLE 88. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY LEVEL OF EDUCATION OF HEAD OF HOUSEHOLD

|  | Level of education of head of household |                                      |                             |             |
|--|---|--------------------------------------|-----------------------------|-------------|
|  | Illiterate                              | Literate but below SSLC <sup>a</sup> | SSLC <sup>a</sup> and above | All classes |
| Number of families . . . . .   | 20                                      | 48                                   | 20                          | 68          |
| Total number of persons . . . . .                                      | 147                                     | 336                                  | 138                         | 621         |
| <i>Number of standardized persons</i>                                  |   |                                      |                             |             |
| Proteins . . . . .   | 128.3                                   | 270.3                                | 104.7                       | 503.3       |
| Calories . . . . .   | 127.0                                   | 267.9                                | 110.5                       | 505.4       |
| <i>Average Protein Intake per standardized persons per day (grams)</i> |   |                                      |                             |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . .    | 23.33                                   | 39.94                                | 60.81                       | 40.05       |
| Flesh food, fish and eggs . . . . .                                    | 10.17                                   | 13.13                                | 14.37                       | 12.73       |
| Milk and milk products . . . . .                                       | 0.67                                    | 2.65                                 | 7.19                        | 3.09        |
| Sugar and confectionery . . . . .                                      | 0.34                                    | 0.49                                 | 2.08                        | 0.78        |
| TOTAL INTAKE   | 34.51                                   | 56.39                                | 84.45                       | 56.65       |
| <i>Average calorie intake per standardized person per day</i>          |   |                                      |                             |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . .    | 1,524.98                                | 2,164.26                             | 2,431.62                    | 2,062.07    |
| Flesh food, fish and eggs . . . . .                                    | 52.71                                   | 76.40                                | 92.86                       | 74.05       |
| Milk and milk products . . . . .                                       | 14.47                                   | 56.15                                | 137.72                      | 63.51       |
| Sugar and confectionery . . . . .                                      | 53.67                                   | 127.94                               | 279.39                      | 142.39      |
| Fats and oils . . . . .  | 52.03                                   | 122.57                               | 227.89                      | 127.87      |
| TOTAL INTAKE   | 1,697.86                                | 2,547.32                             | 3,269.48                    | 2,469.89    |
| <i>Average intake per person per day</i>                               |   |                                      |                             |             |
| Proteins . . . . .   | 30.12                                   | 45.36                                | 64.07                       | 45.91       |
| Calories . . . . .   | 1,466.86                                | 2,031.03                             | 2,537.88                    | 2,010.12    |

<sup>a</sup> Secondary school leaving certificate.

**TABLE 89. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY LEVEL OF EDUCATION OF HOUSEWIFE**

|  | Level of education of housewife |                                      |                             |                 |
|--|---------------------------------|--------------------------------------|-----------------------------|-----------------|
|  | Illiterate                      | Literate but below SSLC <sup>a</sup> | SSLC <sup>a</sup> and above | All classes     |
| Number of families. . . . .  | 27                              | 50                                   | 11                          | 88              |
| Total number of persons. . . . .                                       | 172                             | 384                                  | 65                          | 621             |
| <i>Number of standardized persons</i>                                  |                                 |                                      |                             |                 |
| Proteins . . . . .   | 146.90                          | 303.30                               | 53.10                       | 503.30          |
| Calories . . . . .   | 145.10                          | 307.90                               | 52.40                       | 505.40          |
| <i>Average protein intake per standardized person per day (grams)</i>  |                                 |                                      |                             |                 |
| Cereals, pulses, nuts, roots<br>tubers and other vegetables . . . . .  | 26.38                           | 43.22                                | 59.80                       | 40.05           |
| Flesh food, fish and eggs. . . . .                                     | 10.96                           | 12.75                                | 17.50                       | 12.73           |
| Milk and milk products. . . . .  | 0.85                            | 3.16                                 | 8.82                        | 3.09            |
| Sugar and confectionery . . . . .                                      | 0.32                            | 0.68                                 | 2.66                        | 0.78            |
| <b>TOTAL INTAKE</b>  | <b>38.51</b>                    | <b>59.81</b>                         | <b>88.78</b>                | <b>56.65</b>    |
| <i>Average calorie intake per standardized person per day</i>          |                                 |                                      |                             |                 |
| Cereals, pulses, nuts, roots, tubers<br>and other vegetables . . . . . | 1,544.95                        | 2,213.18                             | 2,605.99                    | 2,062.07        |
| Flesh food, fish and eggs. . . . .                                     | 59.02                           | 73.77                                | 117.29                      | 74.05           |
| Milk and milk products. . . . .  | 18.16                           | 65.54                                | 177.20                      | 63.51           |
| Sugar and confectionery . . . . .                                      | 62.58                           | 141.21                               | 370.35                      | 142.39          |
| Fats and oils . . . . .  | 58.61                           | 135.02                               | 277.69                      | 127.87          |
| <b>TOTAL INTAKE</b>  | <b>1,743.32</b>                 | <b>2,628.72</b>                      | <b>3,548.52</b>             | <b>2,469.89</b> |
| <i>Average intake per person per day</i>                               |                                 |                                      |                             |                 |
| Proteins . . . . .   | 32.89                           | 47.24                                | 72.52                       | 45.91           |
| Calories . . . . .   | 1,470.68                        | 2,107.77                             | 2,860.65                    | 2,010.12        |

<sup>a</sup> Secondary school leaving certificate.

TABLE 90. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY OCCUPATION OF MAIN EARNER IN FAMILY

|   | Occupation of main earner |                              |                         |                                   |                        |                            | All classes |
|---|---------------------------|------------------------------|-------------------------|-----------------------------------|------------------------|----------------------------|-------------|
|   | Unclassified              | Self employed in agriculture | Self employed elsewhere | Wage labour industry, agriculture | Salaried, white-collar | Salaried, non-white-collar |             |
| Number of families . . . . .  | 1                         | 10                           | 9                       | 23                                | 20                     | 25                         | 88          |
| Total number of persons . . . . .                                   | 2                         | 73                           | 61                      | 161                               | 132                    | 192                        | 621         |
| Number of standardized persons                                      |                           |                              |                         |                                   |                        |                            |             |
| Proteins . . . . .  | 1.8                       | 63.9                         | 44.3                    | 137.3                             | 108.4                  | 147.6                      | 503.3       |
| Calories . . . . .  | 1.8                       | 62.7                         | 43.7                    | 136.8                             | 106.3                  | 154.1                      | 505.4       |
| Average protein intake per standardized person per day (grams)      |                           |                              |                         |                                   |                        |                            |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . . | 86.76                     | 32.80                        | 45.78                   | 23.93                             | 52.29                  | 46.90                      | 40.05       |
| Flesh food, fish and eggs . . . . .                                 | 18.41                     | 15.06                        | 11.18                   | 11.53                             | 12.77                  | 13.21                      | 12.73       |
| Milk and milk products . . . . .                                    | 5.87                      | 2.03                         | 3.94                    | 0.83                              | 6.38                   | 2.94                       | 3.09        |
| Sugar and confectionery . . . . .                                   | 0.07                      | 0.18                         | 1.01                    | 0.33                              | 1.70                   | 0.73                       | 0.78        |
| TOTAL INTAKE  | 111.11                    | 50.07                        | 61.91                   | 36.62                             | 73.14                  | 63.78                      | 56.65       |
| Average calorie intake per standardized person per day              |                           |                              |                         |                                   |                        |                            |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . . | 2,931.76                  | 2,064.74                     | 2,027.75                | 1,533.38                          | 2,353.80               | 2,328.64                   | 2,062.07    |
| Flesh food, fish and eggs . . . . .                                 | 89.84                     | 84.16                        | 76.00                   | 58.84                             | 79.45                  | 78.96                      | 74.05       |
| Milk and milk products . . . . .                                    | 119.44                    | 43.72                        | 82.35                   | 17.73                             | 132.94                 | 58.33                      | 63.51       |
| Sugar and confectionery . . . . .                                   | 108.96                    | 85.47                        | 180.51                  | 51.92                             | 263.25                 | 152.09                     | 142.39      |
| Fats and oils . . . . .   | 250.00                    | 121.08                       | 173.43                  | 48.34                             | 205.63                 | 133.25                     | 127.87      |
| TOTAL INTAKE  | 3,500.00                  | 2,399.17                     | 2,540.04                | 1,710.21                          | 3,035.07               | 2,751.27                   | 2,489.89    |
| Average intake per person per day                                   |                           |                              |                         |                                   |                        |                            |             |
| Proteins . . . . .  | 100.00                    | 43.83                        | 44.96                   | 31.23                             | 60.06                  | 49.03                      | 45.91       |
| Calories . . . . .  | 3,150.00                  | 2,060.66                     | 1,819.67                | 1,453.14                          | 2,444.15               | 2,208.18                   | 2,010.12    |

TABLE 91. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY CASTE

|  | Caste        |  |          |          |                           |                             |             |
|--|--------------|--|----------|----------|---------------------------|-----------------------------|-------------|
|  | Unclassified | Nairs, Brahmins and other forward castes | Muslims  | Ezhavas  | All other backward castes | Scheduled castes and tribes | All classes |
| Number of families . . . . .   | 19           | 35                                       | 2        | 14       | 9                         | 9                           | 88          |
| Total number of persons . . . . .                                      | 132          | 267                                      | 14       | 92       | 50                        | 66                          | 621         |
| <i>Number of standardized persons</i>                                  |              |  |          |          |                           |                             |             |
| Proteins . . . . .   | 95.2         | 215.2                                    | 11.5     | 79.8     | 42.3                      | 59.3                        | 503.3       |
| Calories . . . . .   | 102.0        | 212.2                                    | 11.8     | 78.1     | 41.1                      | 60.2                        | 505.4       |
| <i>Average protein intake per standardized persons per day (grams)</i> |              |  |          |          |                           |                             |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . .    | 56.75        | 40.47                                    | 23.84    | 29.61    | 42.66                     | 27.03                       | 40.05       |
| Flesh food, fish and eggs . . . . .                                    | 10.48        | 12.83                                    | 16.52    | 12.62    | 17.80                     | 11.81                       | 12.73       |
| Milk and milk products . . . . .                                       | 5.00         | 3.53                                     | 0.59     | 2.25     | 1.78                      | 0.95                        | 3.09        |
| Sugar and confectionery . . . . .                                      | 1.89         | 0.72                                     | 0.04     | 0.45     | 0.23                      | 0.20                        | 0.78        |
| TOTAL INTAKE   | 74.12        | 57.55                                    | 40.99    | 44.93    | 62.47                     | 39.99                       | 56.65       |
| <i>Average calorie intake per standardized person per day</i>          |              |  |          |          |                           |                             |             |
| Cereals, pulses, nuts, roots, tubers and other vegetables . . . . .    | 2,142.23     | 2,118.58                                 | 1,680.75 | 2,128.93 | 2,266.36                  | 1,575.54                    | 2,062.07    |
| Flesh food, fish and eggs . . . . .                                    | 70.24        | 74.84                                    | 79.20    | 75.89    | 96.32                     | 59.08                       | 74.05       |
| Milk and milk products . . . . .                                       | 96.07        | 74.31                                    | 12.16    | 46.33    | 38.37                     | 19.80                       | 63.51       |
| Sugar and confectionery . . . . .                                      | 250.03       | 134.17                                   | 56.48    | 137.74   | 84.36                     | 51.52                       | 142.87      |
| Fats and oils . . . . .  | 211.45       | 125.70                                   | 39.44    | 93.82    | 117.99                    | 62.21                       | 127.87      |
| TOTAL INTAKE   | 2,770.02     | 2,527.60                                 | 1,868.03 | 2,482.71 | 2,603.40                  | 1,768.15                    | 2,469.89    |
| <i>Average intake per person per day</i>                               |              |  |          |          |                           |                             |             |
| Proteins . . . . .   | 53.46        | 46.38                                    | 33.67    | 38.97    | 52.85                     | 35.93                       | 45.91       |
| Calories . . . . .   | 2,140.47     | 2,008.82                                 | 1,574.48 | 2,107.60 | 2,140.00                  | 1,612.77                    | 2,010.12    |

TABLE 92. TRIVANDRUM: INTAKE OF PROTEINS AND CALORIES, BY NUMBER OF EARNERS IN FAMILY

|   | Number of earners in family |          |             |             |
|---|-----------------------------|----------|-------------|-------------|
|   | 0 or 1                      | 2 or 3   | 4 and above | All classes |
| Number of families . . . . .  | 44                          | 35       | 9           | 88          |
| Total number of persons . . . . .                                       | 256                         | 267      | 98          | 621         |
| Number of standardized persons  |                             |          |             |             |
| Proteins . . . . .  | 203.50                      | 224.20   | 75.60       | 503.20      |
| Calories . . . . .  | 202.90                      | 219.20   | 83.30       | 505.40      |
| Average protein intake per<br>standardized person per day (grams)       |                             |          |             |             |
| Cereals, pulses, nuts, roots, tubers<br>and other vegetables . . . . .  | 43.45                       | 37.86    | 37.39       | 40.05       |
| Flesh food, fish and eggs . . . . .                                     | 14.19                       | 11.53    | 12.36       | 12.73       |
| Milk and milk products . . . . .  | 3.20                        | 3.13     | 2.66        | 3.09        |
| Sugar and confectionery . . . . .                                       | 0.58                        | 0.87     | 1.06        | 0.78        |
| TOTAL INTAKE  | 61.42                       | 53.39    | 53.47       | 56.65       |
| Average calorie intake per<br>standardized person per day               |                             |          |             |             |
| Cereals, pulses, nuts, roots, tubers,<br>and other vegetables . . . . . | 2,216.46                    | 2,060.59 | 1,689.94    | 2,062.07    |
| Flesh food, fish and eggs . . . . .                                     | 82.61                       | 68.96    | 66.55       | 74.05       |
| Milk and milk products . . . . .  | 66.17                       | 66.13    | 50.16       | 63.51       |
| Sugar and confectionery . . . . .                                       | 154.26                      | 141.11   | 116.87      | 142.87      |
| Fats and oils . . . . .   | 142.97                      | 120.52   | 110.43      | 127.87      |
| TOTAL INTAKE  | 2,662.46                    | 2,457.31 | 2,033.95    | 2,469.89    |
| Average intake per person per day                                       |                             |          |             |             |
| Proteins . . . . .  | 48.82                       | 44.83    | 41.25       | 45.91       |
| Calories . . . . .  | 2,110.21                    | 2,017.38 | 1,728.86    | 2,010.12    |



TABLE 93. TRIVANDRUM: DISTRIBUTION OF HOUSEHOLDS, BY INTAKE OF PROTEINS AND CALORIES PER STANDARDIZED PERSON PER DAY

| Calories                  | Proteins (grams) |                   |              |       |              |                      |              |       |
|---------------------------|------------------|-------------------|--------------|-------|--------------|----------------------|--------------|-------|
|                           | Less than 50     | 50-55             | More than 55 | Total | Less than 50 | 50-55                | More than 55 | Total |
|                           |                  | Jagathy (urban)   |              |       |              | Poojapura (urban)    |              |       |
| Less than 2,600 . . . . . | 2                | —                 | 3            | 5     | 4            | 1                    | 3            | 8     |
| 2,600-2,800 . . . . .     | —                | —                 | 2            | 2     | —            | —                    | 4            | 4     |
| More than 2,800 . . . . . | 1                | 1                 | 10           | 12    | —            | —                    | 10           | 10    |
| TOTAL                     | 3                | 1                 | 15           | 19    | 4            | 1                    | 17           | 22    |
|                           |                  | Chenchery (rural) |              |       |              | Pattuvilakam (rural) |              |       |
| Less than 2,600 . . . . . | 13               | —                 | 1            | 14    | 14           | 3                    | 1            | 18    |
| 2,600-2,800 . . . . .     | 1                | —                 | 1            | 2     | 1            | —                    | —            | 1     |
| More than 2,800 . . . . . | —                | 1                 | 6            | 7     | 1            | —                    | 4            | 5     |
| TOTAL                     | 14               | 1                 | 8            | 23    | 16           | 3                    | 5            | 24    |

TABLE 94. TRIVANDRUM: AVERAGE *PER CAPITA* CALORIE INTAKE PER DAY AND PROPORTION OF CALORIE-DEFICIENT PERSONS, BY MONTHLY INCOME OF HOUSEHOLD AND EDUCATION OF HEAD OF HOUSEHOLD

| Education of head of household                    | Income per month (rupees) |                  |                  |                 |                 |
|---|---------------------------|------------------|------------------|-----------------|-----------------|
|   | Below 100                 | 100 to 250       | 250 to 500       | Above 500       | All classes     |
| Illiterate . . . . .                              | 1,469<br>(100.0)          | 1,468<br>(97.4)  | 1,461<br>(100.0) | ...             | 1,467<br>(98.6) |
| Literate but<br>below SSLC <sup>a</sup> . . . . . | 1,552<br>(89.1)           | 1,890<br>(71.1)  | 2,208<br>(47.7)  | 2,538<br>(36.3) | 2,031<br>(61.9) |
| SSLC <sup>a</sup> and above . . . . .             | ...                       | 2,200<br>(100.0) | 2,212<br>(64.1)  | 2,884<br>(17.9) | 2,538<br>(43.5) |
| All classes . . . . .                             | 1,513<br>(94.3)           | 1,761<br>(80.6)  | 2,088<br>(62.0)  | 2,728<br>(26.2) | 2,010<br>(66.5) |

Note: Figures in parentheses are percentages of calorie-deficient persons in total within each cell.

<sup>a</sup> Secondary school leaving certificate.

TABLE 95. TRIVANDRUM: AVERAGE *PER CAPITA* CALORIE INTAKE PER DAY AND PROPORTION OF CALORIE-DEFICIENT PERSONS, BY MONTHLY INCOME OF HOUSEHOLD AND EDUCATION OF HOUSEWIFE

| Education of housewife                            | Income per month (rupees) |                 |                 |                 |                 |
|---|---------------------------|-----------------|-----------------|-----------------|-----------------|
|   | Below 100                 | 100 to 250      | 250 to 500      | Above 500       | All classes     |
| Illiterate . . . . .                              | 1,577<br>(93.9)           | 1,365<br>(97.7) | 1,575<br>(83.8) | ...             | 1,471<br>(93.6) |
| Literate but<br>below SSLC <sup>a</sup> . . . . . | 1,432<br>(94.9)           | 1,994<br>(70.5) | 2,213<br>(59.2) | 2,512<br>(43.2) | 2,108<br>(54.1) |
| SSLC <sup>a</sup> and above . . . . .             | ...                       | ...             | 2,292<br>(35.3) | 3,062           | 2,861<br>(9.2)  |
| All classes . . . . .                             | 1,513<br>(94.3)           | 1,761<br>(80.6) | 2,088<br>(62.0) | 2,728<br>(26.2) | 2,010<br>(66.5) |

Note: Figures in parentheses are percentages of calorie-deficient persons in total within each cell.

<sup>a</sup> Secondary school leaving certificate.

**TABLE 96. TRIVANDRUM: AVERAGE PER CAPITA CALORIE INTAKE PER DAY AND PROPORTION OF CALORIE-DEFICIENT PERSONS, BY MONTHLY INCOME OF HOUSEHOLD AND OCCUPATION OF MAIN EARNER IN HOUSEHOLD**

| Occupation of main earner in household | Income per month (rupees) |                  |                  |                 |                 |
|--|---------------------------|------------------|------------------|-----------------|-----------------|
|  | Below 100                 | 100 to 250       | 250 to 500       | Above 500       | All classes     |
| Self-employed in agriculture . . . . . | 1,396<br>(100.0)          | 1,949<br>(81.0)  | —                | 2,550<br>(62.4) | 2,061<br>(78.1) |
| Self-employed elsewhere. . . . .       | 1,263<br>(100.0)          | 1,759<br>(52.6)  | 1,511<br>(100.0) | 3,637<br>—      | 1,820<br>(62.3) |
| Wage labour . . . . .                  | 1,527<br>(94.6)           | 1,441<br>(100.0) | 1,303<br>(100.0) | —               | 1,453<br>(98.1) |
| Salaried, white-collar . . . . .       | —                         | 2,010<br>(75.0)  | 2,299<br>(40.4)  | 2,903<br>—      | 2,444<br>(34.8) |
| Salaried, non-white-collar . . . . .   | 1,414<br>(100.0)          | 2,024<br>(73.6)  | 2,232<br>(59.2)  | 2,524<br>(33.3) | 2,208<br>(59.4) |
| Unclassified . . . . .                 | 3,150<br>—                | —                | —                | —               | 3,150<br>—      |
| All classes . . . . .                  | 1,513<br>(94.3)           | 1,761<br>(80.6)  | 2,088<br>(62.0)  | 2,728<br>(26.2) | 2,010<br>(66.5) |

*Note:* Figures in parentheses are percentages of calorie-deficient persons in total within each cell.

**TABLE 97. TRIVANDRUM: AVERAGE PER CAPITA CALORIE INTAKE PER DAY AND PROPORTION OF CALORIE-DEFICIENT PERSONS, BY EDUCATION OF HEAD OF HOUSEHOLD AND OCCUPATION OF MAIN EARNER IN HOUSEHOLD**

| Occupation of main earner in household | Education of head of household |                                      |                             |                 |
|--|--------------------------------|--------------------------------------|-----------------------------|-----------------|
|  | Illiterate                     | Literate but below SSLC <sup>a</sup> | SSLC <sup>a</sup> and above | All classes     |
| Self-employed in agriculture . . . . . | 826<br>(100.0)                 | 2,151<br>(76.5)                      | —                           | 2,061<br>(78.1) |
| Self-employed elsewhere . . . . .      | 1,263<br>(100.0)               | 1,696<br>(64.7)                      | 3,637<br>—                  | 1,820<br>(62.3) |
| Wage labour . . . . .                  | 1,417<br>(100.0)               | 1,499<br>(92.3)                      | 1,931<br>(100.0)            | 1,453<br>(98.1) |
| Salaried, white-collar . . . . .       | —                              | 2,222<br>(47.3)                      | 2,603<br>(26.0)             | 2,444<br>(34.8) |
| Salaried, non-white-collar . . . . .   | 1,967<br>(90.0)                | 2,171<br>(50.4)                      | 2,392<br>(68.6)             | 2,208<br>(59.4) |
| Unclassified . . . . .                 | —                              | 3,150<br>—                           | —                           | 3,150<br>—      |
| All classes . . . . .                  | 1,467<br>(98.6)                | 2,031<br>(61.9)                      | 2,538<br>(43.5)             | 2,010<br>(66.5) |

*Note:* Figures in parentheses are percentages of calorie-deficient persons in total within each cell.

<sup>a</sup> Secondary school leaving certificate.

**TABLE 98. TRIVANDRUM: AVERAGE PER CAPITA CALORIE INTAKE PER DAY AND PROPORTION OF CALORIE-DEFICIENT PERSONS, BY EDUCATION OF HOUSEWIFE AND OCCUPATION OF MAIN EARNER IN HOUSEHOLD**

| <i>Occupation of main earner<br/>in household</i> | <i>Education of housewife</i> |  |                                       | <i>All classes</i> |
|---|-------------------------------|--|---------------------------------------|--------------------|
|   | <i>Illiterate</i>             | <i>Literate but<br/>below SSLC<sup>a</sup></i> | <i>SSLC<sup>a</sup> and<br/>above</i> |                    |
| Self-employed in agriculture . . . . .            | 1,186<br>(100.0)              | 2,414<br>(69.2)                                | ...                                   | 2,061<br>(78.1)    |
| Self-employed elsewhere . . . . .                 | 1,263<br>(100.0)              | 1,696<br>(64.7)                                | 3,637<br>—                            | 1,820<br>(62.3)    |
| Wage labour . . . . .                             | 1,394<br>(97.2)               | 1,568<br>(100.0)                               | ...                                   | 1,453<br>(98.1)    |
| Salaried, white-collar . . . . .                  | 2,151<br>(100.0)              | 2,303<br>(42.7)                                | 2,733<br>(13.3)                       | 2,444<br>(34.8)    |
| Salaried, non-white-collar . . . . .              | 1,807<br>(77.1)               | 2,225<br>(61.3)                                | 2,985<br>—                            | 2,208<br>(59.4)    |
| Unclassified . . . . .                            | ...                           | 3,150<br>—                                     | ...                                   | 3,150<br>—         |
| All classes . . . . .                             | 1,471<br>(93.6)               | 2,108<br>(64.1)                                | 2,861<br>(9.2)                        | 2,010<br>(66.5)    |

*Note:* Figures in parentheses are percentages of calorie-deficient persons in total within each cell.

<sup>a</sup> Secondary school leaving certificate.

## Annex IV

### THE ONE LAKH HOUSES SCHEME

The One Lakh Houses Scheme was implemented by the government of Kerala from early 1972. It was designed to provide permanent dwellings for landless agricultural labour families who had not received homesteads (i.e., who were not hutment dwellers like the *kudikidappukars*) under the Kerala Land Reforms Act, 1963, as amended in 1969.<sup>a</sup>

The genesis of the scheme lay in a programme announced by the Government of India in late 1971. Under this scheme the Government was to meet half the cost<sup>b</sup> of acquiring and developing house sites of 100 square yards each to be given to landless agricultural labour families who had not benefited from the land reforms legislation. The programme was to be implemented by the state governments sequentially on a district-by-district basis.

#### KERALA SCHEME COMPARED TO CENTRAL SCHEME

The scheme drawn up by the government of Kerala, submitted to and approved by the central Government, differed from the central scheme in three major respects:

(a) Instead of implementing the scheme on a sequential district-by-district basis, work was to commence simultaneously in all districts;

(b) The scheme—in the first instance—was to cover 96,000 out of over 0.3 million households considered eligible; and

(c) Together with the site, the area of which was fixed at 200 square yards, the allottees were each to be given a fully constructed semi-pukka dwelling.<sup>c</sup>

The scheme was to provide 100 such dwellings<sup>d</sup> in each of the state's 960 panchayats. Each dwelling was to have an area of 250 square feet,<sup>e</sup> divided into three rooms—kitchen, bedroom and a larger "multipurpose" room. As for construction materials, the basement and foundation were to be of random rubble in mud mortar, the floor was to be a cement topping on a consolidated gravel base, the walls were to be of sun-dried brick interspaced between burnt-brick columns, and the roof was to be of tile set on wood procured from state forests.<sup>f</sup>

<sup>a</sup> See chapter V for a more detailed analysis of the land reforms in Kerala and of the sections of the agrarian community which did not benefit from them.

<sup>b</sup> The share of the Central Government in the scheme was subject to a ceiling of Rs 150 per plot.

<sup>c</sup> The argument for thus doubling the area of the homestead given to each household was that, under the Kerala Land Reforms Act, 1963, as amended by the Amendment Act, 1969, the hutment dwellers or *kudikidappukars* in rural areas were given the right to purchase up to 10 cents (i.e., one tenth of an acre); in municipal areas they could purchase up to 5 cents and in city corporation areas up to 3 cents. This being the case, it was considered appropriate to give the households coming under the One Lakh Houses Scheme double the 1 cent of land suggested by the Central Government. In this context "pukka" (as defined in the dictionary) means "durable, reliable, genuine, full-weight"; "semi-pukka" therefore implies constructions which do not fully conform to these qualities but nevertheless constitute an improvement over the dilapidated huts lived in earlier by these agricultural labourers.

<sup>d</sup> Each dwelling was part of a 2-unit "twin-house". In the present annex the term "dwelling" will therefore be used to refer to the individual housing unit, and the term "house" to the entire structure made up of two identical dwellings separated by a brick wall partition.

<sup>e</sup> For details of the other dimensions of each house, see Kerala, *One Lakh Houses Scheme, instructions on the implementation of the Second Stage* (1972), chapter IV.

<sup>f</sup> For the exact specifications see *ibid.*, pp.6-10.

## NUMBER OF DWELLINGS AND COSTS

The scheme envisaged the construction of 96,000 dwellings, to be allotted to families selected on the basis of lots drawn in each panchayat. Each allottee was to pay Rs 110 in 11 equal monthly instalments. This payment, which amounted to a little over 9 per cent of the estimated construction costs (at end-1971 prices) of Rs 1,250 per dwelling (inclusive of the value of the items to be supplied free, namely, unskilled labour, timber, cement and tiles) was intended to give the beneficiaries a sense of participation in the scheme without imposing a heavy financial burden on them.

Slightly over one half of the construction costs of the scheme were to be financed through voluntary public donations and payments from allottees. The remainder of the cost was to be covered by the state government (which was to supply tiles, timber and cement free to each panchayat) and through voluntary donations of (unskilled) labour.

The scheme was to be handled through the existing administrative machinery without any addition of personnel. The panchayat committees had the responsibility of arranging for the procurement of bricks and labour and the actual construction of the dwellings; the district collectors had the responsibility of arranging for the supply of cement, tiles and timber to the panchayats; while at the state level a special secretary to the government was put in over-all charge of the scheme.

An examination of the working of the scheme from the point of view of its fulfilling the functions of a public works programme will now be undertaken. While, as indicated in chapter VIII, the scheme was not intended as a public works programme, such a perspective would none the less be a useful one from which to examine it.

There are three criteria one might apply in judging the scheme as an investment; whether the assets are productive in the sense of generating a flow of desired commodities or services and how high the capital cost is relative to this flow; whether it has a high labour content and can therefore be expected to create employment on an adequate scale; and to what extent it can be self-financing over a period of time. Housing has generally a high capital/output ratio (the output in this case being the flow of residential accommodation it provides); construction can create considerable employment and it can also induce considerable saving on the part of the beneficiaries keen to acquire ownership of the asset. If importance is attached to a housing programme despite the high capital/output ratio, it can in general only be because of the value placed on the need for shelter and the additional employment and saving it is capable of generating.

According to official estimates the cost of constructing a dwelling had risen to Rs 2,400 by end-1974 from Rs 1,250 at end-1971. Using these prices, the value of the houses built under the scheme was Rs 62.3 million by December 1974, a sum which was distributed over the state's districts, as shown in table 99.

As for employment generation in the process of construction, 2.016 million man-days of skilled and 4.416 million man-days of unskilled labour would have been required to construct the 96,000 dwellings in terms of the technical specifications laid down in the scheme. However, only 25,843 dwellings had been constructed by December 1974, for which 0.54 million man-days of skilled labour and 1.19 million man-days of unskilled labour were required.

As originally conceived, only skilled labour was to be remunerated for its contribution; this, as indicated above, was estimated at 2.016 million man-days of employment. The entire needs of unskilled labour, 4.416 million man-days, were to be met from voluntary sources outside the labour market. However, this latter assumption proved to be unrealistic in practice.

Since the unskilled labour requirements of the scheme were expected to be available free, official records are silent as to the proportion of unskilled paid labour to voluntary labour. A study carried out in six panchayats of Trivandrum district showed however that, on average, only 18 per cent of the unskilled labour utilized in the scheme was voluntary. If the assumption is made that this figure corresponds broadly to that for the state as a whole, then about 80 per cent of the unskilled labour involved in the scheme had to be paid for.

TABLE 99. KERALA: VALUE OF HOUSES  
(Millions of rupees, except as otherwise indicated)

| District<br>(1)                 | Values of houses built |                               |                                    |
|---------------------------------|------------------------|-------------------------------|------------------------------------|
|                                 | Planned<br>(2)         | Completed <sup>a</sup><br>(3) | (3) as percentage<br>of (2)<br>(4) |
| Trivandrum . . . . .            | 18.96                  | 7.82                          | 41.3                               |
| Quilon . . . . .                | 24.24                  | 6.11                          | 25.2                               |
| Alleppey . . . . .              | 22.56                  | 2.96                          | 13.1                               |
| Kottayam . . . . .              | 24.00                  | 3.78                          | 15.8                               |
| Idikki . . . . .                | 3.60                   | 1.81                          | 50.3                               |
| Emakulam . . . . .              | 20.64                  | 10.38                         | 50.3                               |
| Trichur . . . . .               | 22.56                  | 8.34                          | 37.0                               |
| Palghat . . . . .               | 21.36                  | 5.15                          | 24.1                               |
| Malappuram . . . . .            | 21.84                  | 2.69                          | 12.3                               |
| Kozhikode . . . . .             | 21.36                  | 9.81                          | 45.9                               |
| Cannanore . . . . .             | 29.20                  | 3.55                          | 12.1                               |
| Kerala, all districts . . . . . | 230.32                 | 63.40                         | 27.0                               |

<sup>a</sup> At end-1974 prices.

This means that about 0.54 million skilled and 0.96 million unskilled paid man-days of work had been generated by the scheme. At an average (end-1974) daily wage of Rs 11 for skilled and Rs 7 for unskilled workers, this would amount to about Rs 12.7 million paid to construction labour, accounting for about 20.3 per cent of total construction costs.

A crucial factor affecting the employment provided through a housing programme is the design used and thereby the inputs required, in particular, the choice of the predominant materials used in construction. It has been shown elsewhere in this report<sup>8</sup> how different building materials have different employment-generating capacities. It is not proposed to cover the same ground here. However, it should be noted that the design selected, involving as it did the transportation of large quantities of cement, tiles and timber to 960 locations scattered throughout the state from a few supply centres, had inherent in it fairly severe organizational problems apart from the costs involved.

#### EFFECTS OF AN ALTERNATIVE TECHNOLOGY

To illustrate the main arguments developed in the sections on building technology in this report—that the design of the dwelling, and in particular the mix of the materials used, is crucial to the achievement of social objectives through building—the effects of using a thatch on coconut-reaper roof in place of tile-on-timber will be examined briefly. Annex V examines the effect of using cement mortar in place of more easily procurable substitutes.

The first effect of such a change in the roof would have been the simplification of organizational problems and a lowering of transport costs. This is because thatch and coconut wood are available throughout the state and could thus have been procured close to the construction site.

The second effect would have been on costs. A thatch-on-reaper roof costs only about 55 per cent of a tile-on-timber roof. This would imply that the roofing of a house would cost only Rs 528 at end-1974 prices instead of Rs 960. The saving of Rs 432 per house amounts to about 9 per cent of its estimated cost at end-1974 prices.

The third effect would have been the impact of the scheme on the prices of building materials. The short-run supply elasticity of thatch and coconut wood can be expected to be much higher than for tile and cement. This would have meant that the sudden increase in demand for these materials created by the scheme would not have had as severe an impact on their market prices.

<sup>8</sup> See annex V.

TABLE 100. KERALA: STAGE OF COMPLETION OF HOUSING, DECEMBER 1974

| District<br>(1)                 | Area to be<br>purchased<br>(acres)<br>(2) | Area<br>purchased<br>(acres)<br>(3) | (3) as<br>percentage<br>of (2)<br>(4) | Dwellings<br>to be<br>built<br>(numbers)<br>(5) | Dwellings<br>already<br>built<br>(numbers)<br>(6) | (6) as<br>percentage<br>of (5)<br>(7) |
|---------------------------------|---|-------------------------------------|---------------------------------------|---|---|---------------------------------------|
| Trivandrum . . . . .            | 395                                       | 385                                 | 94.5                                  | 7,900   | 3,218   | 41.3                                  |
| Quilon . . . . .                | 505                                       | 454                                 | 89.9                                  | 10,100  | 2,458   | 25.2                                  |
| Alleppey . . . . .              | 470                                       | 464                                 | 98.7                                  | 9,400   | 1,234   | 13.1                                  |
| Kottayam . . . . .              | 500                                       | 460                                 | 92.0                                  | 10,000  | 1,536   | 15.8                                  |
| Idikki . . . . .                | 75  | 75                                  | 100.0                                 | 1,500   | 754   | 50.3                                  |
| Ernakulam . . . . .             | 430                                       | 430                                 | 100.0                                 | 8,600   | 4,328   | 50.3                                  |
| Trichur . . . . .               | 470                                       | 474                                 | 100.8                                 | 9,400   | 3,478   | 37.0                                  |
| Palghat . . . . .               | 455                                       | 440                                 | 96.7                                  | 8,900   | 2,148   | 24.1                                  |
| Malappuram . . . . .            | 445                                       | 333                                 | 74.8                                  | 9,100   | 1,120   | 12.3                                  |
| Kozhikode . . . . .             | 440                                       | 434                                 | 98.6                                  | 8,900   | 4,088   | 45.9                                  |
| Cannanore . . . . .             | 610                                       | 548                                 | 89.8                                  | 12,200  | 1,481   | 12.1                                  |
| Kerala, all districts . . . . . | 4795                                      | 4497                                | 93.8                                  | 96,000  | 25,843  | 27.0                                  |

## SAVINGS GENERATED

We come now to the question of savings. As each dwelling was to be given to an allottee on payment of only about 4 per cent of the cost of construction (at end-1974 prices) the question of the scheme acting to any significant extent as an incentive to saving on the part of the allottees did not arise. Also, in view of the fact that the allottees became owners, not just tenants, of the dwellings, the question of a regular income accruing to the government (or the panchayats) from the scheme, with which to finance extensions of it, did not arise. The only method by which the scheme could have increased savings was through the voluntary donations made; and that too only to the extent to which these were accruing out of cuts in consumption.

The panchayats were each expected to collect about Rs 5,000 in voluntary donations; the actual figure collected up to December 1974 came to only a little below Rs 1,000. After adding the collections made by the state government and the district collectors, the total voluntary donations amounted to slightly over one third of the expected total of Rs 60 million.

TABLE 101. KERALA: DENSITY OF POPULATION, 1971<sup>a</sup>  
(Per square kilometre)

| District                        | Population |       |       |
|---------------------------------|------------|-------|-------|
|                                 | Total      | Rural | Urban |
| Trivandrum . . . . .            | 1,003      | 789   | 3,676 |
| Quilon . . . . .                | 522        | 485   | 4,832 |
| Alleppey . . . . .              | 1,126      | 1,013 | 2,564 |
| Kottayam <sup>b</sup> . . . . . | 326        | 298   | 1,895 |
| Ernakulam . . . . .             | 729        | 565   | 3,017 |
| Trichur . . . . .               | 702        | 641   | 2,464 |
| Palghat . . . . .               | 383        | 343   | 1,841 |
| Malappuram . . . . .            | 510        | 486   | 1,603 |
| Kozhikode . . . . .             | 565        | 438   | 2,818 |
| Cannanore . . . . .             | 445        | 369   | 1,795 |
| Kerala, all districts . . . . . | 549        | 477   | 2,585 |

<sup>a</sup> According to 1971 Census.

<sup>b</sup> Excluding Idikki district, which had not been formed at the time of the Census.



## HOUSING PROGRESS, BY DISTRICT

It will be noted from table 100 that the performance of the different districts, in terms of the percentage of houses constructed, varied sharply. Performance was best in Idikki, Ernakulam, Kozhikode and Trivandrum, and poorest in Kottayam, Alleppey, Malappuram and Cannanore.

The reason for the good performance of Ernakulam and Trivandrum could have been their superior administrative and organizational infrastructures, due possibly to the commercial and administrative capitals of Kerala being situated in these two districts. In the case of Idikki, the explanation probably lies in the low target figure. Kozhikode has the advantage of plentiful availability of two out of the three materials supplied by the government, namely, tiles and timber.

It is interesting to note that of the four districts at the bottom of the list, two are characterized by a rural population density considerably below the state average (see table 101). Presumably the housing problem was less acute in these districts and hence implementation could proceed at a slower pace.<sup>b</sup> The explanation for the poor performance of Malappuram and Alleppey probably lies in administrative and organizational limitations.

## LESSONS OF THE SCHEME

It can be said in conclusion that the scheme represented an important effort to provide dwellings for the very poor and, even more, to create widespread awareness of their minimum housing needs. It had several drawbacks, but these contained lessons for a future programme. These lessons are that each scheme should include a system of generating resources for further extension of itself. There should be flexibility in design and careful attention paid to the mix of materials used. Finally, the employment aspect should be given much more attention.

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<sup>b</sup>It may be coincidental that during the period of implementation the collectors in the four districts at the bottom of the list were on average only one and a half years from retirement by end-1974, and hence had no career interests in successfully implementing the scheme. In the case of Cannanore, there were frequent changes throughout the period in the collectors posted. Such administrative upsets may have contributed to the poor performance of this district.

## Annex V

### ALTERNATIVE BUILDING TECHNOLOGY FOR LOW-COST HOUSING

#### SYNOPSIS

Any public works programme of housing construction must be designed to fulfil a number of objectives. It must provide housing to suit the needs, at prices appropriate to the incomes, of those for whom it is intended. It must make maximum use of labour in construction, and use only materials in good supply.

Existing housing in Kerala is overcrowded and built largely of impermanent materials. A sample of village households interviewed indicated a strong preference for more space over other types of improvement to their houses. As incomes are low, the primary problem becomes one of creating extra living space at minimum cost.

A recent Kerala government report has made a number of technical recommendations for cost reduction in building construction. Analysis of some of the alternatives to typical present-day residential construction techniques suggested in the report shows that some increase in local employment and reduction in cost can be achieved without any sacrifice in performance. Other alternatives that would substantially reduce the cost involve changes in performance of a non-measurable kind, whose acceptability is largely a matter of personal judgement. An alternative traditional low-cost building technology is available giving somewhat lower performance standards. Still further cost reduction may be obtained by the use of materials such as earth and thatch for which no performance standards are at present available.

In order to make some of the alternative technologies available on a large scale, new building materials industries or processes may need to be developed.

#### INTRODUCTION

In planning a large-scale programme for the creation of employment through house construction, several different and perhaps conflicting objectives have to be sought simultaneously.

The housing constructed must, above all, fulfil a genuinely felt need. First, its design must take into account the real needs, preferences and aspirations of those for whom it is intended. Secondly, it must be possible to build at a price prospective owners can afford, whether in cash or their own labour. Thirdly, its method of construction must be such as to make maximum use of labour, either directly on site or in local industries, and minimum use of capital, in the creation of new industries. Fourthly, either the building materials used must be available locally in abundance or, alternatively, materials should be used whose supply can be augmented to meet the increased demand without creating either shortages or serious price escalation.

The present annex examines some of the relationships between these objectives and the choice of building technology to be used. Before alternative technologies are discussed some information on the need for housing is presented.

#### THE NEED FOR HOUSING IN KERALA

The main source of data on housing conditions in Kerala is the 1971 Population Census (*Census of India, 1971, Series 9, part IV*). Table 102, derived from the census data, shows the distribution of households according to the materials used in construction. Dwellings are classified into four groups according to the materials of construction, as follows:

A. The predominant materials of both walls and roof are either of burnt brick, galvanized iron or other metal sheets, stone, cement or some combination of these;

B. The predominant materials of the walls are from those mentioned in group A, while

those of the roof are of grass, leaves, reeds or bamboo, mud, unburnt brick and mud, or some combination of these;

C. The predominant materials of the walls come from group B while those of the roof come from group A;

D. The predominant materials of both walls and roof are from group B.

TABLE 102. KERALA: PERCENTAGE DISTRIBUTION OF CENSUS DWELLINGS, BY PREDOMINANT CONSTRUCTION MATERIALS

| Group <sup>a</sup> | Rural | Urban | All  |
|--------------------|-------|-------|------|
| A . . . . .        | 25.1  | 49.4  | 28.7 |
| B . . . . .        | 11.7  | 8.3   | 11.2 |
| C . . . . .        | 9.6   | 7.1   | 9.2  |
| D . . . . .        | 53.6  | 35.1  | 50.9 |

<sup>a</sup> For classification of materials, see text.

Permanent construction materials for both walls and roof are reported in 49.4 per cent of urban dwellings, but in only 25.1 per cent of rural dwellings, while group D materials for both walls and roof are reported in 35.1 per cent of urban dwellings and 53.6 per cent of rural dwellings.

Some insight into the adequacy of housing may be had from analysis of the number of rooms occupied by the census households. Table 103 gives the distribution of urban, rural and total households by the number of rooms occupied. Table 104 shows the average number of persons per room for each category of household.

TABLE 103. KERALA: PERCENTAGE DISTRIBUTION OF HOUSEHOLDS, BY NUMBER OF ROOMS OCCUPIED

| Number of rooms occupied | Rural | Urban | All  |
|--------------------------|-------|-------|------|
| One . . . . .            | 22.0  | 18.1  | 21.4 |
| Two . . . . .            | 31.4  | 27.3  | 30.8 |
| Three . . . . .          | 22.2  | 21.5  | 22.1 |
| Four . . . . .           | 11.3  | 12.8  | 11.5 |
| Five and over . . . . .  | 13.1  | 20.3  | 14.2 |

TABLE 104. KERALA: AVERAGE NUMBER OF PERSONS PER ROOM, BY NUMBER OF ROOMS OCCUPIED IN HOUSEHOLD

| Number of rooms occupied | Number of persons per room |       |      |
|--------------------------|----------------------------|-------|------|
|                          | Rural                      | Urban | All  |
| One . . . . .            | 5.07                       | 5.04  | 5.07 |
| Two . . . . .            | 2.95                       | 3.13  | 2.97 |
| Three . . . . .          | 2.13                       | 2.23  | 2.14 |
| Four . . . . .           | 1.73                       | 1.83  | 1.75 |
| Five and over . . . . .  | 1.22                       | 1.25  | 1.23 |
| All households . . . . . | 2.21                       | 2.06  | 2.19 |

If the average census household comprises two adults and five non-adults, two rooms per household should be considered an irreducible minimum by any norm. It should be noted that the census definition of a room is any enclosed space that is used for living, dining, storing or cooking. In terms of this criterion, about 21 per cent of the households in Kerala would fall below the absolute minimum tolerable level.

A more acceptable, but by no means generous, level of accommodation would be 1.5 persons per room. This standard is achieved only for the 14 per cent of the population living in houses with five or more rooms.

It is clear from the foregoing that overcrowding is the major problem affecting housing in

Kerala. The proportion of houses built of so-called impermanent materials (mud walls and thatch roof) is high; and it is no doubt true that facilities such as electric light, private water supply and toilet are, as in other parts of India, restricted to a very small proportion of the population. None the less, even at existing standards, an increase in the amount of space available would appear to be a worth-while improvement in the housing position.

This point is well illustrated by the results of a sample survey of 25 village households (small farmers and landless labourers with land-holdings of less than 2.5 acres) in Kasaragod taluk. The householders were asked to list in order of preference five alternative ways in which their present accommodation might be improved. The overwhelming preference (see table 105) for more bedroom or kitchen space over other types of improvement such as the addition of storage, bathroom and toilet, is an indication of the great need for more living accommodation.

TABLE 105. KASARAGOD: HOUSEHOLDERS' PREFERENCES FOR ALTERNATIVE IMPROVEMENTS IN LIVING ACCOMMODATION

|                    | Number of samples giving each choice |               |              |               |              |
|--------------------|--------------------------------------|---------------|--------------|---------------|--------------|
|                    | First choice                         | Second choice | Third choice | Fourth choice | Fifth choice |
| Bedroom . . . . .  | 20                                   | 3             | 2            | —             | —            |
| Bathroom . . . . . | 3                                    | 3             | 1            | 15            | 3            |
| Toilet . . . . .   | —                                    | 1             | 3            | 5             | 16           |
| Kitchen . . . . .  | 2                                    | 13            | 8            | 1             | 1            |
| Storage . . . . .  | —                                    | 5             | 11           | 4             | 5            |

SOURCE: Survey of 25 householders in three villages in Kasaragod taluk, Cannanore district.

On the other hand, a programme of housing construction aimed at no more than an increase in available space at existing standards might fail to find a market. It has been repeatedly observed in urban areas that people on very low incomes are prepared to continue to suffer even quite appalling living conditions for long periods in order to save and eventually build a new house of much greater and more lasting value. It is quite possible that such behaviour applies in Kerala, since very little expenditure would in most cases have been required to extend existing houses by one room or more, using materials available on the site itself.

It may as well be assumed, then, that a public works programme of housing should use a building technology which, both in terms of durability and climatic performance (insulation, water proofing etc.) is evidently an improvement on existing rural standards. At the same time, as such a programme would be concerned with providing houses for the lowest-income group, a very low cost per unit area would need to be achieved. The use of the usual on-site materials, though in a modified and improved way, should not be ruled out.

Unfortunately, very little information is available either on the housing preferences and attitudes of the lowest-income groups or on the cost of alternative methods of building with the cheapest materials available in Kerala. Further field work and experimentation on these questions will be needed before definite conclusions can be drawn on what might be an appropriate technology for a large scale low-cost housing programme.

Available information would permit an examination of how far it would be possible to meet the other objectives of a large-scale housing programme, i.e., use of local labour and abundant materials and reduction in cost, without reduction in performance by comparison with typical present-day residential construction. The main body of the present annex presents the results of such an examination. Subsequently, the implications on performance of using other, cheaper or more labour-intensive technologies are discussed.

Much information on available technologies of construction is presented in a recent report of the Kerala government,<sup>a</sup> whose approach and recommendations are of sufficient importance to be worth presenting in summary as an introduction to the analysis of alternative technologies.

<sup>a</sup> Report of the Expert Committee, "Performance approach to cost reduction in building construction," Kerala (January 1974).

The committee that produced the report was constituted in 1972, by order of the government of Kerala, with the following terms of reference:

(a) To examine and assess different methods of lowering the cost of construction of residential houses utilizing local materials and labour to the maximum possible;

(b) To consider to what extent the methods available for lowering costs of construction can be applied to welfare centres, youth hostels, bus transport terminals, rest houses, workshops for industrial estates etc;

(c) To examine the present organization of the building industry in the state and suggest the necessary improvements including training programmes, standardization of materials and designs, provision of finance etc; to make it capable of undertaking on a large scale the low-cost construction methods suggested above;

(d) To examine the National Building Code and Public Works Department norms and present governmental procedures and requirements in regard to building operations in the light of the above, and suggest changes needed in them in order to extend rapidly the use of cheaper methods of construction for achieving the larger objectives of development;

(e) To examine and choose models of low-cost housing available with a view to recommending the adoption of a large-scale housing programme for the poorer people in the state;

(f) To suggest any other means of promoting and encouraging the use of low-cost methods of construction of building in the state.

In its report, published in January 1974, the committee sets out its approach to cost reduction in two major statements.

"The prevailing tendencies towards waste of resources along with considerations of equity force us to state categorically that the time has come for a strong campaign towards simple and comparatively less expensive building for All. We decry any more towards (*sic*) Low Cost Housing for 'the Poor'. Reform, rethinking, re-planning and re-designing must start at the top and spread through all strata of society.

"It is our belief, that by a proper selection of known techniques and material and by a careful examination of each item of construction for its functional need, we can substantially reduce the cost of construction below current costs. This would make it possible to bring housing within reach of a much larger segment of the population."

The Committee enlarges upon this second statement as follows:

"We intend to select only those techniques which do not require large additional investments; which do not require special or rare skills; and which do not require highly mechanised mass production.

"Moreover, we intend to select materials which are locally made or locally available in abundance or which can be made by small scale manufacturing plants spread throughout the State and for which the process of manufacturing is labour-intensive, capital saving and fuel saving.

"In this task we believe that ultimate cost to the State is of far greater importance than the apparent accounts of cost of individual buildings. Our intention is to minimise cost in terms of material and resources rather than cost in terms of labour. In fact, we would concentrate on reduction of resources cost even though it may in some circumstances mean increased labour requirements."

Subsequent sections of the report deal with climatic design, available materials, construction techniques and planning and design, showing in each case how reduction in cost could be achieved. A list of the various options (some commonly used, some little used) available for constructing different elements of a building is presented in table 106.

Among its specific technical recommendations, the Committee advocated increased use of laterite and unplastered brick masonry, the use of lime-surkhi mortar, of treated country timber for doors and window frames, of brick jalis in place of windows, and of Mangalore tile roofs. They also recommended a ban on the use of reinforced concrete slab roofs except when used with tile fillers. The committee also made a number of recommendations for institutional

TABLE 100. KERALA. OPTIONS IN BUILDING MATERIALS

| <i>Foundation and basement</i>  |                                |                                     |                                       |                                      |                          |
|---------------------------------|--------------------------------|-------------------------------------|---------------------------------------|--------------------------------------|--------------------------|
| Granite in mud                  | Granite in mortar              | Laterite                            | Brick over concrete                   | Granite over concrete                | Under-reamed piles etc.  |
| <i>Superstructure</i>           |                                |                                     |                                       |                                      |                          |
| Sun-dried or stabilized blocks  | Hand-moulded burnt bricks      | Machine-moulded burnt bricks        | Laterite blocks                       | Random rubble granite                | Sand-lime bricks         |
| <i>Mortar</i>                   |                                |                                     |                                       |                                      |                          |
| Mud with cement pointing        | Lime-surkhi                    | Lime cement                         | Cement 1:10                           | Cement 1:8                           | Cement 1:6               |
| <i>Wall plaster finish</i>      |                                |                                     |                                       |                                      |                          |
| No plaster                      | Lime wash or colour on brick   | Lime-surkhi plaster                 | Lime plaster                          | Lime-cement plaster                  | Cement plaster           |
| <i>Door frames and windows</i>  |                                |                                     |                                       |                                      |                          |
| No frame                        | Treated country wood           | Jack or anjali wood                 | Reinforced concrete                   | Metal                                |                          |
| <i>Window shutters</i>          |                                |                                     |                                       |                                      |                          |
| Brick jali (no frame)           | Single plank                   | Board and batten                    | Country wood panel                    | Jack or anjali panel                 | Glass panel              |
| <i>Interstorey floor slabs</i>  |                                |                                     |                                       |                                      |                          |
| Timber plank on joists          | Filler slab                    | Hourdis on reinforced concrete beam | Timber on joist with ceiling          | Funicular shell on beams             | Reinforced concrete slab |
| <i>Roofing</i>                  |                                |                                     |                                       |                                      |                          |
| Ola on bamboo                   | Mangalore tile on timber       | Filler slab                         | Mangalore tile on timber with ceiling | Hourdis on reinforced concrete beams | Reinforced concrete slab |
| <i>Flooring</i>                 |                                |                                     |                                       |                                      |                          |
| Lime and surkhi over brick-bats | Cement plaster over brick-bats | Burnt clay tile over brick-bats     | Cement or tiles over concrete         | Simplified grano                     | "Mosaic"                 |

SOURCE: Report of the Expert Committee, "Performance approach to cost reduction in building construction," Kerala (January 1949).

Note: The columns on the left are the low-cost less expensive elements and those on the right are the usual higher-cost elements.

changes, and suggest steps to be taken to facilitate the implementation of their technical recommendations.

Although few of the recommendations have been seriously challenged on technical grounds, the institution with the main responsibility for implementing them, the state Department of Public Works, has in most cases been reluctant to do so. Three reasons for this have been identified.

1. Where alternative materials have been recommended, these may not be available in quantity or quality sufficient for large-scale change.

2. Where a change to an alternative technology is recommended on the grounds of social benefit (e.g., in creation of local labour) this may involve an increased rather than a reduced financial cost.

3. Although an alternative technology may be both technically feasible and cheaper, it may be generally regarded as out of fashion or otherwise unacceptable to the Department's clients.

In an attempt to examine these problems of implementation in more detail a study was made of the comparative costs and materials and labour inputs of some commonly used technologies and alternatives recommended by the committee. The study is described below.

#### ANALYSIS OF COST AND EMPLOYMENT CREATION IN ALTERNATIVE TECHNOLOGIES

Although a large number of alternative technologies for construction are potentially available, this should not be taken to imply that a free choice may be made among the many alternatives.

#### *Objectives*

In deciding which of a number of available construction techniques to use, an engineer will be guided by the availability and price of alternative materials at his site as well as by certain standards and specifications, and a private client will, in addition to these factors, be influenced by his own preconceptions about the durability of different building materials and by current fashions in house design.

The substitution of one technique for another is therefore limited and any study of alternative building techniques must take into account differences in their performance or acceptability. Unfortunately, many of the benefits of using improved or more expensive building materials (improved climatic performance, increased life or fashion) are very difficult to quantify, and for this reason a proper social cost-benefit analysis of alternative housing technologies would be difficult.

The present study has a very much more limited objective. In some cases where two or more methods are available which, according to measurable criteria, give approximately the same performance, an attempt has been made to compare the inputs required.

The input of greatest interest in this study is labour; the labour component of the alternatives selected has therefore been studied in some detail. The material resources required are also examined. The availability or scarcity of these resources is discussed, but no attempt has been made at this stage to estimate the social cost of using scarce or non-renewable resources.

Because of the importance of comparing alternatives of roughly equal performance, the study is not carried out over complete building systems, but is restricted to certain elements of a building where such alternatives exist.

The elements chosen are roofing and mortars for brickwork.

No two roofing systems will give precisely the same performance, and this is one element of a building where non-performance factors, such as fashion and appearance are frequently at least as important as performance in determining the type to be used. Nevertheless, roofing is the most costly single item in any small building (accounting for up to 25 per cent of total cost) and is thus the item where the selection of an alternative technology can be expected to have the greatest impact on cost. It is for this reason that roofing systems have been chosen for comparison.

Mortars, on the other hand, are a smaller item in the total building cost. Mortars and plasters together account for about 15 per cent of total cost. But this is one element in a building where there are a number of fairly well defined alternative ways of achieving a given performance, and where non-performance factors are not likely to play a major part in determining the type to be used. The comparison of different mortar materials is interesting for this reason.

Two alternative roofing systems and three alternative mortars will be considered.

#### *Methods*

In each case, using data supplied by the Public Works Department,<sup>b</sup> an analysis has been made of the inputs, labour and materials at site, and the total cost of completed work has been determined. A further analysis has then been made of each of the materials used, in an attempt to quantify the total labour input. In the case of manufactured building materials, the process of transforming the raw materials into components of a finished building may be split into five stages:

1. Quarrying or procurement of raw materials and transportation to factory;
2. Manufacture of building materials;
3. Transport of building materials to local depot or store;
4. Transport of building materials to site;
5. Construction work at site.

In order to quantify the total labour input, a value has to be assigned to the material at each of these stages, an analysis made of all the inputs at each stage, and both the direct and indirect labour component of these inputs then determined. The information for such an analysis is far from complete and a number of assumptions have had to be made and provisional values assigned. The more important assumptions made are:

1. The site is in southern Kerala, at a distance of 10 kilometres from the nearest railhead, building materials depot etc. A 10 kilometre haul is also assumed in the case of local building materials, sand, stone, lime etc;

2. The proportional breakdown of the price of building materials obtained from various sources may also be applied to these materials at the prices shown in the Public Works Department schedule of rates;

3. The labour component of some of the inputs to building materials factories for which data are not available has been provisionally assumed to be as follows:

Labour component of value of raw materials in cement and steel manufacture 40 per cent

Labour component of value of raw materials in tile manufacture 60 per cent

Labour component of input value of all fuel (coal, oil, electricity) used in building materials manufacture and haulage 30 per cent

Labour component of freight equalization charge on cement and steel 30 per cent

4. The prices shown on the Public Works Department Schedule of Rates dated 1.7.1974 are assumed to apply.

The analysis is thus location specific (assumption 1). It is also approximate and provisional (assumptions 2 and 3). Moreover, as the Public Works Department schedule of rates shows only the controlled prices for certain materials (cement and steel) whose actual market price may be much higher, the analysis is numerically valid only for the builder who, with a government-issued permit, is able to obtain his materials at these prices (assumption 4). Approximate values of controlled and present market prices are shown in table 113.

The results of the analysis are shown in tables 107 and 108.

<sup>b</sup> Kerala, Public Works Department, *Standard Data Book*, 1974; and *Schedule of Rates*, 1974.



TABLE 107. KERALA: LABOUR AND MATERIALS COMPONENTS OF ALTERNATIVE ROOFING SYSTEMS, CALCULATED FOR A HOUSE OF PLINTH AREA 56.8 m<sup>2</sup> AND ROOF AREA 76.3 m<sup>2</sup>.

|   | A <sup>a</sup>    |  |                          | B <sup>b</sup>    |  |                          |
|---|-------------------|--|--------------------------|-------------------|--|--------------------------|
|   | 235               |  |                          | 410               |  |                          |
| (1) Cost (rupees per square metre) . . . . .          | Percentage of (1) | Labour component (percentage per unit of material) | Labour percentage of (1) | Percentage of (1) | Labour component (percentage per unit of material) | Labour percentage of (1) |
| (2) Materials   |                   |  |                          |                   |  |                          |
| Cement . . . . .                                      | ...               | ...  | ...                      | 27.4              | 26   | 7.1                      |
| Steel . . . . .                                       | ...               | ...  | ...                      | 24.6              | 30   | 7.4                      |
| Sand and stone . . . . .                              | ...               | ...  | ...                      | 11.7              | 64   | 7.5                      |
| Timber . . . . .                                      | 40.0              | 25   | 10.0                     | 8.6               | 25   | 2.1                      |
| Tile . . . . .  | 39.3              | 49   | 19.3                     | ...               | ...  | ...                      |
| Other . . . . .                                       | 0.4               | 30   | 0.1                      | 0.9               | 48   | 0.4                      |
| (3) Total materials at site . . . . .                 |                   | 79.7   |                          |                   | 73.2   |                          |
| (4) Labour in local industries, trucking . . . . .    |                   | 29.4   |                          |                   | 10.0   |                          |
| (5) Labour in non-local factories, railways . . . . . |                   | ...  |                          |                   | 14.5   |                          |
| (6) On-site labour . . . . .                          |                   | 20.3   |                          |                   | 26.8   |                          |
| (7) Total labour component . . . . .                  |                   | 49.7   |                          |                   | 51.3   |                          |

<sup>a</sup> Mangalore tile on timber with timber ceiling.

<sup>b</sup> Reinforced concrete cement slab with waterproofing plaster finish to topside, and fine chunnam plaster finish to underside.

#### Alternative roofing systems

The two roofing systems compared in this study are:

(a) Mangalore tile on timber, with 12-millimetre timber plank ceiling;

(b) Sloped 100-millimetre reinforced slab with 12-millimetre waterproofing plaster, and fine plaster finish to underside.

Some data on the climatic performance of roofs given by Koenigsberger and Lynn<sup>c</sup> are reproduced in table 109.

#### Performance

A clay tile roof without a ceiling gives a very much inferior performance compared to one with a ceiling. The "U" value of the reinforced concrete slab is in fact much higher than that of the tile roof with a ceiling, and the lower ceiling temperature is entirely dependent on the reflectivity of the white painted surface. Without this paint, the excess ceiling temperature in the case of the slab rises to 39.8 degrees Fahrenheit. The screeded reinforced concrete cement roof is clearly an improvement in thermal resistance and is also more expensive.

To compare roofs of approximately equal performance restricts the choice to types (2) and (3). Even then, there are further performance differences between the two types which should be mentioned. Climatic performance is not completely defined by mid-day ceiling temperature. As pointed out in the report of the Expert Committee, the rate at which ceiling temperature drops in the evening is particularly crucial for night comfort. The lighter the weight of the roof

<sup>c</sup> O. Koenigsberger and R. Lynn, *Roofs in the Warm Humid Tropics* (London, Architectural Association 1965).

TABLE 108. KERALA: LABOUR AND MATERIALS COMPONENTS OF ALTERNATIVE MORTARS, CALCULATED FOR 1.0 m<sup>3</sup> OF BRICKWORK USING COUNTRY BURNT BRICK

|     |  | A <sup>a</sup>  |                                  | B <sup>b</sup>                          |                                  | C <sup>c</sup>                          |                                  |
|-----|--|---|----------------------------------|---|----------------------------------|---|----------------------------------|
| (1) | Cost of brickwork<br>(rupees per cubic<br>metre) . . . . . | 24.4  |                                  | 23.5                                    |                                  | 24.7                                    |                                  |
|     |  | <i>Labour com-<br/>ponent per-<br/>centage<br/>per unit of<br/>material</i> | <i>Percentage<br/>of<br/>(1)</i> | <i>Labour<br/>percentage<br/>of (1)</i> | <i>Percentage<br/>of<br/>(1)</i> | <i>Labour<br/>percentage<br/>of (1)</i> | <i>Percentage<br/>of<br/>(1)</i> |
| (2) | Materials  |   |                                  |   |                                  |   |                                  |
|     | Cement . . . . .   | 26  | 69                               | 18.0                                    | 47.6                             | 12.4                                    | ...                              |
|     | Lime . . . . .   | 50  | ...                              | ...                                     | 20.4                             | 10.2                                    | 19.4                             |
|     | Pozzolana . . . . .  | 38  | ...                              | ...                                     | ...                              | ...                                     | 50.2                             |
|     | Sand . . . . .   | 49  | 16.5                             | 8.0                                     | 17.0                             | 8.3                                     | 16.2                             |
| (3) | Total materials<br>at site . . . . .                       |   | 85.5                             |   | 85.0                             |   | 85.8                             |
| (4) | Labour in local industries,<br>trucking . . . . .          |   | 8.0                              |   | 18.5                             |   | 36.7                             |
| (5) | Labour in non-<br>local industries,<br>railways . . . . .  |   | 18.0                             |   | 12.4                             |   | ...                              |
| (6) | On-site labour . . . . .                                   |   | 14.5                             |   | 15.0                             |   | 14.2                             |
| (7) | Total labour<br>component . . . . .                        |   | 40.4                             |   | 45.9                             |   | 50.9                             |

<sup>a</sup> 1:6 cement:sand

<sup>b</sup> 1:2:9 cement:lime:sand

<sup>c</sup> 1:1.5 lime/pozzolana:sand

the more quickly it will cool. In this respect tiled roofs are greatly superior to concrete roofs, which continue to radiate heat inwards for some hours after sunset. Other important performance requirements are structural safety, water resistance, durability and fire resistance. The detailed structural design ensures that a timber roof and reinforced concrete roof are capable of withstanding the same load. It may also be assumed that both types of roof are equally waterproof. Although primary species and treated secondary species of timber both have a long life, reinforced concrete is generally considered to be more permanent, though much depends on workmanship. Reinforced concrete certainly has the greater fire-resistance. Of the alterna-

TABLE 109. CLIMATIC PERFORMANCE OF ALTERNATIVE ROOFING SYSTEMS

| Roofing system  | Thermal<br>transmittance <sup>a</sup><br>("U" value) | Excess of mid-day<br>ceiling temperature<br>over indoor temper-<br>ature at 89° F |
|---|--|---|
| (1) ¾ in. clay tiles,<br>no ceiling . . . . .   | 0.81   | 45.5  |
| (2) ¾ in. clay tiles plus<br>½ in. timber board ceiling . . . . .                         | 0.4  | 22.6  |
| (3) 4 in. reinforced concrete slabs,<br>painted white . . . . .                           | 0.7  | 18.6  |
| (4) 4 in. reinforced concrete slabs,<br>painted white, old . . . . .                      | ...  | 39.6  |
| (5) 4 in. reinforced concrete slabs with 3 in.<br>cement, screed, painted white . . . . . | 0.52   | 13.6  |

<sup>a</sup> Measured in British thermal units per square foot per hour per degree Fahrenheit.

tives chosen, climatic considerations therefore tend to favour the tiled roof, while durability and fire-resistance tend to favour the concrete roof.

#### *Cost and labour input*

Table 107 shows the cost and labour component of the two roofing systems. Each has been calculated for the same building, a house of plinth area 56.8 square metres. Including overhangs, the ground area covered by the roof is in each case 76.3 square metres.

The first point to notice is that the tiled roof, at 235 rupees per square metre, is 43 per cent cheaper than the concrete roof (410 rupees per square metre).

Labour at site accounts for 20 per cent of the cost of the tiled roof, and 27 per cent of the cost of the timber roof; the rest is the cost at site and cost of building materials (since overheads, profit etc. are not included).

The major materials in the case of the timber roof are timber and tiles. Both of these are products of local industries. The tile industry is highly labour-intensive, and 49 per cent of the value of the tiles at site is accounted for by wages and salaries, either in quarrying, manufacturing or transporting the material to site. Sawmilling is also labour-intensive, but the value added in this operation is a rather small proportion of the value of the logs in the forest. Including forestry, transportation and sawmilling, the labour component of the value of the timber at site is only 25 per cent. In addition to the labour at site, a further 29.4 per cent of the cost of the completed roof is therefore accounted for by labour in the building materials industries, bringing the total labour component to 49.7 per cent.

In the concrete roof, cement and steel account for no less than 51 per cent of the total cost of the roof. In both cases the materials have to be transported from outside the state, and the labour components of the value of cement and steel at site are only 26 per cent and 30 per cent, respectively. The other materials used, accounting for about 80 per cent of the weight of roof but only 12 per cent of its cost, are stone and sand. These are produced in highly labour-intensive local industries, with an average labour component of 64 per cent. The combined labour component of cement and steel and their transportation accounts for 14.5 per cent of total cost, and the labour component of the local industries 10 per cent. Thus, the total labour component of the concrete roof is 51.3 per cent, very similar to that for the tiled roof.

#### *Material resources*

Cement has been a scarce material for some time, and recent projections of demand and production suggest that this scarcity is likely to persist (see table 110). Although raw materials are available in abundance, production difficulties and delay in getting new factories into

TABLE 110. INDIA: CEMENT INDUSTRY'S PRODUCTION TARGETS AND ACHIEVEMENTS UNDER SUCCESSIVE FIVE-YEAR PLANS  
(Millions of tons)

|  | <i>Target<br/>production</i> | <i>Achieved<br/>production</i> |
|--|------------------------------|--------------------------------|
| First plan<br>(1951/52—1955/56) . . . . .  | 5.4 <sup>a</sup>             | 4.6                            |
| Second plan<br>(1956/57—1960/61) . . . . . | 3.0                          | 8.0                            |
| Third plan<br>(1961/62—1965/66) . . . . .  | 13.0                         | 10.8                           |
| Fourth plan<br>(1969/70—1973/74) . . . . . | 18.0                         | 14.7                           |
| Fifth plan<br>(1974/75—1978/79) . . . . .  | 25.0                         | 20.0 <sup>b</sup>              |

SOURCES: Government of India, *Five-year plans*, Kerala, *Economic Review*, 1974/75.

<sup>a</sup> Target capacity.

<sup>b</sup> Projected estimate.

TABLE 111. KERALA: EXPORT OF TILES, 1960-1965  
(Millions of rupees)

| Year              | Value |
|-------------------|-------|
| 1960/61 . . . . . | 5.030 |
| 1961/62 . . . . . | 2.225 |
| 1962/63 . . . . . | 6.411 |
| 1963/64 . . . . . | 1.811 |
| 1964/65 . . . . . | 0.569 |

SOURCE: J. T. Chirayath *op. cit.*

production have led to a widening gap between demand and production. The situation is worsened by the need to sell cement on the world market in order to earn foreign exchange. The social cost of using cement is thus much higher than the controlled price suggests, and if the present open market price were used the cost penalty of using reinforced concrete would become clearer.

Although not as scarce as cement, steel is also a commodity which can be sold on the world market, and the social cost of using it in building is again very much underestimated by using the controlled price.

In addition to these penalties, both cement and steel used in Kerala have to be transported long distances by rail. There is no factory in Kerala producing Portland cement though there are a number in the neighbouring state of Tamil Nadu. India's entire steel for reinforcing is manufactured in the distant states of Bengal, Bihar and Madhya Pradesh. The use of these materials therefore places a burden on the already overstrained railway system.

The use of tiles is not accompanied by these social costs. It is reported<sup>d</sup> that in 1967/68 there was over 35 per cent unutilized capacity in the tile industry in Kerala. Reasons given for this were the price of firewood for fuel, the drop in local demand and the sudden disappearance in the 1960s of the export market (see table 111). This drop in demand has resulted in the closure of a number of factories in recent years. It may therefore be assumed that the tile industry is in a good position to respond to increases in demand; moreover, as this is a small-scale labour-intensive industry, distributed throughout Kerala, considerable social benefit to the state would be derived from an increase in the use of tiles as a roofing material.

TABLE 112. KERALA: PROJECTED REQUIREMENTS AND  
SUPPLY OF TIMBER, 1980 AND 1990  
(Millions of cubic metres)

|                        | 1980    | 1990      |
|------------------------|---------|-----------|
| Requirements . . . . . | 7.9—9.2 | 10.2—14.8 |
| Supply . . . . .       | 6.7—9.0 | 5.6—12.3  |

Unfortunately, tiles are conventionally used in conjunction with timber, and although Kerala has a large timber industry, there are many competing demands for the primary species available. Requirements and supply projections for 1980-1990 made by the Kerala Forest Department<sup>e</sup> (see table 112) suggest that timber will become increasingly scarce. More-over, the projections assume a continuation of the present trend towards use of reinforced concrete in place of timber in building construction.

However, a large proportion (71 per cent) of the total timber produced is used for firewood, and this includes many secondary species which, if suitably treated, would be suitable for use in

<sup>d</sup> J. T. Chirayath, "A study on the tile industry in Kerala" (Trivandrum, Land and Industrial Bureau, 1969).

<sup>e</sup> C. Chandrasekharan, "Forest resources of Kerala, a quantitative assessment" (Kerala, Forest Department, 1973).

construction.<sup>1</sup> The development of cheaper hydroelectric power should make it possible for Kerala to rely less heavily on firewood for its energy supplies in the future, and so release a proportion of this timber for use in construction. Thus, an increase in the use of timber in construction can be contemplated, but only if it is accompanied by the establishment of timber treatment plants. At present there are very few such plants in the state.

#### *Summary on roofing system*

On the basis of prices by the Public Works Department, a tile-on-timber roof is 43 per cent cheaper than a reinforced concrete slab of approximately equivalent climatic performance. The continued popularity of the reinforced concrete roof is due to three factors: (a) fashion; (b) the supposed superior durability of reinforced concrete roof; and (c) a scarcity of constructional timber even more acute than that of cement and steel. There is little to choose between the two systems in respect of the total labour component, though in the case of the concrete roof about 30 per cent of the labour component is at factories outside Kerala or in the railway system, while in the case of the tiled roof virtually the whole labour components is in local industries within Kerala.

Both types of roofing system use scarce material resources; cement and steel in the case of the concrete roof, timber in the case of the tiled roof. A straightforward reversion from the "modern" (reinforced concrete) to the "traditional" (tile-on-timber) technology cannot therefore be contemplated. A rational longer-term approach would be the development of new sources of constructional timber by the treatment of country timbers, today used only for firewood, and the development of "intermediate" roofing types which replace some cement and steel by tiles or other clay products.

#### *Alternative mortars*

Three different types of mortars are compared in the study:

- (a) 1:6 cement-sand mortar
- (b) 1:2:9 cement-lime-sand mortar
- (c) 1:1.5 lime/pozzolana-sand mortar

#### *Performance*

The equivalence of these three types of mortar for use in structural brickwork is implied by the national building code.<sup>2</sup> The same basic design stress is permitted in each of them. There are, however, some important differences in performance. The cement mortar is likely to set more rapidly than the other two types. Quick setting may not necessarily be an advantage in brickwork, however, and cement mortars are somewhat "harsh" in use. Cement/lime or lime/pozzolana mortars are more workable and result in a mortar with a higher resistance to water penetration. For these reasons, in European countries where both cement and hydrated lime (but not pozzolana) are readily available, the standard mortar for brickwork is alternative (b), a 1:2:9 cement:lime:sand mortar.

#### *Cost and labour input*

Table 108 shows the cost, materials inputs and labour components of the three mortars. The cost of the mortar required for 1.0 cubic metres of brickwork has been calculated including the labour of mixing and handing it up to the mason. It will be seen that there is virtually nothing to choose between the three mortars in terms of cost, so it is necessary to make a choice on other grounds, such as availability of material or social cost.

Direct labour at site accounts for only 14-15 per cent of total cost in such a case, the remaining 85-86 per cent being the cost at site of the building materials.

In the cement-sand mortar, 69 per cent of the total cost is cement, but the labour component of cement is only 18 per cent, all in out-of-state industries. The sand is produced locally in a highly labour-intensive manner but the labour component of the sand accounts for

<sup>1</sup> J. T. Chirayath, *op. cit.*

<sup>2</sup> Indian Standards Institution, *National Building Code of India*, 1970 (New Delhi), p. VI-4-414.

only 8 per cent of the total cost. The total labour component of the cement-sand mortar is 40.4 per cent.

In the cement-sand-lime mortar a proportion of the cement is replaced by lime. The amount of lime used is larger than the amount of cement, but the cost per unit volume is much lower. Production of lime is also local and labour-intensive and thus both total labour and the labour in local industries are increased to 45.9 per cent and 18.5 per cent, respectively, while the non-local labour component is decreased to 12.4 per cent.

In the lime/pozzolana-sand mortar, the cement is replaced by a considerably larger volume of cheaper lime and surkhi, both produced locally. Total and local labour are therefore further increased to 50.9 per cent and 36.7 per cent, respectively, and there is no non-local labour.

Thus, in terms of both local and total labour the lime/pozzolana-sand mortar is to be preferred.

The scarcity of cement and the high social cost attached to its use have already been discussed.

#### *Material resources*

By contrast, lime is produced in very small labour-intensive units all over Kerala, and considerable social benefit would derive from a greater substitution of lime for cement. But there are two serious obstacles to such a change. The first is that the quality of the lime produced in these small units is very variable and a proportion of unburnt material is generally sold with the lime. Quality control is very difficult to enforce in such an industry, and unless there is a large price incentive to use lime in mortars engineers will tend to prefer to use cement, whose quality can be relied on. The second obstacle to the greater use of lime is that supply is inelastic. Increased demand tends to result in price increases rather than in increased supply. Another characteristic of the industry is a proliferation of one-man units, none of which are capable of much expansion. There is no absolute shortage of raw material; there are estimated to be about 3 million tons of lime shells in the lakes and backwaters of Kerala. But as extraction is a small-scale labour-intensive activity, there is probably little elasticity in the supply of shells to manufacturers.

Many of the same arguments apply to the supply of surkhi, which is the only locally available pozzolana. Surkhi is a by-product of brick and tile manufacture, made by grinding reject bricks or tiles to a fine powder. Quality control is absent and adulteration common. Price fluctuates considerably according to demand. Thus, although the potential supply is considerable and increased use of surkhi would be of benefit to the local tile industry, engineers tend to avoid it if possible.

Thus, although the social benefit of using the cement-lime or lime/pozzolana mortar is considerable, there is little incentive for engineers to choose these mortars under present conditions. An alternative approach put forward by the Expert Committee<sup>b</sup> suggests the establishment of small industries manufacturing quality hydrated lime or lime/pozzolana mixture. Such industries would still be labour-intensive, but by using a more efficient technology would be able to reduce both production costs and the amount of fuel used, and they might also exercise a stabilizing influence on prices. The government of Kerala has plans to establish such industries, though none exist at present.

#### *Summary on mortars*

There is little to choose between the costs of three equivalent mortars on current Public Works Department prices, but both total and local labour component costs are greater in the case of mortar using lime and pozzolana in place of cement. There is, potentially, a sufficient supply of these alternative materials, but engineers are reluctant to use them because of variability in supply and lack of quality control in manufacture.

Substitution of "modern" cement by "traditional" lime and pozzolana mortars would certainly increase employment, but at the expense of quality control. A more satisfactory approach would be the development of new industries manufacturing standardized hydrated lime or lime/pozzolana mixture.

<sup>b</sup> Report of the Expert Committee, "Performance approach to cost reduction in building construction." Kerala (January 1974).

TABLE 113. KERALA: PRICES OF MATERIALS TO THE PUBLIC WORKS DEPARTMENT AND TO PRIVATE PURCHASERS  
(Rupees)

| Material                          | Unit        | Public Works Department<br>(June 1974) | Private purchasers<br>(December 1974) |
|-----------------------------------|-------------|--|---------------------------------------|
| Cement . . . . .                  | Bag         | 14.0                                   | 31.50                                 |
| Steel . . . . .                   | Kilogram    | 2.50                                   | 2.60                                  |
| Timber (jack, finished) . . . . . | Cubic metre | 810                                    | 1000-1070                             |
| Tiles . . . . .                   | Thousand    | 430                                    | 490                                   |

#### REDUCTION OF BUILDING COSTS

##### *Approach of the expert committee*

In the preceding section, a detailed analysis has been made of the scope for reducing the cost and/or increasing the social benefits of housing by the use of some of the alternative technologies proposed in the report of the Expert Committee.<sup>1</sup> It has been shown that it is possible to reduce roofing costs by some 40 per cent by the use of tile-on-timber instead of solid reinforced concrete slab, while increasing local employment. In the case of mortars there is little possibility of cost reduction if cement mortars are replaced by lime/pozzolana mortars of equivalent standard, but again local employment is increased.

Some of the other recommendations in the report can also lead to substantial savings in cost. For instance, replacement of some windows by brick jalis completely eliminates the cost of these windows; the use of unplastered brick walls eliminates the cost of plaster for these walls; where a 9" brick wall can be replaced by a 4½" brick wall half the brickwork is saved. The committee estimated that the net effect of all their recommendations could be to reduce the cost of construction by up to 32 per cent without any real sacrifice of performance. It is not of course always possible to measure relative performance as has been done above for roofs and mortars. If the bricks are of adequate durability, the acceptability of unplastered brickwork, either outside or inside, is a matter of individual judgement rather than of performance. The same is true of the use of brick jalis in place of windows, provided that they are well designed so as to provide enough light and air and do not affect privacy, or allow rain to enter during storms. The use of tile fillers in reinforced concrete slabs leads in fact to an improvement in performance, since both the thermal transmittance and the weight, and hence the heat absorption capacity of the roof, are reduced by the tiles.

It is also clear from the analysis presented above that wherever cement or steel can be saved a social benefit to the state is created in addition to the actual savings in cost; similarly the replacement of cement by tiles or clay products is a switch of resources tending towards the creation of more local employment, and thus is a social benefit, even if no cost reduction is involved.

In table 114 the costs of some recently constructed small residential buildings in Kerala are given. Three of these are of conventional design with plastered brick and stone masonry walls and reinforced concrete slab roof. The costs per unit area of these vary between 240 and 350 rupees per square metre. The cheapest of the three is a Public Works Department construction for which there is very low expenditure on services; the most expensive is a private house for which the unit costs of both labour and material are likely to be rather higher than for a Public Works Department building. Between 25 per cent and 35 per cent of the total cost of each of these buildings was accounted for by cement and steel alone.

By comparison, a house built at the same time at the Centre for Development Studies, using essentially the technology recommended in the report, cost only 113 rupees per square metre. The savings which can be achieved by using this technology are therefore apparently even higher than the report itself indicates, although at least a part of the cost reduction is due more to organizational factors than to the technology as such.

<sup>1</sup> See foot-note a.

TABLE 114. KERALA: CONSTRUCTION COSTS OF SOME RECENT RESIDENTIAL BUILDINGS

|  | (1)                        | (2)                                    | (3)                          | (4)                          | (5)                                | (6)               |
|--|----------------------------|--|------------------------------|------------------------------|------------------------------------|-------------------|
| Type . . . . .                                     | Public Works<br>Department | Housing board<br>(low-income<br>group) | Owner-<br>built <sup>a</sup> | Owner-<br>built <sup>a</sup> | L. W. Baker<br>designs             |                   |
| Date of<br>completion . . .                        | 1973                       | 1973                                   | 1973                         | 1975                         | 1974 <sup>b</sup>                  | 1975 <sup>c</sup> |
| Plinth area<br>(square<br>metres) . . . .          | 37.4                       | 53.0                                   | 55.0                         | 105.0                        | 57.5                               | 25.3              |
| Total cost<br>(rupees) . . . .                     | 9,000                      | 16,200                                 | 19,280                       | 14,500                       | 6,500                              | 2,500             |
| Cost/unit area<br>(rupees per<br>square metre) . . | 240                        | 305                                    | 350                          | 138                          | 113                                | 99                |
| Form of con-<br>struction:                         |                            |  |                              |                              |                                    |                   |
| Walls . . . . .                                    | Brick,<br>plastered        | Brick,<br>plastered                    | Laterite,<br>plastered       | Sun-dried brick<br>plastered | Unplastered brick                  |                   |
| Roof . . . . .                                     | Reinforced<br>concrete     | Reinforced<br>concrete                 | Reinforced<br>concrete       | Tile-on-<br>timber           | Reinforced concrete<br>filler slab |                   |

SOURCES: Replies to questionnaire.

<sup>a</sup> Built by private contractors under supervision of owner.

<sup>b</sup> Small detached house at Centre for Development Studies, Trivandrum.

<sup>c</sup> Row house in fishing village scheme, Poonthura, Trivandrum.

The house at the Centre for Development Studies and a number of others like it, the work of the architect L. W. Baker, provide ample evidence of the practicality of the cost reduction approach set out in the report, and provide a model which could be widely copied.

#### *Traditional low-cost technology*

A second alternative is also possible. A traditional technology of construction is widely practised in Kerala for which no architects or engineers are employed, yet which results in durable and comfortable buildings at a cost much lower than that of "modern" residential construction. In this technology the walls are built of sun-dried clay blocks set in a mud mortar strengthened by burnt clay brickwork at the corners, openings etc., and plastered with a lime plaster (possibly with some cement added) on both faces; the floors are of beaten earth with a thin cement mortar topping, and the roof is of Mangalore pattern tiles carried on rafters of coconut or other country timber. The costs for such a technology are given in column 4 of table 114. The cost per unit area is of the same order as the Centre for Development Studies house referred to above.

Such a technology uses very little cement and no steel, and by using coconut timbers the problem of supply of forest timber is eliminated. The earth for making the soil blocks is taken from the site itself, and the entire cost of the major walling material is for labour. Thus it is possible to see that the creation of employment and the increase in social benefit of using such a technology are very high.

From the point of view of performance, however, this technology is somewhat inferior to that set out in the committee report. First, the roof is generally without a ceiling, which would cause high mid-day radiation indoors. The discomfort of this is somewhat offset by the height of the roof. Secondly, although the walls are perfectly adequate from a load-bearing point of view, the adherence of plasters to earth walls is seldom satisfactory; cracking and flaking are liable to occur, leading to unsightliness and a need for maintenance.

In spite of these deficiencies, the technology described above is widely used and understood and could provide another possible model for a large-scale housing programme. A rather similar technology was used in the One-Lakh Houses Scheme (described in Annex IV) for which the cost at mid-1974 was 105 rupees per square metre, a figure of the same order as the example quoted here.



#### *Further cost reduction*

Even a cost of 100 rupees per square metre may not be regarded as cheap enough to provide adequate housing on a mass scale, and it is necessary to ask whether there are (not) still cheaper technologies which could provide satisfactory housing.

For roofing, there is of course always palm or grass thatch available. The problem with thatch in tropical climates is its rate of decay. Thatch of coconut palm is generally made of double thickness, half of which must be replaced every year. If the cost and labour of such replacement are added to the initial cost (and although coconut thatch is abundant it is a readily marketable commodity in Kerala), the cost of a tiled ceiling is exceeded within 10 years. Chemical treatment of thatch to prevent decay is possible but the cost of treatments proposed so far is prohibitive.

Similarly, better use could perhaps be made of earth as a walling material. Numerous techniques have been devised for stabilization of soils by the addition of cement, lime, bitumen, and other materials to make a walling material as strong and durable as burnt-clay bricks. Fortunately, with the stabilizer added the cost of such walls is much less than that of walls made of burnt-clay bricks or concrete blocks. Another alternative is the use of earth stabilized by ramming, either as *pisé de terre* or pressed earth blocks. Walls made of these materials, if protected, can have adequate strength and durability, and their construction involves little more than labour and on-site earth. There may therefore be some scope for further cost reduction using these materials.

However, at the present time neither performance standards nor practical experience with these materials exist, and both research and practical experimentation would be needed before any judgement could be made on whether they were suitable for a large-scale housing programme. No research of this sort is apparently being done in Kerala at present.

#### *Attitudes to housing*

Frequent mention has been made in the present annex of the way in which a choice of housing technology is limited by certain general public attitudes towards housing, and it is perhaps worth while returning to this question in conclusion. Expressions such as "fashion", "preconceptions" or "individual judgement" have been frequently used in the above arguments. In practice very little is known about these matters. Yet some measure of their importance is shown by the fact that a good many people are prepared to pay up to 40 per cent more for a "modern" concrete roof, when a tiled roof with a ceiling is in fact climatically preferable.

It is clear then that the mere availability of a cheaper housing technology, even one of demonstrably equivalent performance, is not sufficient to ensure that it will be adopted or accepted. Its very cheapness may in some quarters be counted against it.

This is not to say that public taste in housing is fixed and cannot be changed. But such change is gradual. The present preference for reinforced concrete roofs, even for the low-income group houses of the State Housing Board (table 114, col. 2) no doubt results from the observation that those who are able to pay for them tend to choose to live under such roofs. Likewise, acceptance of a lower-cost housing technology is likely to follow only if enough of those who are in a position to choose more expensive methods are in fact prepared to opt for an approach which is cheaper and generates more social benefit. This will come about only through increased awareness of the real cost to society of unnecessary expense in housing of any sort, whether for the lowest income groups or for the relatively wealthy.

The choice of housing technology, whether for private clients, civil servants or a public works programme cannot therefore be separated from the whole question of social change. And it is possibly only in a context of a general change in the attitude of society to housing—in particular the common attitude that different standards are applicable to different groups in society—that any of the alternatives referred to in earlier paragraphs are likely to find wide-scale application.

## Annex VI

### GUIDELINES TO FINANCING OF THE SCHEMES UNDER THE PROPOSED LABOUR-CUM-DEVELOPMENT BANK

As a pilot project a Labour-cum-Development Bank has been registered in the Ernakulam district as a co-operative society. It proposes to take up in 1975 four lift irrigation schemes and a scheme for the construction of a fish pond in the Alengad and Parur blocks. The names of these schemes and estimates of the capital expenditure involved, as supplied by the district collector, are given below:

| Name of scheme            | Capital expenditure (rupees) |           |                  |           |
|---------------------------|------------------------------|-----------|------------------|-----------|
|                           | Wages                        | Materials | Land acquisition | Total     |
| Thonnammkuzhikulam        |                              |           |                  |           |
| lift irrigation . . . . . | 70,000                       | 46,000    | 22,000           | 138,000   |
| Aduvathuruthu             |                              |           |                  |           |
| lift irrigation . . . . . | 124,000                      | 110,000   | 76,000           | 310,000   |
| Kadungalloor              |                              |           |                  |           |
| lift irrigation . . . . . | 46,000                       | 7,000     | —                | 53,000    |
| Angadikadavu              |                              |           |                  |           |
| lift irrigation . . . . . | 149,000                      | 108,000   | 24,000           | 281,000   |
| Kottuvally Kayal          |                              |           |                  |           |
| fish pond . . . . .       | 900,000                      | 540,000   | —                | 1,440,000 |

The schemes have not yet been worked out in sufficient detail to permit an economic evaluation. In the case of the lift irrigation schemes, estimates have been furnished of the likely increase in output of paddy and of the additional "net profit" per acre, including in "the cultivation expenditure" the cost of all the labour required, whether such labour is hired or supplied by the members of the family farms. A closer scrutiny of these estimates is required though estimates of the addition to output do not appear to be unreasonable. Some further work has also to be done on the hired-labour component of the recurring costs. In the case of the fish pond scheme, the value of the prawns that can be auctioned by the panchayat has been estimated at Rs 250,000, but it is not clear whether there will be any recurring costs to be set against this; nor have the proposed auctioning arrangements been decided upon. In addition to the returns from the sale of prawns, some income is also expected from coconut trees grown on the bunds, but the precise details, the number of nuts expected on average from each tree, the price per nut, the cost of inputs etc., of the estimated income of Rs 20,000 per annum from this source have not been furnished. For these reasons it is not possible to make even rough estimates at this stage of the likely rate of return from each of these schemes.

A question that has been raised meanwhile is how much of the total cost should be recovered from "the beneficiaries" (defined to include only the cultivators whose production would go up as a result of the lift irrigation schemes, and the Kottuvally panchayat which would secure additional revenue from the proposed fish pond). It is difficult to answer this question precisely without more information about the costs and returns in respect of each of the schemes. All that can be attempted at this stage therefore is to lay down some general principles that might be followed in fixing the amounts to be recovered by the Bank from the beneficiaries.

A fact brought up by the district collector is that the lift irrigation schemes proposed are no different from those normally undertaken by the government as part of its development programmes in the five-year plans and that hitherto the beneficiaries have been required to pay no more than Rs 6 per acre of the area brought under irrigation. The beneficiaries can be persuaded to pay more now only on the reasoning that the Labour-cum-Development Bank could finance the implementation of these schemes immediately and that they would therefore

be able to benefit from them much earlier than if they waited for them to be taken up by the government. There is, apparently, evidence that they are persuaded by this argument to pay Rs 100 per acre, or even more, for a specified period and are willing to sign agreements with the Labour-cum-Development Bank binding themselves to make such payment. However, it is the district collector's judgement that, in view of the lenient pricing policy followed by the government hitherto in respect of irrigation, any attempt to recover the full capital expenditure on each scheme may not succeed, and that therefore it might be better at this stage to aim at recovering only about 50 to 60 per cent of the total expenditure on each scheme.

Apart from this practical consideration, a case could be made for subsidizing the entire Labour-cum-Development Bank project to the extent that the social returns from the schemes undertaken by it can be demonstrated to be higher than the private returns. Assuming that the social returns can be calculated with the help of the necessary data, the question remains of how the quantum of the subsidy is to be determined and who should receive the benefit of the subsidy given. Though the issues raised are of a complex nature the solutions, when found, will have to be simple enough to be operationally feasible. It should also be possible to explain the rationale of the subsidy system to any person associated with the Bank, such as a shareholder, a worker employed on the schemes financed by it, a beneficiary, an administrator, or a member of the general public.

If the capital expenditure incurred by the Bank is not to be fully recovered from the beneficiaries (on the grounds that the social returns are higher than the private returns), it is obvious that the state government—which is to provide the necessary finance—will ultimately have to treat as grants part of the finance extended by it to the Bank. In effect this will be a recurring subsidy from the government to the Bank as long as the schemes selected by the latter conform to the conditions which are supposed to be satisfied. The first question to consider therefore is how the state government might fix the quantum of the subsidy to be given by it. The next question would be whether and how the Bank in turn should pass on the subsidy to others.

It will be recalled that the agency of the Labour-cum-Development Bank was proposed for a variety of reasons. One is to involve the local population in the formulation of schemes for providing more employment. Another reason is to ensure that the schemes chosen are as productive as possible, enabling the recoupment of the expenditure of these employment-creating schemes for the purpose of financing still more such schemes in each area. A third is the need to phase the implementation of the schemes in such a way as to provide more employment when no other work is available in the neighbourhood, and avoid the phasing being determined by time-tables based on other considerations, such as spending the sanctioned amount by the end of each financial year. Still another reason is to explore the possibility of inducing those to whom employment is provided, on days when they would have been otherwise idle, to save a fraction of these additional incomes.

Since any bureaucratic control over the Labour-cum-Development Bank by the state government would be contrary to the whole spirit of the proposal it is essential, for the objectives to be realized, that there should be enough incentive for each Bank, and the local population it is intended to serve, to function in such a way as to promote their realization. The subsidies made available by the state government to each Bank could be so devised as to provide the necessary incentives.

One set of desirable proposals offered for consideration is the following. Since at any given time the number of workers that can be offered additional employment will be larger the higher the proportion of additional income they are prepared to save, and since workers would need to be given adequate incentive to save, the state government could give as subsidy to the Bank an amount equal to the deferred component of the wages paid. Thus, if the total wage bill on all schemes financed by the Bank during a year is Rs 150,000 and the workers are agreeable to receiving one third of the wages in the form of three-year fixed deposits, the state government could then give Rs 50,000 as an outright subsidy to the Bank for the year.

Similarly, in order to promote quick and effective recovery from the beneficiaries of expenditures incurred in each scheme, the state government could give as an outright grant each year an amount equal to one half of the payments made by the beneficiaries to the Bank during the year. Thus, the higher the proportion of total expenditure on a scheme recovered from the

beneficiaries the larger will also be the grant element in the financial assistance given by the state government to the Bank, and this will help the Bank to expand its outlays at a faster rate.

Many schemes require for their implementation the acquisition of some land. But such acquisition is also very often used for various malpractices, as when the more powerful landowners in an area get their relatively inferior land acquired for "public purposes" at a handsome profit to themselves. To exert social pressures in the other direction, more particularly since it is now customary for farmers benefiting from minor irrigation schemes to donate the land required for these schemes, it might be useful if the state government offers as outright subsidy to the Bank an amount equal to 75 per cent of the value of the land donated during the year for the implementation of its schemes.

For illustrative purposes, consider the implications of the above suggestions for the Angadikadavu lift irrigation scheme, estimated to cost Rs 280,000. Assuming that the workers employed on the scheme will agree to accept one third of their wages in the form of three-year fixed deposits, that 50 per cent of the total capital expenditure on the scheme will be recovered by the Bank in instalments from the beneficiaries, and that the entire land required for the scheme will be given without charge, the Bank will be entitled to grants from the state government amounting to nearly Rs 140,000. If the entire capital expenditure is recovered from the beneficiaries the grant element of the scheme will come to as much as Rs 210,000.

It will be evident from the foregoing that the more fully the Bank, and the local community it serves, satisfy the conditions specified for promoting a climate favourable to the growth of self-sustained employment the smaller will be the loan element of the expenditure on the schemes the Bank sponsors. If the Bank is able to recover, as a grant, a high proportion of its expenditure, it is open to it to decide what to do with the sum involved. It is already a part of the proposal that workers employed on the schemes should be offered interest at the rate of 12.5 per cent per annum on the deferred component of their wages. In addition, the Bank could use the grants received for taking up schemes in the area which do not offer a high rate of return, such as housing for the poorer sections of the population. Once the subsidies given by the state government are designed to provide incentives in the required directions it should be left to local leadership to decide how best to utilize the agency of the Bank to promote the welfare of the people in each area.

## Annex VII

### A SURVEY OF THE EDUCATED UNEMPLOYED

A sample survey of those registered at the employment exchanges in two districts of Kerala, Trivandrum and Calicut, was conducted by the Centre for Development Studies during April 1973. The present annex gives a brief summary of the results of the surveys. A monograph devoted to a fuller analysis of the results is in course of preparation.

The annex is divided into four sections. Section 1 describes the nature and representativeness of the sample, sections 2, 3 and 4 discuss the socio-economic characteristics, educational attainment and duration of unemployment of the registrants, respectively.

#### 1. THE SAMPLE

##### *Scope of the survey*

As of 31 December 1972 there were about 450,000 work seekers on the live registers of the employment exchanges in Kerala; these registrants can be classified into three groups: (a) those with levels of education below matriculation (the equivalent of which in Kerala is the secondary school leaving certificate), constituting roughly 43 per cent of the total; (b) post-graduates in different subjects and graduates in technical subjects such as medicine, engineering, law, agriculture etc. who form less than 1 per cent of the total; and (c) the remainder who may be described as those with general education of at least matriculation level.<sup>a</sup>

TABLE 115. KERALA: PERCENTAGE DISTRIBUTION OF MATRICULATES ON THE LIVE REGISTER, BY INTERVAL SINCE REGISTRATION

| District             | Less than<br>1 year | 1-2<br>years | 2-3<br>years | More than<br>3 years | Total |
|----------------------|---------------------|--------------|--------------|----------------------|-------|
| Trivandrum . . . . . | 60.0                | 15.7         | 9.7          | 14.6                 | 100.0 |
| Quilon . . . . .     | 36.9                | 30.3         | 19.4         | 13.4                 | 100.0 |
| Alleppey . . . . .   | 34.4                | 24.7         | 25.6         | 15.3                 | 100.0 |
| Kottayam . . . . .   | 57.4                | 18.0         | 8.6          | 16.0                 | 100.0 |
| Trichur . . . . .    | 32.8                | 15.3         | 13.5         | 38.3                 | 100.0 |
| Malappuram . . . . . | 49.3                | 26.7         | 13.7         | 10.0                 | 100.0 |
| Calicut . . . . .    | 9.6                 | 15.1         | 32.1         | 43.2                 | 100.0 |
| Cannanore . . . . .  | 35.8                | 16.8         | 11.6         | 15.0                 | 100.0 |
| Emakulam . . . . .   | 53.3                | 18.1         | 16.1         | 28.7                 | 100.0 |

SOURCE: Kerala, Directorate of Employment.

The survey was restricted to category (c). This category consists of registrants whose highest educational attainment ranges from matriculation to graduate level, including intermediate levels, e.g., completion of the pre-degree or pre-university examination. In a sense this category represents the most important segment of the highly educated employment-seeking population. It excludes those with technical education and post-graduates, i.e., category (b) above, the market for whom is assumed to be of a different nature.

Because of cost considerations the survey was restricted to two of the 11 districts of Kerala, Trivandrum and Calicut. These districts were chosen because they exhibited widely disparate distributions of registrants with respect to the length of time since registration. Table 115 gives the relevant data for nine districts on matriculates who constitute the great majority of registrants.

The employment exchanges also have a so-called dead register of persons who fail to

<sup>a</sup> The figures are based on data in Kerala, State Planning Board, *Economic Review*, 1974 (1975).

renew their registration from time to time. It was decided to choose samples from the dead register also. The reasoning that led to this decision was the following: first, a transfer from the live to the dead register at any given time may be due to the technical reason that a registrant has failed to renew his or her registration in time in accordance with the rules of the exchange. This may happen in the case of a number of currently unemployed persons, although in many cases such a transfer may well mean that the registrant is now employed and no longer seeking work. Secondly, since one of the objectives of the survey was to estimate waiting periods, it was expected that persons with completed waiting periods (i.e., those who either are employed currently or were at some time in the past) will be found in a greater proportion on the dead register than on the live register.

#### *Size of the sample*

The numbers on the live registers at the time of the survey could be ascertained with a fair degree of accuracy from the exchange authorities. But no records were maintained in respect of the dead register and hence it was decided to draw samples only of persons whose registrations had lapsed during the year preceding the date of the survey. In both cases random samples were drawn directly from the stocks of registration cards. The sizes of the population and samples are given in table 116. There was some non-response due to difficulty in tracing some of the registrants. The sample size given in table 116 refers to the number of registrants who were actually interviewed.

TABLE 116. TRIVANDRUM AND CALICUT: SIZES OF POPULATION AND SAMPLES

|                      | Number of persons on the   |                            | Sample size                |                            | Total |
|----------------------|----------------------------|----------------------------|----------------------------|----------------------------|-------|
|                      | Live register <sup>a</sup> | Dead register <sup>b</sup> | Live register <sup>a</sup> | Dead register <sup>b</sup> |       |
| Calicut . . . . .    | 38,108                     | ...                        | 190                        | 119                        | 309   |
| Trivandrum . . . . . | 95,986                     | ...                        | 413                        | 90                         | 503   |

<sup>a</sup> The number on the live register refers to category (c) described in the text.

<sup>b</sup> The exact size of the dead register could not be ascertained; the samples were drawn from approximately 9,000 cards in Calicut and 4,000 cards in Trivandrum.

#### *Representativeness of employment exchange data*

One may ask how adequate are samples from employment exchange registers for studying the characteristics of unemployment. If a large majority of the educated unemployed do not register but seek employment through other avenues it is clear that exchange data will be of little use. A survey conducted by the Kerala Bureau of Economics and Statistics shows that there were about 138,000 unemployed matriculates in the state at the end of 1965.<sup>b</sup> Employment exchange data show that there were about 73,000 matriculates on the live register at about the same time.<sup>c</sup> According to the survey, about 6,000 of those who were on the live register were actually employed. This implies that about 67,000 out of the 138,000 unemployed matriculates registered with the exchanges. Data collected from registrants can accordingly be expected to reflect fairly accurately the characteristics of unemployment among the educated in the state.

## 2. SOCIO-ECONOMIC CHARACTERISTICS OF THE REGISTRANTS

This section attempts to analyse the composition of the stock of registrants at the employment exchanges in the two districts, Trivandrum and Calicut, with respect to a number of socio-economic characteristics.

#### *Current activity status of registrants*

It has already been mentioned in section 1 that the distinction between the live register and the dead register is to a certain extent irrelevant from the standpoint of the market for the educated. The survey data substantiating this belief are given in table 117.

<sup>b</sup> Kerala, Bureau of Economics and Statistics, "Sample survey of employment and unemployment," Employment Studies. Report No. 1 (Trivandrum mimeographed), p. 34.

<sup>c</sup> Kerala, State Planning Board, *Statistics for Planning, Series No. 2, Manpower*, p. 85.

TABLE 117. TRIVANDRUM AND CALICUT: COMPOSITION OF THE LIVE AND DEAD REGISTERS, BY CURRENT ACTIVITY STATUS OF THE REGISTRANTS  
(Number of registrants; percentage distribution in sample)

| Current activity status      | Trivandrum    |               |       | Calicut       |               |       |
|------------------------------|---------------|---------------|-------|---------------|---------------|-------|
|                              | Live register | Dead register | Total | Live register | Dead register | Total |
| Whole-time student . . . . . | 66 (16.0)     | 15 (16.7)     | 81    | 22 (11.6)     | 14 (11.7)     | 36    |
| Employed full time . . . . . | 48 (11.6)     | 36 (40.0)     | 84    | 24 (12.6)     | 38 (31.9)     | 62    |
| Part-time student . . . . .  | 70 (16.9)     | 5 ( 5.5)      | 75    | 19 (10.0)     | 5 ( 4.2)      | 24    |
| Employed part time . . . . . | 22 ( 5.3)     | 7 ( 7.8)      | 29    | 3 ( 1.6)      | 1 ( 0.8)      | 4     |
| Wholly unemployed . . . . .  | 207 (50.1)    | 27 (30.0)     | 234   | 122 (64.2)    | 61 (51.3)     | 183   |
| TOTAL                        | 413 (100.0)   | 90 (100.0)    | 503   | 190 (100.0)   | 119 (100.0)   | 309   |

While whole-time students and those fully employed cannot be regarded as unemployed, part-time students and those employed part time must be included in the category of those actively seeking employment. A majority of the persons classified as part-time students were learning typewriting, shorthand and similar skills in order to enhance their chances of employment, while those designated as "employed part time" were looking for full-time salaried jobs but in the meantime were engaged in occupations giving some income. Viewed in this light, table 117 shows that, in both districts, while the proportion of currently employed persons is larger on the dead register than on the live register, the proportion of unemployed persons on the dead register is quite substantial; the proportion of wholly or partly unemployed registrants among those whose registrations have lapsed during the year preceding April 1973 was 43 per cent in Trivandrum and 56 per cent in Calicut. While the belief that not all those on the live register are unemployed is hence well founded, it can be clearly seen that ignoring the so-called dead register will lead to serious underestimation of the magnitude of unemployment.

The question may now be asked as to what gives rise to the phenomenon of whole-time students and currently employed persons registering at the employment exchange. Registration by students must be attributed to two facts: (a) as shown in chapter IX, the waiting period for salaried jobs is in general long and longer still for those whose levels of education are relatively lower; and (b) priority queues are formed in the exchanges in accordance with the length of time of registration. The phenomenon of currently employed (whole-time) persons registering with the exchanges is easily explained by the fact that a large number of salaried jobs are of temporary tenure. Until ultimately absorbed into a position of permanent tenure, registrants go through alternating phases of being unemployed and employed. The search for a job with a higher salary also gives rise to such registrations; this is particularly true in situations of acute competition in which persons accept jobs with salaries below their normal expectations.

#### *Family income*

Table 118 gives the distribution of the sampled registrants by levels of family income. It can be seen that the low-income groups, particularly households with incomes below Rs 100 per month, are well represented in the market for the educated.

TABLE 118. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY LEVEL OF INCOME

|                                 | Family income per month (rupees) |         |          |         |
|---------------------------------|----------------------------------|---------|----------|---------|
|                                 | 0-100                            | 100-350 | Over 350 | Total   |
| Trivandrum:                     |                                  |         |          |         |
| Number of registrants . . . . . | 153                              | 264     | 86       | 503     |
| (Percentage of total) . . . . . | (30.4)                           | (52.5)  | (17.1)   | (100.0) |
| Calicut:                        |                                  |         |          |         |
| Number of registrants . . . . . | 90                               | 163     | 56       | 309     |
| (Percentage of total) . . . . . | (29.1)                           | (52.8)  | (18.1)   | (100.0) |

#### *Income and occupation of main earner in family*

The income level of a household can be typically low or high depending on the nature of the occupation of the head of the household. In chapter IX this relationship was discussed to some extent. Table 119 gives the distribution of registrants by level of income as well as by occupation of the main earner in the family.

It can be seen that levels of income of households vary widely in both districts. In this respect the wage-labour households and the families in which the main earner has white-collar salaried employment represent two extremes; whereas the former belong mostly to the low-income groups, the latter are represented in greater proportions in the high-income groups.

If income classifications are ignored, registrants from wage labour and cultivator households (i.e., self-employed in agriculture) number 333, constituting 41 per cent of the total; the high rate of participation by these classes in the market for the educated is indicative of the extent of vertical mobility in the state.



TABLE 119. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY LEVEL OF INCOME AND OCCUPATION OF MAIN EARNER IN FAMILY

| Occupation of main earner in family |                              |            |                                   |            |             |            |                       |            |                           |            |       |            |
|-------------------------------------|------------------------------|------------|-----------------------------------|------------|-------------|------------|-----------------------|------------|---------------------------|------------|-------|------------|
| Family income per month (rupees)    | Self-employed in agriculture |            | Self-employed outside agriculture |            | Wage labour |            | Salaried white-collar |            | Salaried non-white-collar |            | Total |            |
|                                     | No.                          | Percentage | No.                               | Percentage | No.         | Percentage | No.                   | Percentage | No.                       | Percentage | No.   | Percentage |
| Trivandrum                          |                              |            |                                   |            |             |            |                       |            |                           |            |       |            |
| 1-50 . . . . .                      | 12                           | 9.7        | 6                                 | 6.7        | 7           | 10.0       | 2                     | 1.4        | 0                         | 0.0        | 27    | 5.4        |
| 51-100 . . . . .                    | 43                           | 34.7       | 24                                | 26.7       | 39          | 55.7       | 7                     | 5.0        | 13                        | 16.7       | 126   | 25.0       |
| 101-200 . . . . .                   | 44                           | 35.5       | 28                                | 31.1       | 16          | 22.9       | 20                    | 14.2       | 24                        | 30.8       | 132   | 26.2       |
| 201-350 . . . . .                   | 17                           | 13.7       | 21                                | 23.3       | 7           | 10.0       | 54                    | 38.3       | 33                        | 42.2       | 132   | 26.2       |
| 351-500 . . . . .                   | 5                            | 4.0        | 11                                | 12.2       | 1           | 1.4        | 28                    | 19.8       | 7                         | 9.0        | 52    | 10.3       |
| Over 500 . . . . .                  | 3                            | 2.4        | 0                                 | 0.0        | 0           | 0.0        | 30                    | 21.3       | 1                         | 1.3        | 34    | 6.8        |
| TOTAL                               | 124                          | 100.0      | 90                                | 100.0      | 70          | 100.0      | 141                   | 100.0      | 78                        | 100.0      | 503   | 100.0      |
| Calicut                             |                              |            |                                   |            |             |            |                       |            |                           |            |       |            |
| 1-50 . . . . .                      | 4                            | 4.5        | 1                                 | 2.3        | 5           | 9.8        | 0                     | 0.0        | 1                         | 2.9        | 11    | 3.6        |
| 51-100 . . . . .                    | 27                           | 30.7       | 8                                 | 18.2       | 31          | 60.8       | 8                     | 8.7        | 5                         | 14.7       | 79    | 25.6       |
| 101-200 . . . . .                   | 40                           | 45.5       | 16                                | 36.4       | 12          | 23.5       | 16                    | 17.4       | 16                        | 47.1       | 100   | 32.4       |
| 201-350 . . . . .                   | 8                            | 9.0        | 12                                | 27.3       | 2           | 3.9        | 33                    | 35.9       | 8                         | 23.5       | 63    | 20.4       |
| 351-500 . . . . .                   | 7                            | 8.0        | 4                                 | 9.1        | 1           | 2.0        | 18                    | 20.6       | 3                         | 8.8        | 33    | 10.7       |
| Over 500 . . . . .                  | 2                            | 2.3        | 3                                 | 6.8        | 0           | 0.0        | 17                    | 18.5       | 1                         | 2.9        | 23    | 7.4        |
| TOTAL                               | 88                           | 100.0      | 44                                | 100.0      | 51          | 100.0      | 92                    | 100.0      | 34                        | 100.0      | 309   | 100.0      |

### Income and caste

Another characteristic, caste, is related both to the nature of occupation and income. As shown in chapter IX, these relationships hold within the whole population of the state and are also reflected among the educated unemployed.

Generally speaking, the so-called forward-caste households have higher levels of education and income (see tables 56 and 57) whereas households belonging to the lower castes are characterized by lower levels of income and education. The data in table 120 show the caste income relationship among the educated unemployed; Muslims, Ezhavas, other backward castes and scheduled castes belong mostly to low-income groups but forward castes are equally well represented in both high- and low-income groups. None the less, the data on proportions of the different castes among the registrants can neither support nor refute the presence of discrimination in the labour market. This is best illustrated in the case of Christians who form only 1.6 per cent of the total number of registrants; in the state as a whole they constitute about 20 per cent of the total population. But in order to characterize the degree of unemployment among Christians as low it would be necessary to compare the figure of 1.6 per cent with the proportion of Christians in the outflow of the educational system. No information is available for making such a comparison. That Christians form a disproportionately small group within the educational system itself is, however, very unlikely because they are highly organized with respect to educational facilities. The explanation for the low proportion of Christians among registrants must be sought in the degree of self-employment and possibly of migration outside the state, or even in lower rates of registration with the employment exchanges compared to other castes.

TABLE 120. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY FAMILY INCOME AND CASTE

| Family income<br>per month<br>(rupees) | Caste      |  |         |         |                             |                                   | Total |
|--|------------|--|---------|---------|-----------------------------|-----------------------------------|-------|
|  | Christians | Nairs,<br>Brahmins<br>and other<br>forward<br>castes | Muslims | Ezhavas | Other<br>backward<br>castes | Scheduled<br>castes and<br>tribes |       |
| Trivandrum                             |            |  |         |         |                             |                                   |       |
| 1-50 . . . . .                         | 0          | 10   | 1       | 4       | 1                           | 1                                 | 27    |
| 51-100 . . . . .                       | 0          | 34   | 10      | 28      | 45                          | 9                                 | 126   |
| 101-200 . . . . .                      | 0          | 48   | 7       | 31      | 37                          | 9                                 | 132   |
| 201-350 . . . . .                      | 5          | 49   | 9       | 20      | 38                          | 11                                | 132   |
| 351-550 . . . . .                      | 1          | 26   | 1       | 8       | 16                          | 0                                 | 52    |
| Over 550 . . . . .                     | 2          | 25   | 0       | 3       | 4                           | 0                                 | 34    |
| TOTAL                                  | 8          | 192  | 28      | 94      | 151                         | 30                                | 503   |
| Calicut                                |            |  |         |         |                             |                                   |       |
| 1-50 . . . . .                         | 0          | 6  | 1       | 3       | 0                           | 1                                 | 11    |
| 51-100 . . . . .                       | 4          | 18   | 10      | 35      | 9                           | 3                                 | 79    |
| 101-200 . . . . .                      | 5          | 28   | 16      | 34      | 14                          | 3                                 | 100   |
| 201-350 . . . . .                      | 6          | 26   | 7       | 14      | 7                           | 3                                 | 63    |
| 351-550 . . . . .                      | 0          | 16   | 4       | 7       | 5                           | 1                                 | 33    |
| Over 550 . . . . .                     | 1          | 12   | 2       | 5       | 3                           | 0                                 | 23    |
| TOTAL                                  | 16         | 106  | 40      | 98      | 38                          | 11                                | 309   |

### Occupation and caste

The relationship between caste and income is explained to a certain extent by the association between caste and occupation. Once again it must be emphasized that these relationships hold good not just among the educated unemployed but among the people of the state in general. Table 121 gives the distribution of registrants by caste and occupation of the main earner in the household. To interpret the data in table 121 it must be recalled that wage

TABLE 121. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY CASTE AND OCCUPATION OF MAIN EARNER IN FAMILY  
(Number of registrants; percentage distribution in sample)

Number of registered persons, percentage distribution in sample,

| Occupation of<br>main earner in family    | Caste       |   |             |             |                                 |                                   | Total        |
|---|-------------|---|-------------|-------------|---------------------------------|-----------------------------------|--------------|
|   | Christians  | Nairs, Brah-<br>mins and<br>other for-<br>ward castes | Muslims     | Ezhavas     | All other<br>backward<br>castes | Scheduled<br>castes and<br>tribes |              |
| Trivandrum                                |             |   |             |             |                                 |                                   |              |
| Self-employed in<br>agriculture . . . . . | —<br>(0)    | 45<br>(23)  | 4<br>(14)   | 32<br>(34)  | 40<br>(26)                      | 3<br>(11)                         | 124          |
| Self-employed<br>elsewhere . . . . .      | —<br>(0)    | 21<br>(11)  | 15<br>(54)  | 26<br>(28)  | 21<br>(14)                      | 7<br>(23)                         | 90           |
| Wage labour . . . . .                     | —<br>(0)    | 10<br>(5)   | 3<br>(11)   | 17<br>(18)  | 30<br>(20)                      | 10<br>(33)                        | 70           |
| Salaried, white-collar . . . . .          | 7<br>(87)   | 76<br>(40)  | 2<br>(7)    | 10<br>(11)  | 40<br>(26)                      | 6<br>(20)                         | 141          |
| Salaried, non-white-<br>collar . . . . .  | 1<br>(13)   | 40<br>(21)  | 4<br>(14)   | 9<br>(10)   | 20<br>(14)                      | 4<br>(13)                         | 78           |
| TOTAL                                     | 8<br>(100)  | 192<br>(100)  | 28<br>(100) | 94<br>(100) | 151<br>(100)                    | 30<br>(100)                       | 503<br>(100) |
| Calicut                                   |             |   |             |             |                                 |                                   |              |
| Self-employed in<br>agriculture . . . . . | 7<br>(44)   | 35<br>(33)  | 9<br>(22)   | 28<br>(29)  | 8<br>(21)                       | 1<br>(9)                          | 88           |
| Self-employed<br>elsewhere . . . . .      | 2<br>(13)   | 8<br>(8)  | 12<br>(30)  | 10<br>(10)  | 12<br>(32)                      | 0<br>(0)                          | 44           |
| Wage labour . . . . .                     | 0<br>(0)    | 13<br>(12)  | 7<br>(17)   | 23<br>(23)  | 3<br>(8)                        | 5<br>(46)                         | 51           |
| Salaried, white-collar . . . . .          | 5<br>(31)   | 39<br>(37)  | 11<br>(28)  | 21<br>(21)  | 12<br>(32)                      | 4<br>(36)                         | 92           |
| Salaried, non-white-<br>collar . . . . .  | 2<br>(13)   | 11<br>(10)  | 1<br>(3)    | 16<br>(16)  | 3<br>(8)                        | 1<br>(9)                          | 34           |
| TOTAL                                     | 16<br>(100) | 106<br>(100)  | 40<br>(100) | 98<br>(100) | 38<br>(100)                     | 11<br>(100)                       | 309<br>(100) |

labour and self-employment in agriculture were identified as occupations generally associated with low levels of income (see table 119). The two districts have disparate distributions, but it can be seen that among the registrants belonging to forward castes a significant proportion also belongs to households where the main earner is engaged in either of the two low-income occupations. This explains why the forward castes are well represented in both low- and high-income groups (see table 120).

But what is more significant is that a fairly high proportion of registrants belonging to "other backward castes" and scheduled castes and tribes are from households of white-collar salaried earners. However, as already mentioned, the reported income levels of these households were generally low (see table 120) and hence it must be concluded that, although the occupation of the main earner was classified as "white-collar", salary levels were low. The explanation for this may lie in the reservation system under which a certain proportion of salaried jobs are reserved for these caste groups, but they cannot take advantage of the system to any great extent in respect of jobs with high salaries, since securing such jobs would require higher levels of education than is general among these groups.

### 3. LEVELS OF EDUCATIONAL ATTAINMENT

In the two districts combined, the sample of 812 registrants consisted of 574 matriculates, 117 graduates and 121 with intermediate levels of education. Thus, matriculates constitute by far the most numerous category among the educated unemployed in the state. As shown in chapter IX, this phenomenon is partly explained by the fact that Kerala's educational system places greater emphasis on school than on higher levels of education. Higher education is restricted to the high-income groups of society.

#### *Interrelationships between levels of education and some socio-economic characteristics*

Tables 122 to 124 give the composition of registrants in each education group by income, caste and occupational differences. It can be seen that lower levels of education are associated with lower levels of family income. Graduates among the unemployed belong mostly to high-income families. On the other hand, the caste compositions within each educational category are not widely different (see table 123). The data in table 124, however, indicate that there are significant differences in the composition of each educational category with respect to different occupational groups. In general, registrants belonging to wage-labour households are found in greater proportions in the matriculate category than in the higher educational groups; the reverse is true of registrants from families of white-collar salary earners who dominate the group of unemployed graduates. Since the two variables, income and occupation, are considered separately, it is difficult to say to what extent the occupation of the head of the household determines the level of education independently of income. The following section provides greater insight into the nature of the market for the educated.

### 4. DURATION OF UNEMPLOYMENT

The main form of employment conforming to the expectations of the educated is the salaried one. Accordingly, during the course of the survey, employment and unemployment were defined only with respect to salaried jobs. The question of whether a person was unemployed in the usual sense, that is, of having no gainful employment of any form, was not considered.

Using the criterion of salaried employment, it is possible to summarize the employment and unemployment experience of a given registrant in terms of time spent from the date of completion of education to the time of interview (April 1973). The distribution of registrants according to the total time spent since completion of education will first be analysed (see table 125).

It can be seen that, as of 1 April 1973, the matriculates in the sample in Trivandrum had spent on average 62.5 months and in Calicut, 54.8 months since completing their education; the averages corresponding to higher levels of education are lower. The composition of the stock of matriculate registrants shows that in both districts more than 40 per cent of the registrants, who can be regarded as work-seekers of one kind or another, had completed their education more than five years previously. Of 184 persons in Trivandrum, and 104 in Calicut, who have been effectively in the labour market for more than five years, 170 in Trivandrum and 96 in Calicut were matriculates. A comparison with those having higher levels of education clearly shows that this form of variability in the composition of the stock can come about only if the rates of absorption into employment are considerably lower for matriculates.

#### *Analysis of waiting period*

But the entire time spent waiting cannot be regarded as a period of unemployment. As has been seen, some of the registrants were wholly employed at the time of interview, others reported having employment experience in the past although they were unemployed at the time of the investigation. Consequently, it is more meaningful to analyse the data with respect to the waiting period involved in getting a salaried job. A large number of such jobs are of temporary tenure and consequently one who is so employed is essentially in a transitory phase. Following this a distinction is made between the first job, the second job, and so on. The waiting periods involved in securing jobs after the termination of the first job are also estimated along with the waiting period corresponding to the first job (the first waiting period) and its tenure.

To estimate the first waiting period, ideally one should observe the movement of a cohort until every member of it secures a salaried job. Alternatively, one must take the currently

TABLE 122. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY LEVELS OF EDUCATION AND FAMILY INCOME

| Level of education      | Family income per month (rupees) |        |         |        |               |        |       |         |
|-------------------------|----------------------------------|--------|---------|--------|---------------|--------|-------|---------|
|                         | Less than 100                    |        | 100-350 |        | More than 350 |        | Total |         |
| Trivandrum              |                                  |        |         |        |               |        |       |         |
| Matriculation . . . . . | 127                              | (36.3) | 180     | (51.4) | 43            | (12.3) | 350   | (100.0) |
| Pre-degree . . . . .    | 17                               | (22.4) | 48      | (63.2) | 11            | (14.4) | 76    | (100.0) |
| Degree . . . . .        | 9                                | (11.7) | 36      | (46.8) | 32            | (41.5) | 77    | (100.0) |
| TOTAL                   | 153                              | (30.4) | 264     | (52.5) | 86            | (17.1) | 503   | (100.0) |
| Calicut                 |                                  |        |         |        |               |        |       |         |
| Matriculation . . . . . | 76                               | (33.9) | 116     | (51.8) | 32            | (14.3) | 224   | (100.0) |
| Pre-degree . . . . .    | 10                               | (22.2) | 26      | (57.8) | 9             | (20.0) | 45    | (100.0) |
| Degree . . . . .        | 4                                | (10.0) | 21      | (52.5) | 15            | (37.5) | 40    | (100.0) |
| TOTAL                   | 90                               | (29.1) | 163     | (52.8) | 56            | (18.1) | 309   | (100.0) |

TABLE 123. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY LEVELS OF EDUCATION AND CASTE

| Level of education      | Caste      |   |           |           |                             |                                   |           | Total |
|-------------------------|------------|---|-----------|-----------|-----------------------------|-----------------------------------|-----------|-------|
|                         | Christians | Nairs,<br>Brahmins<br>and other<br>forward castes | Muslims   | Ezhavas   | Other<br>backward<br>castes | Scheduled<br>castes and<br>tribes |           |       |
| Trivandrum              |            |   |           |           |                             |                                   |           |       |
| Matriculation . . . . . | 5 (1.4)    | 127 (36.3)  | 18 (5.1)  | 66 (18.8) | 116 (33.1)                  | 18 (5.1)                          | 350 (100) |       |
| Pre-degree . . . . .    | 1 (1.3)    | 29 (38.2)   | 5 (6.6)   | 18 (23.7) | 14 (18.4)                   | 9 (11.8)                          | 76 (100)  |       |
| Degree . . . . .        | 2 (2.6)    | 36 (46.7)   | 5 (6.5)   | 10 (13.0) | 21 (27.3)                   | 3 (3.9)                           | 77 (100)  |       |
| TOTAL                   | 8 (1.6)    | 192 (38.2)  | 28 (5.6)  | 94 (18.7) | 151 (30.0)                  | 30 (6.0)                          | 503 (100) |       |
| Calicut                 |            |   |           |           |                             |                                   |           |       |
| Matriculation . . . . . | 9 (4.0)    | 78 (34.8)   | 26 (11.6) | 76 (33.9) | 29 (12.9)                   | 6 (2.7)                           | 224 (100) |       |
| Pre-degree . . . . .    | 3 (6.7)    | 15 (33.3)   | 5 (11.1)  | 17 (37.7) | 2 (4.4)                     | 3 (6.7)                           | 45 (100)  |       |
| Degree . . . . .        | 4 (10.0)   | 13 (32.5)   | 9 (22.5)  | 5 (12.5)  | 7 (17.5)                    | 2 (5.0)                           | 40 (100)  |       |
| TOTAL                   | 16 (5.2)   | 106 (34.3)  | 40 (12.9) | 98 (31.7) | 38 (12.3)                   | 11 (3.6)                          | 309 (100) |       |

TABLE 124. TRIVANDRUM AND CALICUT: DISTRIBUTION OF SAMPLE REGISTRANTS, BY LEVEL OF EDUCATION AND OCCUPATION OF MAIN EARNER IN FAMILY

| Level of education      | Occupation of main earner in family |                            |                |                          |                   |           | Total |
|-------------------------|-------------------------------------|----------------------------|----------------|--------------------------|-------------------|-----------|-------|
|                         | Self-employed<br>in agriculture     | Self-employed<br>elsewhere | Wage<br>labour | Salaried<br>white-collar | Salaried<br>other |           |       |
| Trivandrum              |                                     |                            |                |                          |                   |           |       |
| Matriculation . . . . . | 85 (24.3)                           | 63 (18.0)                  | 57 (16.3)      | 80 (22.9)                | 65 (18.5)         | 350 (100) |       |
| Pre-degree . . . . .    | 21 (27.6)                           | 14 (18.4)                  | 9 (11.8)       | 22 (28.9)                | 10 (13.3)         | 76 (100)  |       |
| Degree . . . . .        | 18 (23.4)                           | 13 (16.9)                  | 4 (5.2)        | 39 (50.6)                | 3 (3.9)           | 77 (100)  |       |
| TOTAL                   | 124 (24.7)                          | 90 (17.9)                  | 70 (13.9)      | 141 (28.0)               | 78 (15.5)         | 503 (100) |       |
| Calicut                 |                                     |                            |                |                          |                   |           |       |
| Matriculation . . . . . | 68 (30.4)                           | 29 (12.9)                  | 40 (17.9)      | 57 (25.4)                | 30 (13.4)         | 224 (100) |       |
| Pre-degree . . . . .    | 9 (20.0)                            | 8 (17.8)                   | 9 (20.0)       | 15 (33.3)                | 4 (8.9)           | 45 (100)  |       |
| Degree . . . . .        | 11 (27.5)                           | 7 (17.5)                   | 2 (5.0)        | 20 (50.0)                | 0 (0.0)           | 40 (100)  |       |
| TOTAL                   | 88 (28.5)                           | 44 (14.2)                  | 51 (16.5)      | 92 (29.8)                | 34 (11.0)         | 309 (100) |       |

TABLE 125. TRIVANDRUM AND CALICUT: DISTRIBUTION OF THE SAMPLE, BY LEVEL OF EDUCATION AND TIME SPENT FROM DATE OF COMPLETION OF EDUCATION TO DATE OF SURVEY

(Months)

| Level of education      | Average time spent | Time spent after completion of education until 1973 |            |           |              |           |
|-------------------------|--------------------|---|------------|-----------|--------------|-----------|
|                         |                    | 0-20  | 20-40      | 40-60     | More than 60 | Total     |
| Trivandrum              |                    |   |            |           |              |           |
| Matriculation . . . . . | 62.5               | 51 (14.6)   | 74 (21.1)  | 55 (15.7) | 170 (48.6)   | 350 (100) |
| Pre-degree . . . . .    | 19.4               | 50 (65.8)   | 10 (13.2)  | 8 (10.5)  | 8 (10.5)     | 76 (100)  |
| Degree . . . . .        | 24.2               | 34 (44.2)   | 32 (41.5)  | 5 (6.5)   | 6 (7.8)      | 77 (100)  |
| TOTAL                   | 50.1               | 135 (26.8)  | 116 (23.1) | 68 (13.5) | 184 (36.5)   | 503 (100) |
| Calicut                 |                    |   |            |           |              |           |
| Matriculation . . . . . | 54.8               | 48 (21.4)   | 43 (19.2)  | 37 (16.5) | 96 (42.9)    | 224 (100) |
| Pre-degree . . . . .    | 23.8               | 25 (55.6)   | 5 (11.1)   | 9 (20.0)  | 6 (13.3)     | 45 (100)  |
| Degree . . . . .        | 28.1               | 13 (32.5)   | 21 (52.5)  | 4 (10.0)  | 2 (5.0)      | 40 (100)  |
| TOTAL                   | 46.8               | 86 (27.8)   | 69 (22.3)  | 50 (16.2) | 104 (33.7)   | 309 (100) |



employed population as the basis for such an estimate. Both these procedures are impractical, hence the estimates discussed here are based on the experience of the registrants at the exchanges. These estimates have the following obvious limitations: (a) not all the registrants have the experience of salaried employment; and (b) those who register may have typically longer waiting periods than those who do not. But to the extent that jobs are of a temporary nature the employment exchanges can be expected to reflect the effects of this type of functioning of the labour market, one aspect of which is the presence of large numbers of currently employed persons on the live register (see table 117). A problem remains. The stock is composed of registrants who have been actively seeking employment for varying lengths of time. Estimating the average waiting period on the basis of the experience of those who have had salaried employment at one time or another may lead to biases. This can best be illustrated by means of a simple example. Suppose that on the date of the survey it is found that 50 out of 100 persons had some work experience and that the corresponding average first waiting period is 2 years. The figure of 2 years as an estimate of the average waiting period of the population may be biased either downwards or upwards because it ignores the fact that in the sample 50 persons have been found without any work experience. For example, if the average time already spent by these 50 is 3 years it implies that the average waiting period for 50 per cent of the population is at least as high as 3 years whereas for the remaining 50 per cent it is 2 years. Thus the population average must be at least 2.5 years. In a similar manner an upward bias can result if the jobless on the exchange are all relatively new entrants. In what follows attention is focused on all the relevant statistics, namely, the proportion of those with jobs and the average time spent by them as well as the average first waiting period corresponding to those who have had jobs.

#### *A summary*

Of the registrants surveyed in Trivandrum, 71 per cent had no jobs even after spending varying lengths of time searching for employment (see table 126). The average time spent by them on the date of the survey, April 1973, was 40.4 months. The remaining 29 per cent who had been employed at some time had an average first waiting period of 36.6 months. In Calicut the average time spent by those who never had a salaried job—constituting, again, 71 per cent of the total registrants—was 38.6 months, and the average first waiting period of those who had some experience of salaried employment, i.e., the remaining 29 per cent—was 34 months. Thus, there is practically no difference in the severity of the situation in the two districts.

Since over two thirds of the registrants had already spent 3.5 years since completing their education without a job the average waiting period for the educated as a whole is much higher than the estimate suggested by the experience of those who had a job and for whom the average waiting period was approximately 3 years.

TABLE 126. TRIVANDRUM AND CALICUT: FIRST WAITING PERIOD AND RELATED STATISTICS, BY LEVEL OF EDUCATION

| <i>Level of education</i> | <i>Percentage of registrants who had jobs</i> | <i>Average waiting period (months)</i> | <i>Percentage of registrants who had no jobs</i> | <i>Average time spent by the jobless (months)</i> | <i>Average monthly pay, first job (rupees)</i> |
|---------------------------|---|--|--|---|--|
| <i>Trivandrum</i>         |   |  |  |   |  |
| Matriculation . . . . .   | 30.3  | 45.4                                   | 69.7   | 51.9  | 132  |
| Pre-degree . . . . .      | 17.1  | 17.4                                   | 82.9   | 13.2  | 160  |
| Degree . . . . .          | 36.4  | 15.0                                   | 63.6   | 18.3  | 190  |
| All classes . . . . .     | 29.2  | 36.6                                   | 70.8   | 40.4  | 146  |
| <i>Calicut</i>            |   |  |  |   |  |
| Matriculation . . . . .   | 26.8  | 43.5                                   | 73.2   | 46.3  | 118  |
| Pre-degree . . . . .      | 22.2  | 21.4                                   | 77.8   | 17.3  | 161  |
| Degree . . . . .          | 50.0  | 14.4                                   | 50.0   | 27.4  | 227  |
| All classes . . . . .     | 29.1  | 33.4                                   | 70.9   | 38.6  | 149  |

The relationship between the waiting period, on the one hand, and family background, on the other, will now be examined. The data are given in tables 126 to 129.

*Determinants of the waiting period*

Before discussing these tables it may be recalled that the analysis in sections 2 and 3 was inconclusive in respect of the influence of socio-economic characteristics on unemployment. This was mainly because the analysis there, based on the number of registrants belonging to different socio-economic groups, ignored the variability in work experience between these groups. Tables 126 to 129 make good this omission and bring out the relationships in a more unambiguous manner.

TABLE 127. TRIVANDRUM AND CALICUT: FIRST WAITING PERIOD AND RELATED STATISTICS, BY FAMILY INCOME

| <i>Family income per month (rupees)</i> | <i>Percentage of registrants who had jobs</i> | <i>Average first waiting period (months)</i> | <i>Percentage of registrants who had no job</i> | <i>Average time spent by the jobless (months)</i> | <i>Average monthly pay, first job (rupees)</i> |
|---|---|--|---|---|--|
| <i>Trivandrum</i>                       |   |  |   |   |  |
| Less than 100. . . . .                  | 20.9  | 32.9   | 79.1  | 45.2  | 109  |
| 101-200 . . . . .                       | 25.7  | 41.8   | 74.3  | 44.2  | 132  |
| 201-350 . . . . .                       | 36.3  | 40.8   | 63.7  | 34.4  | 150  |
| 351-550 . . . . .                       | 32.6  | 32.4   | 67.4  | 35.6  | 184  |
| More than 550 . . . . .                 | 47.0  | 21.3   | 53.0  | 26.2  | 192  |
| <i>Calicut</i>                          |   |  |   |   |  |
| Less than 100. . . . .                  | 15.5  | 40.5   | 84.5  | 36.1  | 135  |
| 101-200 . . . . .                       | 27.0  | 37.2   | 73.0  | 43.8  | 112  |
| 201-350 . . . . .                       | 41.3  | 29.6   | 58.7  | 40.9  | 153  |
| 351-550 . . . . .                       | 45.4  | 23.1   | 54.6  | 36.9  | 183  |
| More than 550 . . . . .                 | 34.7  | 24.4   | 65.3  | 22.7  | 215  |

TABLE 128. TRIVANDRUM AND CALICUT: FIRST WAITING PERIOD AND RELATED STATISTICS, BY OCCUPATION OF MAIN EARNER IN FAMILY

| <i>Occupation of main earner in family</i> | <i>Percentage of registrants who had jobs</i> | <i>Average first waiting period (months)</i> | <i>Percentage of registrants who had no job</i> | <i>Average time spent by the jobless (months)</i> | <i>Average monthly pay, first job (rupees)</i> |
|--|---|--|---|---|--|
| <i>Trivandrum</i>                          |   |  |   |   |  |
| Self-employed in agriculture . . . . .     | 22.6  | 26.4   | 77.4  | 38.3  | 124  |
| Self-employed elsewhere. . . . .           | 23.3  | 30.6   | 76.7  | 40.2  | 168  |
| Wage labour . . . . .                      | 18.6  | 46.6   | 81.4  | 46.6  | 131  |
| Salaried, white-collar . . . . .           | 44.0  | 34.3   | 56.0  | 34.4  | 162  |
| Salaried, other . . . . .                  | 29.5  | 50.6   | 70.5  | 46.7  | 116  |
| <i>Calicut</i>                             |   |  |   |   |  |
| Self-employed in agriculture . . . . .     | 22.7  | 25.9   | 77.3  | 43.0  | 153  |
| Self-employed elsewhere. . . . .           | 29.5  | 27.8   | 70.5  | 32.1  | 146  |
| Wage labour . . . . .                      | 19.6  | 40.6   | 80.4  | 35.7  | 119  |
| Salaried, white-collar . . . . .           | 38.0  | 35.9   | 62.0  | 34.5  | 166  |
| Salaried, other . . . . .                  | 35.3  | 41.6   | 64.7  | 50.4  | 121  |

TABLE 129. TRIVANDRUM AND CALICUT: FIRST WAITING PERIOD AND RELATED STATISTICS, BY CASTE

| <i>Caste</i>                      | <i>Percentage of registrants who had jobs</i> | <i>Average first waiting period (months)</i> | <i>Percentage of registrants who had no jobs</i> | <i>Average time spent by the jobless (months)</i> | <i>Average monthly pay, first job (rupees)</i> |
|-----------------------------------|---|--|--|---|--|
| <i>Trivandrum</i>                 |   |  |  |   |  |
| Christians . . . . .              | 50.0  | 35.0   | 50.0   | 51.7  | 185  |
| Nairs, Brahmins, etc. . . . .     | 37.5  | 35.1   | 62.5   | 38.6  | 155  |
| Muslims . . . . .                 | 14.3  | 21.5   | 85.7   | 45.2  | 134  |
| Ezhavas . . . . .                 | 24.4  | 39.0   | 75.6   | 40.3  | 143  |
| Other backward castes . . . . .   | 26.5  | 39.3   | 73.5   | 44.6  | 128  |
| Scheduled castes/tribes . . . . . | 13.3  | 34.5   | 86.7   | 25.5  | 132  |
| <i>Calicut</i>                    |   |  |  |   |  |
| Christians . . . . .              | 18.7  | 47.3   | 81.3   | 28.7  | 143  |
| Nairs, Brahmins etc. . . . .      | 32.1  | 35.8   | 67.9   | 45.8  | 153  |
| Muslims . . . . .                 | 20.0  | 28.2   | 80.0   | 27.7  | 219  |
| Ezhavas . . . . .                 | 29.5  | 36.0   | 70.5   | 38.7  | 130  |
| Other backward castes . . . . .   | 36.8  | 30.1   | 63.2   | 40.7  | 140  |
| Scheduled castes/tribes . . . . . | 18.2  | 2.5  | 81.8   | 28.6  | 140  |

The following inferences drawn from tables 126-129 are obvious.

#### *Educational levels*

(1) Waiting periods are inversely correlated to levels of education. The difference between the matriculates and the other two groups is very sharp: the corresponding waiting periods are in the neighbourhood of 45 and 17 months, respectively. (2) Chances of finding jobs are significantly higher for degree holders. Among the jobless, the times spent (until April 1973) are highest for the matriculates. (3) Average monthly pay rises with level of education. These facts are not unexpected, but the striking thing about them is the magnitude of differences that exist between matriculates and other groups.

#### *Caste*

Waiting periods for Muslims and scheduled castes appear to be somewhat lower than those for the others. But average waiting periods in the population also depend on the proportion of persons not finding jobs and on the waiting periods already spent by them. Since among Muslims and the scheduled castes this proportion is higher than that corresponding to the others, the only inference possible is that caste is unlikely to be an important determinant of the waiting period.

#### *Income*

(1) Waiting periods are inversely related to family income. (2) Chances of securing salaried employment rise with family income and, correspondingly, among the jobless average waiting periods are longer for the relatively poorer. (3) Monthly pay corresponding to the job secured rises with family income.

#### *Occupation of the main earner in the family*

(1) Waiting periods are significantly lower for registrants belonging to households of salaried white-collar earners. (2) Chances of finding employment are lowest for registrants from wage-labour households. (3) Since the average waiting period of the population would depend on both these factors it is obvious that this type of family background may be a disadvantage.

#### *Conclusion*

The evidence seems to support the hypothesis that, apart from the level of education, there are other socio-economic characteristics that influence the waiting period. In particular, low levels of family income may be a disabling factor in the labour market. Similarly, the status of

one's family may confer certain privileges or, on the other hand, may prove to be a handicap. But since the analysis is based on one variable at a time some of the observed correlations have to be interpreted with caution. For example, the poor may have longer waiting periods not because of poverty but because their educational attainments may be lower. But to the extent that educational level itself is determined by the socio-economic status of the family one must conclude that the scales may be weighted against some groups irrespective of direct discrimination in the labour market. In other words, some classes of people, e.g., wage labourers, have low family incomes and consequently children in families belonging to such groups acquire low levels of education and face the labour market with the certain prospect of longer waiting periods than the others.

Direct verification of the presence or absence of discrimination is difficult, however, due to the smallness of the sample, which does not allow the estimation of waiting periods according to more than one classificatory variable at a time, since very few reported employment experience.

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Districts and taluks

I. Cannanore district

|                 |    |
|-----------------|----|
| 1. Kasargode    | 9  |
| 2. Hosdurg      | 12 |
| 3. Thaliparamba | 12 |
| 4. Cannanore    | 11 |
| 5. Tellicherry  | 11 |
| 6. North Wynad  | 6  |

II. Kozhikode district

|                |    |
|----------------|----|
| 7. Badagara    | 8  |
| 8. Quilandy    | 7  |
| 9. South Wynad | 50 |
| 10. Kozhikode  | 16 |

III. Malappuram district

|                                 |    |
|---------------------------------|----|
| 11. Ernad <sup>a</sup>          | 14 |
| 12. Tirur <sup>a</sup>          | 14 |
| 13. Perinthalmanna <sup>b</sup> | 4  |
| 14. Ponnani <sup>b</sup>        | 7  |
| Mannarsikkat                    | 7  |

IV. Palghat district

|                |    |
|----------------|----|
| 15. Ottappalam | 15 |
| 16. Palghat    | 9  |
| 17. Alathur    | 6  |
| 18. Chittur    | 13 |

V. Trichur district

|                  |    |
|------------------|----|
| 19. Thalappilly  | 12 |
| 20. Trichur      | 21 |
| 21. Chowghat     | 7  |
| 22. Cranganore   | 2  |
| 23. Mukundapuram | 14 |

VI. Ernakulam district

|                  |    |
|------------------|----|
| 24. Cochin       | 12 |
| 25. Perur        | 7  |
| 26. Alwaye       | 9  |
| 27. Kunnathunad  | 6  |
| 28. Muvattupuzha | 16 |
| 29. Kadayannoor  | 13 |

VII. Idikki district

|                               |   |
|-------------------------------|---|
| 30. Devikulam <sup>c</sup>    | 6 |
| 31. Thodupuzha <sup>c</sup>   | 8 |
| 32. Udumbanchola <sup>c</sup> | 4 |
| 33. Peermade <sup>c</sup>     | 5 |

VIII. Kottayam district

|                   |    |
|-------------------|----|
| 34. Valam         | 8  |
| 35. Meenachil     | 11 |
| 36. Kottayam      | 11 |
| 37. Changanassery | 5  |
| 38. Kanjirappally | 6  |

IX. Alleppey district

|                    |    |
|--------------------|----|
| 39. Shertalai      | 9  |
| 40. Ambalapuzha    | 6  |
| 41. Kuttanad       | 8  |
| 42. Thiruvalla     | 10 |
| 43. Changanoor     | 7  |
| 44. Mavelikkara    | 8  |
| 45. Karthigappally | 6  |

X. Quilon district

|                    |    |
|--------------------|----|
| 46. Karunagappally | 9  |
| 47. Kunnathoor     | 9  |
| 48. Pathanamthitta | 13 |
| 49. Pathanapuram   | 7  |
| 50. Kottarakkara   | 9  |
| 51. Quilon         | 10 |

XI. Trivandrum district

|                   |    |
|-------------------|----|
| 52. Chirayinkil   | 8  |
| 53. Nedumangad    | 12 |
| 54. Trivandrum    | 24 |
| 55. Neyyattinkara | 13 |

<sup>a</sup> Formed part of Kozhikode district till 1969.

<sup>b</sup> Formed part of Palghat district till 1969.

<sup>c</sup> Formed part of Kottayam district till 1971.

<sup>d</sup> Formed part of Ernakulam district till 1971.

— District boundary

..... Taluk boundary