


# CENSUS OF INDIA, 1951

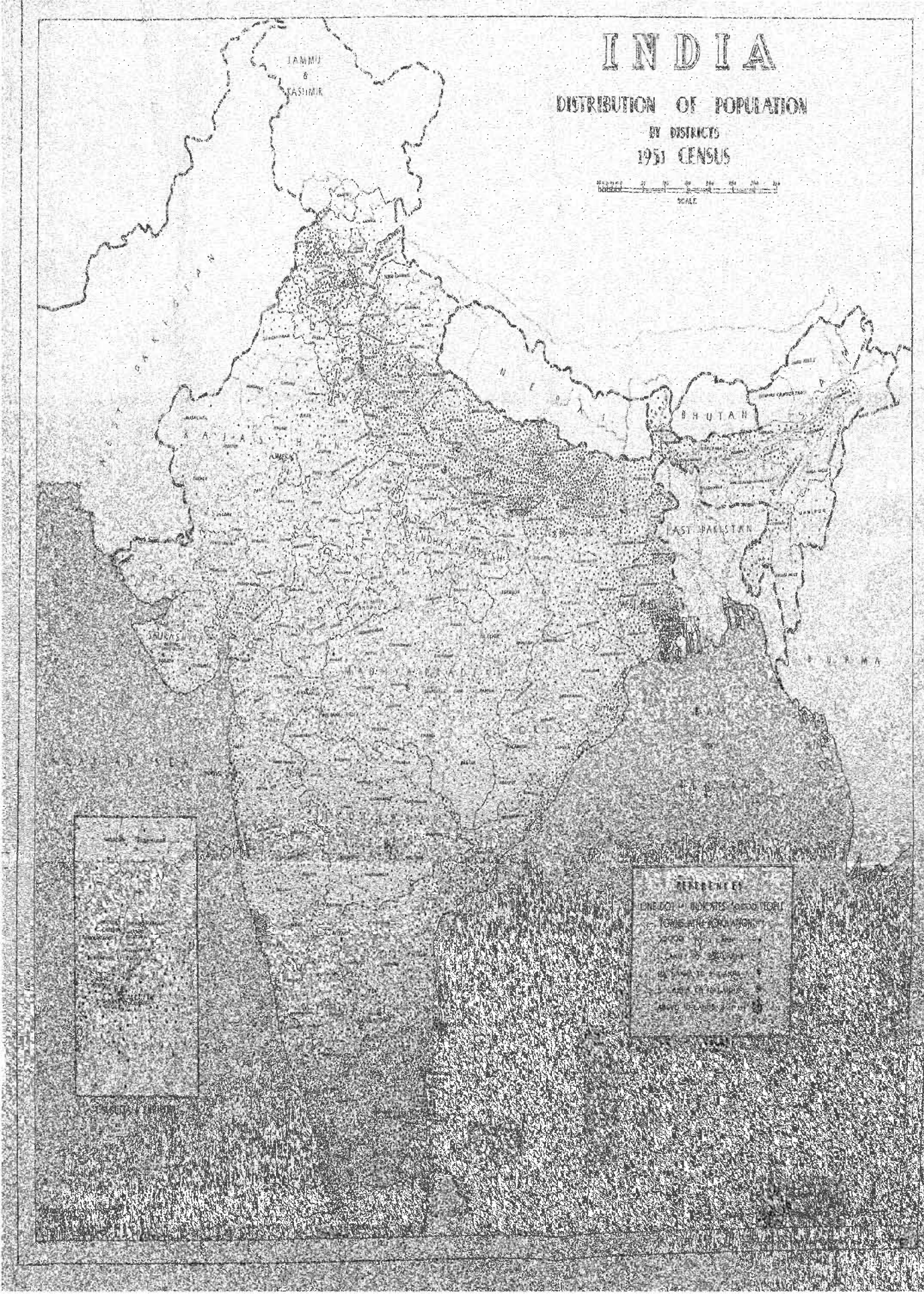
## VOLUME I

## I N D I A

### PART I-A — REPORT




R. A. GOPALASWAMI,
OF THE INDIAN CIVIL SERVICE,
*Registrar General, India and ex-officio Census Commissioner for India*


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| PART I-B—Appendices | . Rs. 10/- or 16 sh. | Rs. 3/- or 5 sh. |
| PARTS I-A & I-B (*combined*) | . Rs. 15/- or 23 sh. 6 d. | Rs. 5/- or 8 sh. |

PRINTED IN INDIA BY THE SURENDRA PRINTERS PRIVATE LTD., DELHI
AND PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI, 1957

*FEW PEOPLE OUTSIDE realise that census is an admimistrative operation of great dimensions and, in addition, it is a scientific process. Indian census, in particular, covers the largest population in the world and it is also one of the most economical administrative operations. Census as an institution goes back to the remote past, but it is no longer a mere counting of heads; it involves extraction of information which plays a vital role in the determination of many of our administrative policies. The facts elicited during the course of this operation yield valuable scientific data of sociological importance. In many matters it provides a useful guide for the effectiveness or otherwise of our economic policies. The theory of population is in itself an interesting part of economics. The census helps us to test and adapt that theory to facts.*

—Sardar VALLABHBHAI PATEL

No. 51/59/53-RG

THE REGISTRAR GENERAL, INDIA

*New Delhi*, the 1st August, 1953

From

Shri R. A. Gopalaswami, I.C.S.,
Registrar General, India ; and
*ex-officio* Census Commissioner for India

To

The Secretary to the Government of India,
Ministry of Home Affairs,
New Delhi

Sir,

I have the honour to submit herewith my report on the 1951 Census.

Yours faithfully,

R. A. GOPALASWAMI.

Registrar General, India ; and
*ex-officio* Census Commissioner for India

# INTRODUCTION

**The 1951 Census Reports**—The reports on the 1951 Census are issued in 17 volumes, which are divided into 63 parts. The first of these volumes contains the All-India Census Report. It is divided into five parts entitled :

PART I-A—REPORT;

PART I-B—APPENDICES TO THE REPORT;

PART II-A—DEMOGRAPHIC TABLES;

PART II-B—ECONOMIC TABLES (General Population);

PART II-C—ECONOMIC TABLES (Rural and Urban Population).

The other volumes which are divided into 39 parts, contain the State Census Reports. These are prepared by my colleagues—the Superintendents of Census Operations—in different states as shown below :

| *Name of Superintendent* | *Volume number* | *Number of parts* | *Name of state(s)* |
|---|---|---|---|
| Shri RAJESHWARI PRASAD, I.A.S. . . . . | II | 5 | Uttar Pradesh |
| Shri S. VENKATESWARAN, I.C.S. . . . . | III | 3 | Madras and Coorg |
| Mr. J. B. BOWMAN, I.C.S. . . . . | IV | 4 | Bombay, Saurashtra and Kutch |
| Shri RANCHOR PRASAD, I.A.S. . . . . | V | 3 | Bihar |
| Shri ASOK MITRA, I.C.S. . . . . | VI | 6 | West Bengal and Sikkim |
| Shri J. D. KERAWALLA, I.A.S. . . . . (*Died on 7-10 1952*) | VII | 6 | Madhya Pradesh |
| Shri LAKSHMI CHANDRA VASHISHTHA, of Punjab Civil Service . . . . . | VIII | 4 | Punjab, *PEPSU*, Delhi, Himachal Pradesh and Bilaspur |
| Shri C. K. MURTHY, I.A.S. . . . . | IX | 4 | Hyderabad |
| Shri YAMUNA LAL DASHORA . . . . . | X | 5 | Rajasthan and Ajmer |
| Shri M. AHMED, of Orissa Civil Service . . . . . | XI | 3 | Orissa |

| | | | |
|---|---|---|---|
| Shri R. B. VAGHAIWALLA, I.C.S. . . . . | XII | 4 | Assam, Manipur and Tripura |
| Dr. U. S. NAIR . . . . . | XIII | 3 | Travancore-Cochin |
| Shri. J. B. MALLARADHYA, I.A.S. . . . . | XIV | 2 | Mysore |
| Shri RANGLAL . . . . . | XV | 4 | Madhya Bharat and Bhopal |
| Shri N. K. DUBE . . . . . | XVI | 2 | Vindhya Pradesh |
| Shri A. K. GHOSH, I.C.S. . . . . | XVII | 1 | Andaman and Nicobar Islands |
| | | 59 | |

2. **District Census Handbooks**—In addition to the All-India Census Report and the State Census Reports, 307 District Census Handbooks have been compiled by my colleagues. Each handbook relates to one district separately and contains all the 1951 Census statistics relating to different local areas within the district as well as the basic totals of population (by eight separate livelihood classes) for every village and every ward of every town in the district. The handbooks (which are issued as State Government publications) also include other items of information relating to the districts which could be readily assembled and seemed likely to be useful for purposes of reference.

3. **Census of India Brochures**—It will be noted that the statistical information contained in the All-India Census Report is limited to demographic and economic data relating to the country as a whole. Other types of data are published separately in a series of brochures. These are self-contained papers, which present the relevant statistics with the minimum of introductory information required for their proper understanding and use. This series of brochures also includes a summary of demographic and economic data which it was found necessary to make available to the public in advance of the main report, as well as some which are of a specialised nature.

The following brochures have been published :

(*i*) Final Population Totals;
(*ii*) Population Zones, Natural Regions, Sub-regions and Divisions;
(*iii*) Sample Verification of the 1951 Census Count;
(*iv*) Religion;
(*v*) Summary of Demographic and Economic Data;
(*vi*) Special Groups.

(*vii*) Maternity Data;
(*viii*) Languages;
(*ix*) Displaced Persons;
(*x*) Age Tables;
(*xi*) Life Tables;
(*xii*) Literacy and Educational Standards; and
(*xiii*) Subsidiary Tables.

4. **Cost**—These are the end-products of the 1951 Census. The total cost involved cannot be stated exactly until after next year. But as most of the expenditure is known, the total can be estimated fairly closely. It is reckoned that the Central Government will have spent 149 lakhs of rupees in all on the 1951 Census. This works out to a sum of Rs. 41/12 per 1,000 persons enumerated. The corresponding rate for the 1931 Census (the last census for which full tabulation was undertaken) was Rs. 15/8. The rise in the unit cost is smaller than the increase which has occurred in the general level of prices, wages and salaries since 1931.

5. **Preparation**—The system of census-taking in India is somewhat unusual. It used to be likened in the past to the phoenix—the only bird of its kind which is reputed to complete its life-cycle by burning itself on the funeral pile and then to rise from the ashes with renewed youth to live through another cycle. Mr. M. W. M. YEATTS described it in somewhat less complimentary terms as follows :

> "The system, if that word can be used here, is in brief that every 10 years some officer is appointed to conduct a census and officers to work under him are appointed in each province. The states take corresponding action. These appointments are made at the minimum of time beforehand and within one year questionnaires have to be settled, the whole country divided into enumeration units, a hierarchy of enumeration officers created and trained, millions of schedules of slips printed and distributed over the face of the country, the whole process of enumeration carried out and checked, tabulation then carried out in offices located in any old place that can be found, on make-shift pigeon-holes and furniture and with temporary staffs, rushed through the presses—and then, in the third year the whole system is wound up, the officers and the office staffs are dispersed and India makes haste to discard and forget as soon as possible all the experience so painfully brought together."

Shortly after the transfer of power, Government decided to put an end to

this reproach. The action taken by Government was described in the following terms by the late Sardar VALLABHBHAI PATEL, then Home Minister, when he inaugurated the first Census Conference :

> "Ever since I assumed charge of the Home Ministry, I have been taking some interest in census matters and I was really very happy to have been instrumental in placing on the Statute Book a permanent enactment dealing with the whole operation of Census.....
>
> "Hitherto, the Census used to be looked upon as a decennial operation for which haphazard temporary arrangements used to be made. I have already stated that there is now a permanent Census Act on the Statute Book and Government have already a permanent office of the Registrar General and Census Commissioner. It is our intention through this unified organisation to effect continuous improvement over the whole field of population data including the Census and vital statistics and to conduct experiments in sampling which would reduce not only the elaboration of these operations but also the cost."

Mr. YEATTS, who had taken part in the 1931 Census as the Superintendent of Census Operations in Madras and directed the 1941 Census as Census Commissioner for India, was appointed Registrar General and *ex-officio* Census Commissioner. Thanks to these arrangements, it was possible to begin advance planning for the 1951 Census somewhat earlier than at former censuses. A provisional questionnaire was drawn up; printing of census slips was taken in hand; a general outline of the scheme of operations was drawn up; and the officers were selected and earmarked for appointment as state census superintendents. Then, Mr. YEATTS fell ill and went on leave. I took charge of the census preparations in November 1949 as a temporary leave arrangement, in addition to my other duties in the Ministry of Home Affairs. Unfortunately, Mr. YEATTS, died in August 1950, when his responsibility devolved on me entirely.

A definite stage in the preparatory period was reached during the last week of February 1950, when the newly appointed state census superintendents met in conference. We discussed the work before us in all aspects and achieved an agreed understanding of our tasks. Final orders of Government were obtained on the dates to be fixed for the census and on certain issues of policy affecting the scope of census enquiries. The questionnaire was finalised, as also a set of model all-India instructions. Detailed local instructions were prepared by my colleagues in all the local languages. Census charges were delimited in every district, divided into census circles and sub-divided into

census blocks—the ultimate territorial unit for purposes of census enumeration. The census workers were selected and allotted to their respective charges, circles and blocks. They were supplied with forms and stationery, given oral as well as written instructions, practised and tested. During the first week of February 1951, when the preparatory phase ended, a temporary organisation consisting of about 7 lakhs of field workers was got ready for action. The exact numbers, according to reports received, were as follows : *5,93,518 census enumerators, grouped under the supervision and guidance of 80,006 census supervisors, themselves directed by 9,854 census charge officers.*

6. **Enumeration**—The nature of the work entrusted to the field workers is clearly described in a message which was sent to them on the eve of enumeration by Shri C. RAJAGOPALACHARI, then Home Minister of the Government of India :

"Dear colleagues in the Census work ! This is the first census held under orders of the Republic of free India. I am addressing the enumerators in particular. You have the privilege and honour of taking a hand in the first census of free India. Ten years hence the next census will be held. Yours is the earliest privilege. You are an enumerator and therefore you build the very base of the whole big structure. The base is, as you know, the most important part of any structure. The record of your work will remain carefully kept for use throughout the next ten years.

"Enumeration begins at sunrise on the 9th day of February. From then upto sunrise on the 1st March you will be visiting all the houses in your block, locating all the people for whose enumeration you are responsible ; and ascertaining and recording, in respect of all of them, the replies which are given to you for the prescribed census questions. On the 1st, 2nd and 3rd days of March you will re-visit all the houses for final check. You will then make sure that you have prepared the record of census enumeration in all respects as instructed, and hand it over to the supervisor.

"Yours is not an isolated local inquiry. You are one of about six hundred thousand patriots, all of whom will be engaged on an identical task at the same time. All of you are jointly responsible for enumerating all the people. Collectively you will prepare a record of basic facts relating to the life and livelihood of all the citizens and families in our Republic.

"If this record is to be correct and complete, the part which you contribute

should, in itself, be correct and complete. You should master the simple instructions which you have received, and apply them uniformly and conscientiously. These instructions are based on a common plan for the country as a whole. Like a swarm of bees that build a beautiful hive according to the laws of geometry, each doing its part in obedience to a mystic urge, you should do your part according to conscience and the sense of truth inherent in us all.

IMPORTANT THINGS TO REMEMBER

"*First*,—EVERY PERSON SHOULD BE ENUMERATED ONCE, AND NOT MORE THAN ONCE. Most people would be enumerated at their usual place of residence. There are a few who should be enumerated wherever they are found.

"*Secondly*,—Do not grudge the time and effort which will be necessary to get correct and complete answers to the questions relating to ECONOMIC STATUS AND MEANS OF LIVELIHOOD.

"I do hope you will take pride over the quality of your contribution to this nation-wide enterprise and do your best. GOD BLESS YOU !"

During the last 21 days of February 1951, 6 lakhs of census workers visited 644 lakhs of occupied houses and made enquiries. The information supplied to them by about 7 crores of citizens was recorded in 3,569 lakhs of census slips each of which was a dossier of one person. Then or later the more important items of the information contained in these dossiers were transcribed in the National Register of Citizens of which one part is allotted to every village and every ward of every town. The Register shows all the occupied houses and households arranged in numerical order ; and against each household every line records the informaton relating to one member of the household.

The census slips and the National Register of Citizens were the record of basic information collected during the 1951 Census. We ascertained the following particulars in respect of every person who was enumerated :

(*i*) Name, relationship to head of household, birth-place, sex, age and marital status ;

(*ii*) Household economic status, employment status (if any), principal means of livelihood and subsidiary means of livelihood (if any) ; and

(*iii*) Nationality, religion, membership of 'special group'* (if any), mother-

*This relates to Scheduled Castes, Scheduled Tribes, Anglo-Indians and certain classes treated provisionally as 'backward' for purposes of the Census.

tongue, bilingualism (if any), literacy and educational standard, and particulars of displacement (for displaced persons only).

In addition to these items which were common to all parts of India one other item was prescribed in each state by the State Government concerned.

7. **Tabulation**—The second phase of census operations, *viz.*, enumeration ended with the second visit to all houses carried out during the first three days of March and the report by the field workers of the number counted by them. These reports were transmitted from the block, circle and charge, through the district administrative hierarchy, to state census superintendents and to me, and the 'Provisional Totals' based on them published during the second fortnight of April 1951 for districts, states and the country as a whole. The third phase commenced during April-May 1951, with the opening of 52 temporary tabulation offices, sited at convenient centres in all parts of the country; and the arrival at these offices of the census slips and National Register of Citizens together with abstracts and relevant information prepared by local officers.

The manner in which these offices were to be organised, workers recruited and trained, and the nature of the work to be performed in these offices had been planned in advance. The main principles were discussed and settled in a conference held during the last week of December 1950. Very detailed instructions designed to secure rigid uniformity of forms and procedures as well as safeguards against error had been settled and issued.

There were three stages in the working of these offices. The first was 'sorting and compilation' at the end of which, the numbers relating to each item of information were extracted from the census slips by sorters on what are called 'sorter's tickets' and then put together by compilers in 'posting statements' for the smaller territorial units within each district. This was the most important stage of tabulation. It was also the most expensive since the tabulation offices were at maximum strength while it was in progress. According to detailed information available about all the 52 offices except one (Hyderabad) for which figures are not available, 47,218 man-months were used up in this process of sorting and compilation. It took 10·4 sorter-months, 2·4 compiler-months and 1·1 supervisor-months to sort and compile the dossiers of one lakh of people.†

†In other countries, electrically operated machinery is used at this stage, thus rendering the employment of a large staff unnecessary. A proposal that such machinery should be used at this census in order to carry out a part of the work was considered carefully and decided against, on the ground that it would certainly increase the cost and, in all probability, take more time. Subsequent experience has not indicated any reason to regret the decision to rely entirely on human agency.

The second stage of tabulation consists in processing the compilers' posting statements into the main census tables in the form prescribed for all states; the institution of arithmetical checks and counter-checks for avoidance of error; and finally their scrutiny and independent check in a central tabulation office set up within my office. The final tables are then prepared for the press and go out as separate parts containing purely statistical material with brief introductions and explanations.

The third stage of tabulation consists in the preparation of what are called 'subsidiary tables' and constitutes statistical preparation for the next phase—*viz.*, study and report. The aim at this stage is two-fold. One is to work out derivative data such as rates and percentages so as to institute comparison between the 1951 Census data and the corresponding data of previous censuses. The other is to work out the inter-connections between the census data and other important data (these are mainly vital statistics and cultivation statistics). Here again, identical forms and instructions were prescribed in advance. A special difficulty of a fairly formidable character was presented by the fact that the boundaries of India as well as of almost all states and a great many districts had undergone very extensive changes after the 15th August, 1947. All the relevant statistical data of earlier years had to be recomputed for the new territorial units; and the manner in which this was done had to be clearly explained. The three stages mentioned above are applicable to the work done in the tabulation offices controlled by my colleagues. The second and third of these three stages were reproduced in the central tabulation office, where the all-India tables were prepared on the basis of state tables which had been checked in this office and approved for publication.

8. **Study and Report**—It has been a regular feature of all previous censuses (except that of 1941 when practically all tabulation except the basic population totals and community totals was dispensed with) that the census organisation did not content itself with the bare presentation of statistical data. The data were subjected to careful study and the results of the study were embodied in narrative reports of quite considerable length. Three broad purposes were sought to be served by such study :

*First*,—It was necessary to assess the value, in terms of completeness, reliability and comparability of the data procured and furnish such comments and explanations as would be helpful to users of census statistics. The officers who trained the field staff and scrutinised the basic record in the various stages of tabulation were in the best position to do this work;

*Secondly*,—Much of the material collected at successive censuses is of an identical nature or at any rate relatable and comparable. A comparative study, with the help of the subsidiary tables already mentioned, helped to bring out evidence of changes in various characteristics which were usually important and significant either directly as matters of public interest or as the raw material for more specialised economic and social enquiries which might be undertaken by others; and

*Thirdly*,—There are a great many topics of interest relating to the social and economic life of the people. Where the officers in charge of census operations were specially interested in any of them, they were in a position to collect and study the relevant data along with the routine study referred to above and the results were set out in the form of specialised discussion of such topics.

The Census Commissioner and the Superintendents are chosen primarily with reference to their intimate knowledge of the administrative machinery whose services are required to be mobilised as well as their capacity for general management of staff employed on governmental duties, rather than for any specialised knowledge or aptitude for making statistical computation or for carrying out economic and social research. The quality of the result achieved by their study was, therefore, of a varying nature. Almost all reports were characterised by their painstaking thoroughness, while the intellectual standard set by some reports was conspicuously high.

Careful consideration was given, on this occasion, to the question whether precedent should be followed at all or whether the census organisation might content itself with bare presentation of statistical material. The conclusion was reached that it was essential that the first and second of these three purposes should be secured as satisfactorily as possible within the time, and that the officers should exercise their discretion in respect of the third. In one respect, however, a departure from precedent was clearly stipulated from the outset. The 1951 Census was *not* to concern itself with questions regarding races, castes and tribes—except in so far as the necessary statistical material relating to 'special groups' was to be published and certain other material relating to backward classes collected and made over to the Backward Classes Commission. On the other hand, it was also enjoined that the maximum possible attention should be paid to economic data. The instructions which were issued to state census superintendents about the preparation of state census reports indicated the general structure required, and concluded with a statement of objective in the following terms :

"It does not matter if available material does not permit of analysis sufficiently definite for reaching conclusions.....It does not also matter if the time available to reporting officers is insufficient for carrying out even such analysis as may be permitted by the material. What is essential is that the prescribed subsidiary tables should be correctly prepared and the reporting officers should apply their mind to these tables and attempt a review on the lines indicated. .....*The reports thus prepared will be of value mainly as the starting point of more detailed studies (to be undertaken subsequently) of the inter-relationships of population changes and economic changes in the country as a whole, as well as in the different states and natural divisions of the country. If this purpose is served, reporting officers will have discharged their duty.*"

All state census superintendents have been proceeding on these lines generally in preparing their reports. It should be emphasised here that the views expressed in these reports written by different officers are of a purely personal nature. They should not be regarded as committing Government in any manner to any particular expression of opinion on controversial issues of any kind.

While the study of census data organised on the lines above described was proceeding, public interest in the population problem was increasing rapidly. The Planning Commission took cognisance of the subject and initiated group discussions in which I also took part. The report of the Planning Commission embodies specific proposals and visualises the collection of data bearing on the problem, partly as the basis for action by Government and partly as material for consideration by a Commission, the setting up of which is mentioned as a possibility.

In these circumstances, I felt that an all-India report on the 1951 Census would be materially incomplete, if it failed to deal adequately with the population problem of the country. I have accordingly set out a clear and full statement of my own personal appreciation of the problem and what I conceive to be the correct solution. *As explained already the views expressed in the report are of a purely personal nature and should not be understood to commit Government in any manner whatsoever.*

9. **Arrangement of the All-India Report**—The All-India Report, as already mentioned, is divided into five parts. Three of these parts (PARTS II-A, II-B and II-C) consist of statistical tables, accompanied by introductory notes which explain the manner in which the data were secured and the tables were compiled.

PART I-A is the narrative report proper and PART I-B consists of the APPENDICES. The report is divided into five chapters. The first three chapters present the picture as observed in 1951.

*The first chapter, entitled "The Land and the People*—1951" focusses attention on the area of land per head of population available in the country as a whole, describes how this varies in different parts of the country and how this variation is relatable to variations in topography, soil and rainfall. After dividing the country into 5 natural regions and 15 sub-regions in terms of these factors, a description is given of the salient facts of population and land use in three groups of sub-regions which are distinguished from one another as high, low and medium density sub-regions. Finally a comparison is instituted, with other countries of the world which leads to the conclusion not only that there is a very notable shortage of 'land area *per capita*' in our country but that the utilisation of usable land within this limited area has proceeded very far already. A great deal of statistical information—in parts newly ascertained—has been brought together in APPENDIX I (*Population and Land Use*) and used as the basis for the account given in the first chapter.

*The second chapter is headed "The Pattern of Living*—1951." It begins with an account of total numbers and numbers in different size-groups of villages and towns and the distribution of the people among them. Then there is a description of houses and households—information regarding the relative proportion of households of different size-groups as well as their composition being a new feature of this census. This is followed by a description of the variations of the sex-ratio in different parts of the country. The age-structure of our people is then described and compared with that of other countries of the world. The last two sections of this chapter contain much material which is both new and important. It is well-known that data based on registration of births and deaths are both incomplete and defective. But a serious and largely successful attempt was made on this occasion to put them to the fullest use by separating the grain from the chaff and studying them in combination with census data and all other data which were capable of throwing some light on the subject. A systematic study of the whole subject is contained in APPENDIX II (*Note on Birth Rates and Death Rates*). As a result of this study, reasonably firm conclusions are reached regarding the levels (which prevailed during the decade ending 1950), of our true birth rates and death rates (as distinguished from our registered birth rates and death rates). Estimates are furnished not only for India as a whole, but six broad zones (North India, East India, South India, West India, Central India and North-West India) ; and they are then compared with similar rates of other

countries. The information presented in the last section of this chapter entitled 'Maternity Pattern' is even more important. Thanks to the wise use made by certain State Governments of the 'local option' given to them to put one question of their choice, very valuable data have been secured about the average number of children born to mothers of different age-groups. Careful analysis of the data thus secured has yielded, for the first time, a clear picture of the pattern of maternity in this country and permits a comparison with the corresponding pattern in other countries. These statistics have led me to a new form of presentation of the solution for the population problem which, I believe, offers definite practical advantages. These are explained in the last chapter.

*The third chapter entitled "Livelihood Pattern*—1951" begins with the 'India Picture.' It contains a complete accounting of how the people obtain their means of livelihood. The next section explains how the pattern varies from one zone to another. The last section brings out the main features of contrast between the pattern in India and the pattern in Great Britain and the United States of America. The account given in this chapter is furnished in as simple terms as possible ; but serious students are sure to have very exacting standards of precision in respect of definitions and classifications. In order to meet their needs, a systematic review of a more formal nature has been prepared and included in the report as APPENDIX III (*Review of Census Economic Data*). In this review a full account is given of the pitfalls to be avoided in instituting comparison of the data between one part of the country and another for the same census, and between two different censuses for the same territory, and the limitations subject to which it is possible to draw significant conclusions.

*The fourth chapter is headed "Before and Since*—1921". This, like the three previous chapters, is strictly factual ; but it lays the foundation on which the assessment of the population problem presented in the last chapter is subsequently erected. It is a fundamental conclusion of the study—of which the results are set out in this report—that 1921 is the 'Great Divide'. Our pattern of growth subsequent to that year is entirely unlike the pattern of growth before that year. The fact that there is a sharp contrast is first established by a detailed analysis of the relevant figures of all parts of India. Then the reasons which account for that fact are established by documentary evidence. The growth of population had been checked by famine and pestilence repeatedly before 1921. Except for one tragic exception, population grew unchecked after 1921. APPENDIX IV (*Famine and Pestilence*), which contains relevant extracts from old reports, furnishes in detail the evidence which is summarised in the first section of this chapter. The next section

is devoted to showing that 1921 is the 'Great Divide' in another respect—before 1921, cultivation had more than kept pace with the growth of population ; after 1921, cultivation was lagging far behind while the population total was forging ahead. Developing the conception of 'land area *per capita*,' we have the area of cultivated land *per capita*, and based on it, of productivity of cultivation *per capita*. This had been stationary or moving up before 1921 ; after 1921, it was falling steeply. The value of the material presented in this section consists in this : great care has been taken to sift available data about cultivation, locate the areas for which statistics of high quality are available on a comparable basis over a long period and then work out the results for these areas. The third section sets out the results of the comparative study contained in APPENDIX III and explains how the livelihood pattern has been changing in response to unchecked growth of population and the decline of cultivation *per capita*. The economic strength of the average household is seen to have weakened. The last section of this chapter brings out the final and most important aspect of the 'Great Divide'. Notwithstanding the famines of the last century, India used to be surplus in food. Round about 1921, India developed a shortage of foodgrains and this shortage has been growing ever since—slowly but steadily. The relevant statistics have been brought together from different sources and they bring out unmistakably how the change came about over a series of years. The change-over is dealt with in different aspects. First, there are the statistics of imports and exports of grains already referred to. Then, there are the statistics of grain prices (for which, thanks to the completeness of information available with the Government of Madras, we can form a good picture for the last 150 years and institute an illuminating comparison with the trend of grain prices in the United States of America). Finally, there is the profound change in the whole conception of the responsibilities of the State in respect of the supply and distribution of grains, the breakdown of free trade, the Bengal Famine, and the development of 'state trading system' on which crores of our people depend to-day. The evidence in support of material conclusions in the analysis made in this section is presented fully in APPENDIX V (*Shortage of Foodgrains*).

*The last chapter entitled "The Prospect*—1981" poses the question—what will be the pattern of our growth during the next thirty years ? We know whither the current on which we have been drifting since 1921 is taking us. We also know of the great attempts now being made to stop this dangerous drift and steer the ship of State to safety. How strong is the current ? And how strong are these attempts ? How is a favourable outcome to be assured ? These questions are discussed at length and firm conclusions reached. Much of the evidence in support of material conclusions of the analysis in this chapter

is set out in APPENDIX VI (*Old Irrigation Projects and Irrigation Development Projects*) and APPENDIX VII (*Maternity Data and Birth Control*). It is fully realised and made clear at every stage of the discussion that the nature of the material is such that widely varying views can be and are being held both in respect of the facts themselves and the appreciation of the significance of the facts. As the Royal Commission in the United Kingdom observed "parts of the subject may be likened to that fabled morass where armies whole have sunk". The various views held on the subject are set out and reasons given for reaching a particular conclusion. The busy reader may, at this stage, turn over to the last section of the last chapter and read the conclusion straightaway.

10. **Acknowledgements**—Though the CONSTITUTION lays the duty of census-taking exclusively on the Central Government the census is carried out for the benefit of the entire State which, according to the CONSTITUTION "includes the Government and Parliament of India and the Government and the Legislature of each of the States and all local or other authorities within the territory of India or under the control of the Government of India". It gives me great pleasure to report that this was fully realised ; and the census received unstinted support and ready assistance from the Governments of all states as well as all other authorities.

This census, like its predecessors, was made possible by the efforts of about six lakhs of public-spirited census workers who made the enquiries and the seven crores or so of citizens who gave them the information asked for. The fact that this is the first census of free India was appreciated by all and it contributed greatly to the success of the undertaking. The press throughout the country, as I have gratefully acknowledged once before, was consistently helpful and gave effective publicity and support to the census at all important stages.

The results of the labours of my colleagues will be before the public. Where all have given of their best, it would be invidious to name any one for special mention. I should, however, place on record my tribute of admiration for Shri J. D. KERAWALLA whose enthusiasm for the work was infectious and whose untiring exertions may have contributed to the malady of which he died before his report could be published.

A number of officers helped me to direct the census and write this report. Shri D. NATARAJAN who was on Mr. YEATTS' staff both in 1931 and 1941 has not only contributed his personal knowledge of prior censuses but also borne a heavy burden of administrative responsibility as Assistant Census Commissioner. Without his help I could not have held charge of two distinct offices. I have also benefitted by Shri NATARAJAN'S advice and suggestions in

drafting my report. Shri P.N. KAUL had no previous experience of government offices when he was called upon to function as the statistical conscience-keeper not only for me but all the state census superintendents. He did this to the satisfaction of all of us. He organised the central tabulation office, trained and led a temporary staff which constructed all the all-India tables and checked all the state census tables. Shri T.V. RANGARAJAN and Shri SHANKAR KAPOOR rendered notable assistance, in the collection and analysis of material for my use, as well as in checking the drafts and preparing them for the press. All the members of this able team, and the other members of the staff have worked long hours over a long period ungrudgingly and have still got much to do in seeing all this material through the press. This report is as much theirs as mine and I am very grateful to them.

I have drawn freely on the resources of other Ministries and Departments who have ungrudgingly offered all facilities. The Ministry of Labour spared the services of Shri S. P. JAIN who prepared the Age Tables and Life Tables, and whose initial study of the statistics of registration of births and deaths in combination with census data was the starting point of the systematic analysis of demographic data furnished in this report. The Planning Commission spared the services of Dr. V. NATH who helped me to formulate the scheme of natural regions and sub-regions and to build up parts of the statistical material presented in APPENDICES I and VI, including in particular, the data relating to 'decline of cultivation *per capita*.' I valued his advice and suggestions based on his study of conditions in foreign countries as well as his knowledge of discussion and study within the Planning Commission. The Adviser of the Planning Commission on Health Programmes, Dr. T. LAKSHMINARAYANA spared time for many discussions which clarified the issues relating to birth control. His experienced judgment gave me confidence in putting forward definitive conclusions in a highly controversial field.

Much material was specially compiled for me by the Surveyor General of India; the Director General of Observatories, Meteorological Department; the Director of Geological Survey of India; the Inspector-General of Forests; the Economic and Statistical Adviser, Ministry of Food and Agriculture; the Statistical Adviser, Indian Council of Agricultural Research; and the Head of the Division of Chemistry, Indian Agricultural Research Institute.

The Directorate General of Health Services spared the services of Shri KHUSHI RAM, who prepared most of the maps and all the diagrams in this report.

Publicity arrangements for the census were in the hands of Shri V.

KRISHNASWAMI of the Press Information Bureau, who took keen personal interest for which I am grateful.

In these days the pressure on the Government Press is extremely heavy and Shri C. A. SUBRAHMANYAM, Controller of Printing & Stationery, India has a very difficult task to perform. But the Census of India is an old customer and there has never been any doubt about the anxiety of all concerned in the Government Press to do their best to ensure that census printing is attended to efficiently and speedily.

R. A. GOPALASWAMI
Registrar General, India ; and
*ex-officio* Census Commissioner for India.

NEW DELHI:
1st August, 1953

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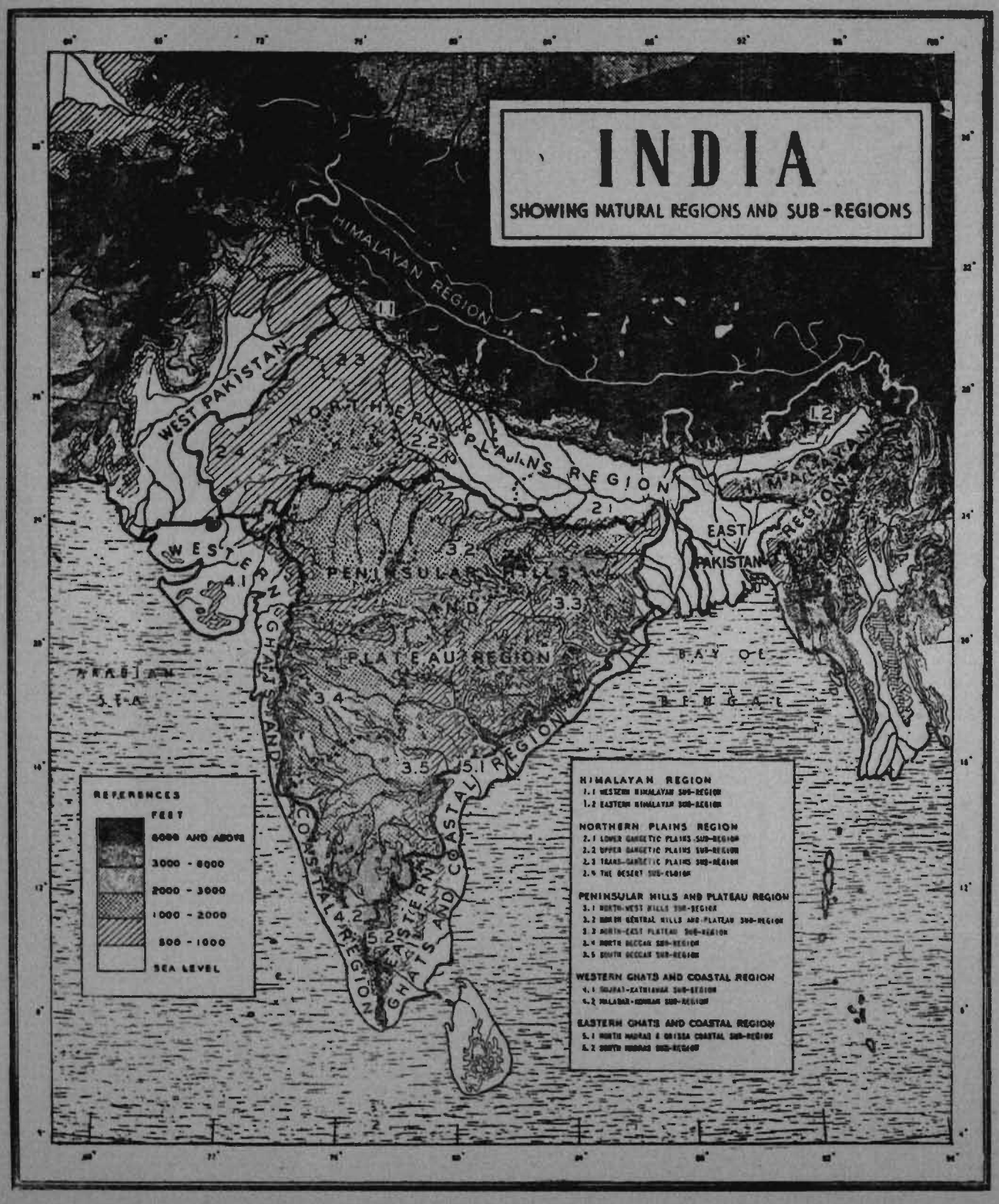
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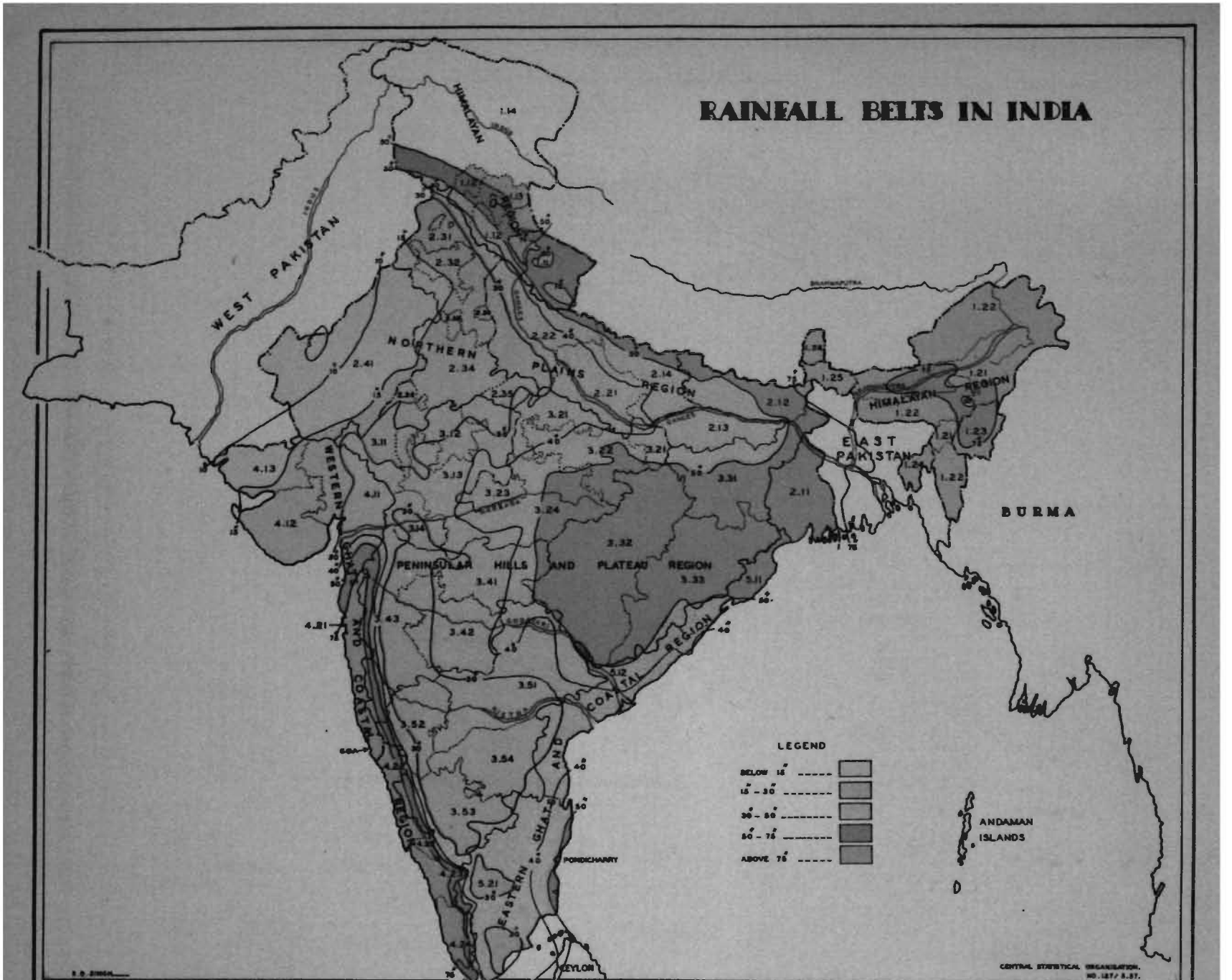
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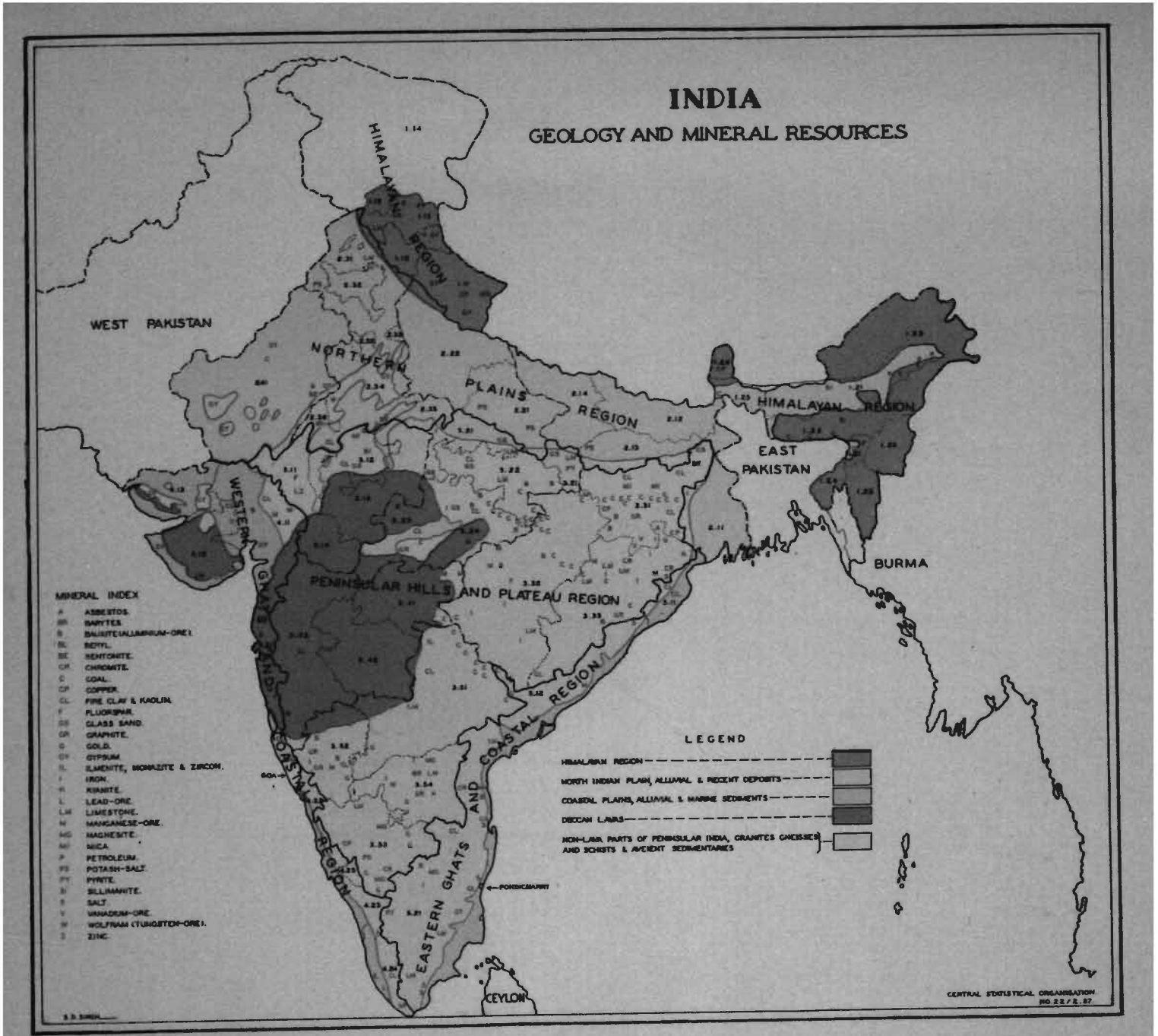
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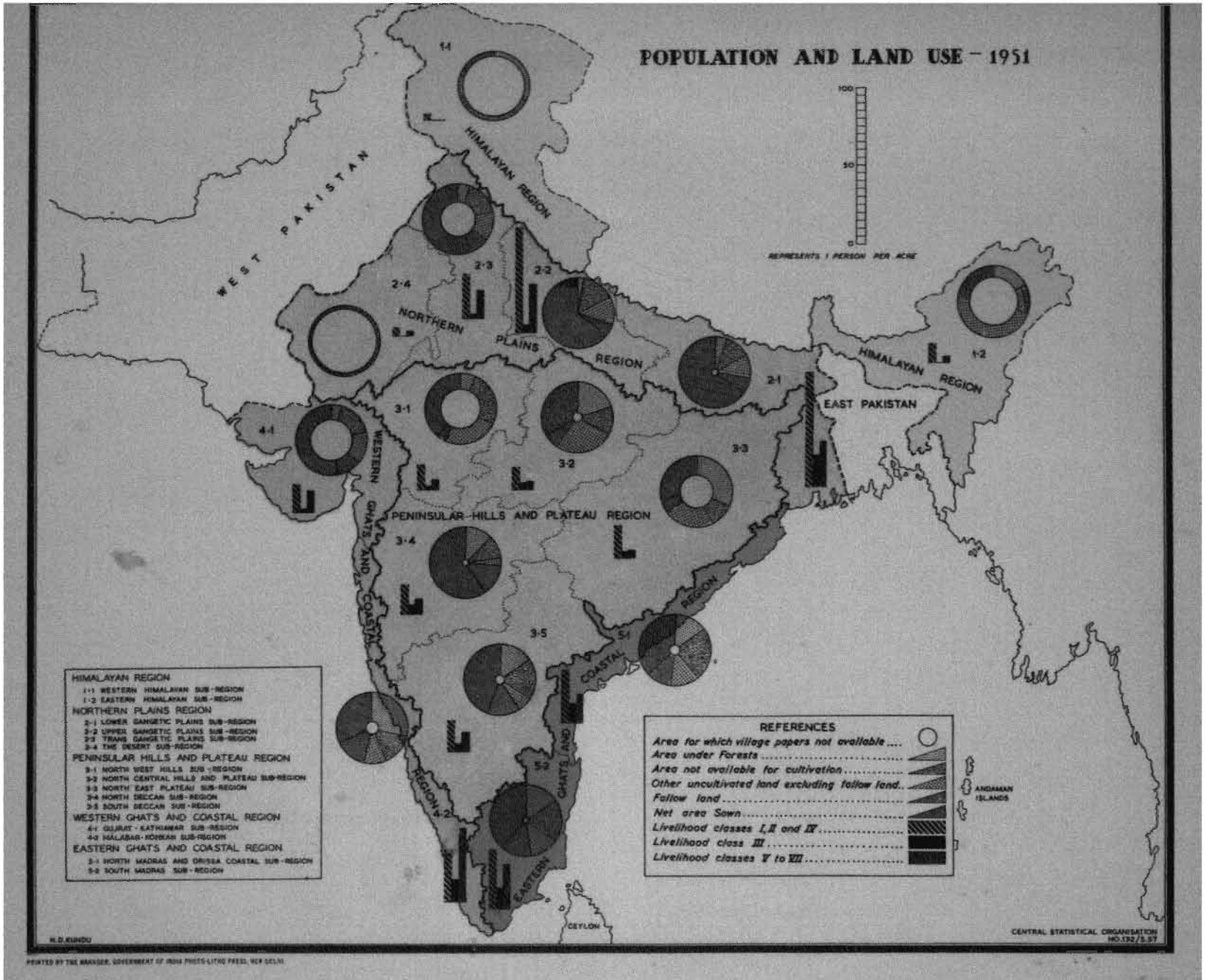
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CENTRAL STATISTICAL ORGANISATION.


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GR GRAPHITE.
G GOLD.
GY GYPSUM.
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I IRON.
K KYANITE.
L LEAD-ORE.
LM LIMESTONE.
M MANGANESE-ORE.
MG MAGNESITE.
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NORTH INDIAN PLAIN, ALLUVIAL & RECENT DEPOSITS
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DECCAN LAVAS
NON-LAVA PARTS OF PENINSULAR INDIA, GRANITES GNEISSES AND SCHISTS & ANCIENT SEDIMENTARIES
CENTRAL STATISTICAL ORGANISATION




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CHAPTER

# The Land and the People—1951

*"We, the People of India"*

*"WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN DEMOCRATIC REPUBLIC and to secure to all its citizens :*

*JUSTICE, social, economic and political ;*

*LIBERTY of thought, expression, belief, faith and worship ;*

*EQUALITY of status and of opportunity ; and to promote among them all ;.*

*FRATERNITY assuring the dignity of the individual and the unity of the Nation ;*

*IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION."*

Thus the preamble of the CONSTITUTION OF INDIA, which came into force on the 26th day of January, 1950.

2. How many are "We, the People of India"? In what places do we live ? In what manner do we obtain our means of living ? At what rate have we been growing in number during the last few decades ? What has been the effect of this growth upon our means of living ? What is the inference to be drawn from the experience of the last few decades about the probable growth of our numbers and our means of living during the next few decades ?.

We need answers to these questions. We need them, not because of idle curiosity, but in order to help us achieve the high purposes enshrined in our CONSTITUTION.

## A—*Land Area per capita*

THIS REPORT cannot be easy reading. It is loaded with figures, and figures are wearisome. It is all the more necessary, therefore, that attention should be drawn, at the outset, to two figures which are of fundamental importance. They are :

*First*,—'*81 crores of acres*'. This is the total area of our land.

*Secondly*,—'*36 crores of people*'. This was the population of the Indian Union at some point of time between the 26th January, 1950 when the Indian Union was born and the 1st March, 1951, the reference date of the Census.

4. Can these figures be relied on as correct ? *Yes*. There is no room for reasonable doubt on the point. The first figure—81 crores of acres—and indeed all figures of land area which are borne on the books of the Survey of India, are perhaps the most accurate among the national statistics of India (or, for that matter, of any country in the world). They are based on exact measurements, scientifically designed and carried out by a highly trained professional agency over a long series of years.

5. The 1951 Census count yielded a total of 356,879,394 as the number present at sunrise on the 1st March, 1951. May we take it that the count was correct—if not to the last integer—at least to the nearest lakh ? May we take it as certain that the number was 3,569 lakhs ? *No*. That would be rating the completeness of the census count too high.

We have indeed made the best possible effort to take a correct count. There are very good reasons to believe that the count must have been at least as close to the truth on this occasion as at any previous census in India. But until recently we had no knowledge about how close to the truth the census count used to be in the past. At this census, Government decided that a verification of the census count should be carried out under conditions designed to yield reliable information on this point.

The results of that operation have been published* already along with a detailed account of the manner in which the verification was carried out. The conclusion has been stated thus:

> "*For every thousand persons included in the census count 11 other persons were probably omitted. It is a reasonably safe conclusion that the number of persons omitted (per thousand counted) could not have exceeded 12 or fallen short of 10.*"

* "Sample Verification of the 1951 Census Count" : *Census of India Paper No. 1 of 1953.*

6. From this it would follow that the actual number of people present at sunrise of the 1st March, 1951) must have exceeded the published total by not less than 36 lakhs and not more than 43 lakhs. It is convenient to express the same result in another way. We may say that the published total of 35 crores and 69 lakhs represented the actual number of people present—not indeed on the 1st March 1951, the reference date of the Census, but on some other day a few months earlier. Our knowledge of the rate at which our numbers are growing in recent years (this will be explained in a later chapter) helps us to fix this earlier date within fairly narrow limits. It must have preceded the census day by not less than 10 months and not more than 12 months. On some day in March-April 1950—it is reasonably certain the census count of 35 crores and 69 lakhs represented the exact number of people present in the territory covered by the 1951 Census.

7. But the territory covered by the 1951 Census is not quite the same thing as the territory of India. There is a fringe of tribal territory in the north-east frontier (known as the *Part B Tribal Areas of Assam*) where the census has never been taken. A figure of about six lakhs of people has been mentioned as the probable number of people living there. Though little better than a guess, it indicates the order of magnitude which might be borne in mind.

When preparations for the 1951 Census were taken in hand, it became clear that a complete count was impossible in the conditions prevailing in the state of Jammu and Kashmir. Government decided that the information likely to be secured by an incomplete count was not worth the effort, expense and very considerable strain on administrative resources, which are necessarily involved in census-taking. Hence the entire state of Jammu and Kashmir had to be excluded from the census count. It is possible, however, from past census figures to make a fairly firm estimate of the population of Jammu and Kashmir. This may be taken to be about 44 lakhs.

It is reasonably safe on these facts to conclude : First,—*that the total number of people living in India had passed the 36-crore-mark well before the census day* ; *and* Secondly,—*that it had not reached that figure on 26th January, 1950.**

8. Given the two basic figures—81 crores of acres and 36 crores of people—we may derive a third, namely,—'2¼ *acres*'. This is our 'land area *per capita*'.

Let us suppose that the entire territory of India is divided (with mathematical exactitude) equally among all the people living in India, we may

* The title of this chapter—"The Land and the People—1951"—as well as all other statements made about the people (as enumerated at the 1951 Census) should therefore be regarded as referable, not to a specific point of time, but to the interval between the 26th January, 1950 and the 1st March 1951.

each expect to get a square plot of land—measuring a little more than one hundred yards from north to south as well as from east to west.

That is the 'land area *per capita*' in India. Let us keep this plot of land firmly in mind—for we shall see, as we proceed, that the size of this plot, the manner in which it is used, and the changes which occur in it from one generation to another have a profound effect on our life and livelihood.

9. The CONSTITUTION defines the political divisions of the country as consisting of *Part A* states, *Part B* states, *Part C* states and *Part D* territories. These legal distinctions have no special significance in relation to the life of the people or their means of living. Consistently with the nature and purpose of this report, it would be appropriate for us to consider the states and territories in the order of their population.

Rather more than two-thirds of the people of India—24 crores and 25 lakhs—live in six states, in all of which the inhabitants number more than two crores. The six states are: Uttar Pradesh (632), Madras (570), Bihar (402), Bombay (360), West Bengal (248) and Madhya Pradesh (212). [The figures in brackets represent the number of people in each state, rounded to the nearest lakh.]

There are 8 other states, in all of which the inhabitants number between half-a-crore and two crores. These are: Hyderabad (187), Rajasthan (153), Orissa (146), Punjab (126), Travancore-Cochin (93), Mysore (91), Assam (90) and Madhya Bharat (80). The total number of people living in these states is 9 crores and 66 lakhs. There are 16 other political units all of whose inhabitants taken together, number only about 2 crores in all. These are the states of Jammu and Kashmir (44*), Saurashtra (41), Vindhya Pradesh (36), Patiala and East Punjab States Union (35), Delhi (17), Himachal Pradesh (10), Bhopal (8), Ajmer (7), Tripura (6), Manipur (6), Kutch (6), Coorg (2), Sikkim (1), Bilaspur (1), and finally two other territories with less than half-a-lakh each, *viz.*, Chandernagore and the Andaman and Nicobar Islands.

10. Full information about each of these units with detailed reference to district data will be found in the reports written by state census superintendents. It is, therefore, not necessary that all of them should be individually referred to and discussed in this report. It is also not useful to do so because these 32 units vary so largely among themselves, both in size of population and extent of territory, that if we tried to look at all of them at once, we shall miss the wood for the trees and get lost in a parade of local peculiarities which may have no real significance in the all-India picture.

*Estimate

That is why it is necessary that some sort of grouping of geographically contiguous units should be made. Hence the six 'zones': North India, East India, South India, West India, Central India and North-West India.

Uttar Pradesh is so situated and has such a large population that it is convenient to treat it as a zone by itself. It is *North India.*

Bihar, Orissa, West Bengal, Assam, Manipur, Tripura, Sikkim and Chandernagore are grouped together as *East India.*

*South India* consists of Madras, Mysore, Travancore-Cochin and Coorg.

Bombay, Saurashtra and Kutch make up *West India.*

*Central India* takes in Madhya Pradesh, Madhya Bharat, Hyderabad, Bhopal and Vindhya Pradesh.

Rajasthan, Punjab, Patiala and East Punjab States Union, Jammu and Kashmir, Ajmer, Delhi, Bilaspur and Himachal Pradesh make up *North-West India.*

The total population of Andaman and Nicobar Islands is only 30,971; and the land area is 20·58 lakhs of acres. The figures relating to this territory are not included in any zone but are included in the India totals.]

11. The table below shows for each zone the two basic figures—land area and population—and the derived figure of land area *per capita*:

TABLE I

| *Zone* | *Land area* (IN LAKHS OF ACRES) | *Population* (IN LAKHS) | *Land area per capita* (IN ACRES) |
|---|---|---|---|
| North India . . . . | 726 | 632 | 1·15 |
| East India . . . . | 1,675 | 901 | 1·86 |
| South India . . . . | 1,075 | 756 | 1·42 |
| West India . . . . | 957 | 407 | 2·35 |
| Central India . . . . | 1,852 | 523 | 3·54 |
| North-West India . . . | 1,226 | 350 | 3·51 |
| INDIA (*excluding Jammu & Kashmir*) . | 7,532 | 3,569 | 2·11 |
| INDIA (*including Jammu & Kashmir*) . | 8,126 | 3,613 | 2·25 |

The table brings out clearly the simple fact that the people of India are *not* distributed among the different zones in any kind of orderly proportion to the land area.

## B—*Topography, Soil and Rainfall*

IT IS CLEAR that the people living in some zones of India have got more land per head than their fellow-citizens in other zones. Does this mean that the former are much better off than the latter ? Central India, for instance, provides 354 cents of land, which is more than three times as large as the land area *per capita* in North India—115 cents. Are the people of Madhya Pradesh, Hyderabad and Madhya Bharat three times as rich as those of Uttar Pradesh ? Obviously, this cannot be. For all we know to the contrary, 115 cents of land in North India may provide even better living than 354 cents of land in Central India. Evidently, we should not attempt to draw conclusions of practical significance from the figures in Table I, until we have gone some way towards understanding the differences between the different sorts of land there are in different parts of the country, and assessed the significance of those differences for purposes of growing food or otherwise providing a means of living out of the land.

Among the major factors which make a difference in this respect, the first is topography—the nature of the terrain or the land-form of the tracts in question.

13. Out of India's total land area of 81 crores and 26 lakhs of acres, 8 crores and 69 lakhs of acres (or 10·7 per cent) lie in mountains. The word 'mountain' is used in this context in a strict sense—it is limited to really steep land at a very high elevation and generally excludes all land below a limit of 7,000 feet above sea level. Nearly two-thirds of such mountain tracts (5 crores and 48 lakhs of acres) are found in Jammu and Kashmir. The remaining one-third is distributed in three zones as follows:

141 lakhs of acres in East India;
97 lakhs of acres in North-West India (*excluding* Jammu & Kashmir); and
79 lakhs of acres in North India.

Rather less than 5 lakhs of acres are to be found in South India. There are no mountains, in the strict sense of the term, in West India and Central India.

Mountains are impressive affairs—even inspiring—to people who live far away from them and go there for rest and recreation or occasional business. But they are of little use for settlement of people who wish to cultivate the land and grow food. In general the land is far too steep. It is extremely difficult to find (or make) plots of land on which food or other crops may be grown. Scholars who have made a special study of this subject estimate that 95 per cent of the superficial area of land in mountain tracts should be written off, from the point of view of practical farming.

14. The write-off is not so heavy when we turn to other kinds of tracts. It has been suggested that the appropriate ratios are 75 per cent in hilly tracts, 25 per cent in plateaus and perhaps as low as 5 per cent in the plains.

We may use the term 'hill' to cover all kinds of weathered highlands (except mountains) without reference to the level at which they are situated. The term would include practically the entire area of all ranges other than the Himalayan and also the foothills of the Himalayan range upto the limit already mentioned—about 7,000 feet above sea level.

Hilly tracts as thus defined comprise 15 crores and 9 lakhs of acres (or 18·6 per cent) of all land in India. They are distributed as follows :

525 lakhs of acres in East India ;
333 lakhs of acres in Central India ;
278 lakhs of acres in South India ; and
198 lakhs of acres in West India.

There are 88 lakhs of acres in North-West India outside Jammu and Kashmir and there are 27 lakhs of acres in Jammu and Kashmir. There are 41 lakhs of acres in North India and 21 lakhs in Andaman and Nicobar Islands.

15. Plateaus may be defined, in the conditions of this country, as including all relatively flat tracts of land which lie between one thousand feet and three thousand feet above sea level. Such tracts measure 22 crores and 48 lakhs of acres, or 27·7 per cent of all land in India. Almost exactly one-half of all plateaus (11 crores and 25 lakhs of acres) is found in Central India. The remaining half is distributed as follows :

300 lakhs of acres in North-West India (*excluding* Jammu & Kashmir) ;
286 lakhs of acres in South India ;
284 lakhs of acres in West India ; and
204 lakhs of acres in East India.

A fringe of North India measuring 34 lakhs of acres is also plateau-land.

16. Finally, we may come down to the plains, of which we have 34 crores and 99 lakhs of acres—that is to say, 43·0 per cent of all land in India. The plains are distributed as follows :

805 lakhs of acres in East India ;
742 lakhs of acres in North-West India ;
572 lakhs of acres in North India ;
506 lakhs of acres in South India ;
476 lakhs of acres in West India ; and
395 lakhs of acres in Central India.

As a rule, these tracts are the best for purposes of cultivation and settlement of people. This is so not only because the amount of land which requires to be written off is relatively small, but the chances of finding fertile soil are better in the plains than in the plateaus where (as a rule and unlike the valleys in hilly tracts) fertile land is scarce.

17. This is not to say, however, that all the 35 crores of plain-land are fertile or even cultivable. Far from it. There are vast stretches of land in some parts of the country which can be called 'land' only in a technical sense. A notable instance of such 'land' is the Rann of Kutch, which measures as much as 59 lakhs of acres. Another type of such land is the stretch of sandy waste* in the Rajasthan Dry Area which measures about 2 crores and 54 lakhs of acres. The capacity of such land to support life is negligible. The sandy wastes and marshy land which occur in many plain tracts, as isolated patches, are one thing; continuous stretches of waste like those mentioned above are in a different category. In any realistic assessment of usable resources, it is necessary that they should be left out of the reckoning. We have got altogether 3·3 crores of acres of such land in North-West India and about three-quarters of a crore in West India.

18. We may now sum up the result of our review of the topography of the different zones from the point of view of distinguishing what may be called the 'topographically usable area' from other area not so usable. The relevant figures are shown in one view in the table below:

TABLE 2

(IN LAKHS OF ACRES)

| *Zone* | *Total land area* | *Topographical factors* | | | | *Deduct unusable area* | *Topographically usable area* |
|---|---|---|---|---|---|---|---|
| | | *Mountains* | *Hills* | *Plateaus* | *Plains* | | |
| North India . . . | 726 | 79 | 41 | 34 | 572 | 143 | 583 |
| East India . . . | 1,675 | 145 | 521 | 204 | 804 | 620 | 1,055 |
| South India . . . | 1,075 | 4 | 278 | 286 | 506 | 310 | 765 |
| West India . . . | 957 | .. | 198 | 284 | 476 | 314 | 643 |
| Central India . . . | 1,852 | .. | 336 | 1,125 | 395 | 550 | 1,302 |
| North-West India . . | 1,226 | 97 | 88 | 300 | 742 | 583 | 643 |
| INDIA (*excluding J. & K.*) | 7,532 | 325 | 1,479 | 2,232 | 3,495 | 2,535 | 4,997 |
| INDIA (*including J. & K.*) | 8,126 | 873 | 1,506 | 2,248 | 3,498 | 3,082 | 5,044 |

Note—(*i*) Individual figures have been rounded to lakhs; hence the differences in totals.
(*ii*) India figures include 21 lakhs of acres—Hills—of Andaman and Nicobar Islands.

*This is not the whole of the territory which has been classified as the 'Desert Sub-Region,' but only a part of it.

19. It is not to be supposed that all topographically usable area is cultivable. Even within this area, there are large extents of land which are little better than barren rock and have little or no soil cover. We should now consider the nature and extent of soil cover available for land in different parts of the country.

Unfortunately such information as we have been able to get together is mostly of a descriptive nature. There is next to no information of a quantitative character about the actual areas or productivity in terms of crop yields per acre of different types of soils. The following is a very brief summary of available information :

(*i*) Four main groups of soils are found extensively all over India. Among them, the alluvial group is by far the most productive. They are distributed over practically the whole of the Gangetic plains in Uttar Pradesh, West Bengal and extend to the Punjab and parts of Assam and Orissa. The coastal tracts of southern India are also alluvial, especially at the mouths of the rivers, where they are known as deltaic alluvium. The soils are deficient in phosphoric acid, nitrogen and humus, but not generally in potash and lime. Interspersed within the alluvial group, are patches of saline and alkaline soils which contain varying amounts of soluble salts. Such type of soils are found in Uttar Pradesh (*'usar'* land), Bombay, Deccan and a portion of North Bihar.

(*ii*) Then there are the black soils which are loamy to clayey in texture, vary in depth, and contain lime *kankar* in varying percentages, and free calcium carbonate. These soils are generally suitable for cultivation of cotton and are known in many places as 'black cotton soils' or *'regur.'* Resembling tropical black earth, they are very well-defined soils which occupy the greater part of Bombay and Saurashtra, western parts of Madhya Pradesh, Madhya Bharat, and Hyderabad and some parts of Madras including the districts of Tirunelveli and Ramanathapuram. The soils are fairly fertile and very useful for commercial crops. They are generally deficient in nitrogen, phosphoric acid and organic matter, but potash and lime are usually high.

(*iii*) Another fairly well-defined and extensive group consists of red soils. They differ widely in depth and fertility in different parts of India and are generally of medium to low fertility. They cover very large tracts of Madras, Mysore, south-east Bombay, east Hyderabad and

a strip of tract running along the eastern part of Madhya Pradesh to Chhota Nagpur and Orissa. In the north, the red soil area extends into and includes the greater part of the Santhal Parganas in Bihar, the Birbhum district of West Bengal, the Mirzapur, Jhansi and Hamirpur districts of Uttar Pradesh, northern portion of Madhya Bharat, the Aravallies and the eastern half of Rajasthan.

(*iv*) The last of the four main groups consists of laterite and lateritic soils. Soils of this group are derived by the atmospheric weathering of several types of rocks under monsoon conditions of alternating dry and wet periods. Well developed laterite and lateritic soils are found on the summits of hills of the Deccan, Madhya Bharat, Madhya Pradesh, and of the Rajmahal and Eastern Ghats, and certain parts of Orissa, Bombay, Malabar and Assam. The soils are deficient in potash, phosphoric acid and lime. On higher levels these soils are exceedingly thin and gravelly, but on lower levels and in the valleys they consist of heavy loams and clays. On the whole, these soils are poor.

(*v*) Other miscellaneous types of soils include desert or arid soils occurring in the regions having low rainfall, *e.g.*, Ajmer, eastern Rajasthan etc. Marshy or peaty soils occur over small areas in Travancore, and in parts of West Bengal, Orissa and Madras. Hill soils, which are generally sandy or red loam occur in the hilly regions of West Bengal, Punjab and Assam.

20. We cannot grow food unless we have topographically usable land with at least the minimum of useful soil. But land alone will not do ; even if it is perfectly level and has the most fertile soil cover, it cannot be used to grow food or any other crops unless there is rain.

The amount of rain that falls on Indian territory every year, and year after year, is something colossal. Let us consider an inch of rain falling on an acre of land. The water which thus collects disappears from view very quickly and one does not, therefore, appreciate the fact that the quantity is quite large—the weight of this water is no less than 2,800 maunds. On an average of good, bad and indifferent years, and taking into account all parts of the country, we get rather more than 42 inches of rain falling on every acre of land every year. That is to say, we get well over one lakh of maunds of water on every acre of land. We have noted already that there are 81 crores of acres. Those who feel curious about the total amount of our rain-water-supply may do the

multiplication sum for themselves! If only this enormous amount of rain fell evenly both in space and in time, the amount of food which is now grown on our land can be greatly increased. Unfortunately, nature distributes rain even more unevenly than soils. Some tracts get too much rain, many get too little. A great deal of rain falls in such places and at such times that it cannot be used to any good purpose.

21. One of the maps at the beginning of this chapter shows the division of the country into five 'rainfall belts' which have been named as follows:

| *Rainfall belt* | *Annual rainfall* |
|---|---|
| Blue belt | Exceeding 75 inches; |
| Dark green belt | Between 50 and 75 inches; |
| Light green belt | Between 30 and 50 inches; |
| Brown belt | Between 15 and 30 inches; |
| Yellow belt | Below 15 inches. |

The blue belt and the dark green belt cover almost exactly a third of the country. They are well provided with enough rain, which is generally, though not invariably, also dependable.

The light green belt covers almost exactly another third of the country. Here the rainfall, if timely, is adequate; but the vagaries of the monsoon are apt to cause occasional failure of crops and consequent distress.

The brown belt and the yellow belt, taken together, cover the remaining third of the country. Here the seasonal fluctuations are so frequent, that they are more or less regularly expected; and when they occur, they cause a great deal of hardship to the people and expense to Government. The yellow belt has so little rain that a great many people do not live there. The brown belt where one-fourth of our people live, is exposed to special hazards which are a permanent problem for the people and the Government.

22. If we are to make an intelligent study of why the people happen to be as unequally distributed as they are in different parts of our country, it is essential we should get behind the existing political divisions of the country into the states and their grouping in zones. We should visualise the country as consisting of different parts which are distinguished from one another by differences of topography, soil, rainfall—the major factors which determine how much of 'land' can be used to grow food and the degree of its usefulness for the purpose. These, in turn, determine how many people could make a living on the land. From the point of view merely of topography, the country may be divided notionally into five broad 'regions', *viz.*, (1) the Himalayan region, (2) the Northern Plains region, (3) the Peninsular Hills and Plateau

region (4) the Western Ghats and Coastal Region, (5) the Eastern Ghats and Coastal region. These regions, however, are very large units. Big differences occur within them because of differences in the amount of rainfall, as also to some extent because of variations in the soils. So, these regions have been divided into 15 'sub-regions' as shown below :

| *Code No.* | *Region* | *Code No.* | *Sub-Region* |
|---|---|---|---|
| 1. | Himalayan | 1·1 | Western Himalayan |
| | | 1·2 | Eastern Himalayan |
| 2. | Northern Plains | 2·1 | Lower Gangetic Plains |
| | | 2·2 | Upper Gangetic Plains |
| | | 2·3 | Trans-Gangetic Plains |
| | | 2·4 | The Desert |
| 3. | Peninsular Hills and Plateau | 3·1 | North-West Hills |
| | | 3·2 | North Central Hills & Plateau |
| | | 3·3 | North East Plateau |
| | | 3·4 | North Deccan |
| | | 3·5 | South Deccan |
| 4. | Western Ghats and Coastal | 4·1 | Gujrat-Kathiawar |
| | | 4·2 | Malabar-Konkan |
| 5. | Eastern Ghats and Coastal | 5·1 | North Madras & Orissa Coastal |
| | | 5·2 | South Madras |

These sub-regions, in turn, have been divided into 'natural divisons' each of which is either an entire state or a group of contiguous districts within a state. The data collected at the 1951 Census have been tabulated for these natural divisions and it is hoped this will facilitate more intensive study and better understanding of the significance of our basic population data.

## C—*High Density Sub-Regions*

APPROXIMATELY one-half of the people of India live on rather less than one-quarter of Indian land. The tracts in which they live comprise the five sub-regions specified in Table 3 on odposite page.

HIGH DENSITY SUB-REGIONS

TABLE 3

| *Name of sub-region.* | *Population* (IN LAKHS) | *Density* (NUMBER PER SQ. MILE) | *Land area* (IN LAKHS OF ACRES) | *Land area per capita* (IN CENTS) |
|---|---|---|---|---|
| Lower Gangetic Plains . . | 700 | 832 | 538 | 77 |
| Upper Gangetic Plains . . | 389 | 681 | 366 | 94 |
| Malabar Konkan . . . | 238 | 638 | 239 | 100 |
| South Madras . . . | 307 | 554 | 355 | 115 |
| North Madras & Orissa Coastal . | 211 | 461 | 293 | 139 |
| TOTAL 5 SUB-REGIONS | 1,845 | 660 | 1,791 | 97 |

The sub-regions are arranged in order of density of settlement of the people on the land. We may examine what are the conditions of topography, soil and rainfall which enable the land to be used in such a way as to support much larger numbers in these sub-regions than elsewhere.

24. LOWER GANGETIC PLAINS—This sub-region includes the whole of West Bengal except three sub-Himalayan districts (Jalpaiguri, Darjeeling and Cooch-Behar) : the whole of Bihar *except* Chotta Nagpur division ; and also Eastern Uttar Pradesh (that is to say, the districts of Banaras, Ghazipur, Ballia, Gorakhpur, Deoria, Azamgarh, Gonda and Bahraich). The total population is 700 lakhs. The land area is 538 lakhs of acres. In terms of India, the population percentage is 19·4 ; while the land area percentage is only 6·6. The land area *per capita* is 77 cents—against India's 225. In this sub-region, the range of variation is not very large. The land area *per capita* is 73 cents in West Bengal Plain, 76 cents in North Bihar Plain and 75 cents in East Uttar Pradesh Plain. It rises to 89 cents in South Bihar Plain which includes some hills and plateau tracts. The sub-region as a whole, is one large plain. Out of the total of 77 cents *per capita*, 74 cents are plain-land. A small fringe of plateaus and hills accounts for the remaining 3 cents.

The soils are among the best in India. West Bengal Plain soils are almost wholly alluvial, ranging from red to brown loams with lateritic soils in the old alluvial area.

The North Bihar Plain soils are alluvial and calcareous. In South Bihar Plain, both alluvial and red sandy soils occur. The alluvial soils of East Uttar Pradesh vary from sands to heavy clays.

The rainfall is normally ample and rarely excessive. About 284 lakhs of acres fall in the light green belt, the greater part of the rest of the sub-region in the dark green belt and a small fringe in the blue belt. The average rainfall varies from 56 inches in the West Bengal Plain to 44 inches in East Uttar Pradesh and South Bihar Plain. The average number of rainy days ranges from 73 in West Bengal Plain to 50 in the East Uttar Pradesh.

Out of the total of 538 lakhs of acres, 512 lakhs of acres are topographically usable. Out of this again, the net area sown is 356 lakhs of acres, or 51 cents *per capita*. Double-cropping is heavy—in fact the heaviest of all the sub-regions of India. It covers 27·9 per cent of the net area sown. Irrigation is also high—21·6 per cent of the gross sown area.

Fallow land is relatively small, being only 9·7 per cent of the net area sown. *Unused* land is also small (10·8 per cent of the total land area). There is* very little forest. Minerals are scarce in this sub-region†. Mica is produced in South Bihar Plain (8·6 per cent of India's output). There is also some saltpetre.

25. UPPER GANGETIC PLAINS—This sub-region includes all the districts of Uttar Pradesh with the exception of (*i*) the ten districts already mentioned as included in the Lower Gangetic Plains; (*ii*) the five Himalayan districts of Garhwal, Tehri-Garhwal, Nainital, Almora and Dehra Dun; and (*iii*) the five upland and hilly districts of Jhansi, Jalaun, Hamirpur, Banda and Mirzapur. Three hundred and eighty-nine lakhs of people live here over a land area of 366 lakhs of acres. In terms of India, the population percentage is 10·9 and the land area percentage is 4·8. The land area *per capita* is 94 cents. Practically the whole of it (93 cents) consists of plain tracts only. The land area *per capita* is slightly larger in West Uttar Pradesh Plain (99 cents) than in Central Uttar Pradesh Plain (89 cents).

The soils of the sub-region are mostly alluvial. The vary widely in texture from clay and loam to sandy types. A few typical black cotton soils also occur in Allahabad district.

The rainfall is not so heavy as in the Lower Gangetic Plains. The main bulk of the Upper Gangetic Plains (248 lakhs of acres) falls in the light green belt: only a small area (31 lakhs of acres) falls in the dark green belt.

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*This excludes not only the net area sown, current fallows and forests but also uncultivated and which is specifically classified as not available for cultivation. This last item would include land put to various kinds of quasi-agricultural and non-agricultural uses, such as village sites, town sites, mines and quarries, roads, rivers, channels etc.

†A part of the Raniganj coalfield which extends into Burdwan district is counted as part of the mineral resources of the adjoining North-East Plateau sub-region.

This is counterbalanced by a somewhat larger area (87 lakhs of acres) falling in the brown belt. Following the diminishing trend (as one moves up the Gangetic plains) the average rainfall drops from 44 inches in East Uttar Pradesh of the Lower Gangetic Plains to 37 inches in Central Uttar Pradesh and then to 33 inches in West Uttar Pradesh. The average number of rainy days also diminishes from 50 in East Uttar Pradesh to 45 in Central Uttar Pradesh and 40 in West Uttar Pradesh. As the rainfall diminishes in amount, it tends also to become less dependable. Out of the total area of 366 lakhs of acres, 346 lakhs of acres are topographically usable. The net area sown is 237 lakhs of acres, or 61 cents *per capita*. The double-crop percentage is heavy—24·2 per cent; so also irrigation—24·6 per cent. Fallow land is even smaller than in the Lower Gangetic Plains (5·6 per cent). But the ratio of unused land is rather higher (being 14·8 per cent). The area classified as forest is negligible and minerals of any significance are practically non-existent. [Small quantities of saltpetre are worked at some places.]

26. MALABAR-KONKAN—This sub-region includes the entire west coast of India to the south of the Daman Ganga river. It consists of Greater Bombay, Bombay-Konkan (*i.e.*, districts of Thana, Kolaba, Ratnagiri and Kanara), West Madras (*i.e.*, Malabar, South Kanara and Nilgiri districts), Coorg and Travancore-Cochin. Two hundred and thirty-eight lakhs of people live here in an area covering 239 lakhs of acres. In terms of India, the population percentage is 6·6 and the land area percentage is 2·9. The land area *per capita* consists of 100 cents. The terrain here is such that it is impossible to demarcate a topographically homogeneous territory without cutting clear across administrative boundaries down to district level. So, the sub-region includes the main chain of the Western Ghats as well as the narrow fringe of coastal plains to its west. Areas of very varied topography are, therefore, necessarily included, and there are corresponding variations in rainfall. The pattern of land utilisation and density of settlement of population differ sharply as between the coastal strip, the slopes of the ghats, and the heights. Out of the total of 100 cents of land area *per capita* in this sub-region, hills contribute 56 cents, while plains account only for 40 cents. There are 3 cents of plateau-land and one cent of mountain-land.

The soils in this sub-region vary from medium black in the north, to the red gravelly, loamy and lateritic soils in the south. Red loams and yellow loams predominate in Travancore-Cochin.

Rainfall is very heavy in Malabar-Konkan—heaviest in India outside the Eastern Himalyan sub-region. The annual rainfall is over 100 inches

along the west coast from Alibag near Bombay to Cochin in the south. A few stations in Coorg and on the Cardamom hills in Travancore-Cochin get well over 200 inches of rain in a year. Several stations on the western slopes of the South Kanara and Malabar districts receive rainfall of the order of 180 inches. On the eastern side of the ghats the annual rainfall is much less. The Nilgiris, for instance, receive about 55-60 inches and quite a few of the stations receive less than 40 inches. All this is mainly the south-west monsoon. The southern half of the sub-region also gets a little rain from the north-east monsoon. Thus the greater part of this sub-region (194 lakhs of acres) falls in the blue belt and about 32 lakhs of acres in the dark green belt.

The average number of rainy days ranges from 121 in West Madras, 118 in Coorg and Travancore-Cochin to 95 in Bombay-Konkan and 74 in Greater Bombay. The sub-region is, therefore, one of the very few parts of India, of which it can be said that it never suffers from drought. Out of the total area of 239 lakhs of acres, the topographically usable area is 128 lakhs —the hilly country accounts for a heavy write-off. The net area sown is 73 lakhs of acres, or 31 cents *per capita*. Forty-six per cent of the land is classified as fallow—a very high ratio, (in fact, the highest among all the sub-regions). But the unused land ratio is nearly as low as in the Lower Gangetic Plains (10·7 per cent).

The double-crop percentage is 11·0 and irrigation percentage is 12·3 —both of them being somewhat below the all-India average.

The area classed as forest is very large (66 lakhs of acres out of a classified area of 231 lakhs). The forests are also valuable. Fishing makes a significant contribution to food supply. The sands of Travancore-Cochin yield ilmenite and monazite which are the principal minerals. Small amounts of mica, manganese and iron ore are also produced. Salt is made along the coast.

27. SOUTH MADRAS—This sub-region consists mainly of the Carnatic plains. It stretches as an extensive tract flanked on the west and north-west by the Western and the Eastern Ghats and bordered on the east and south-east by the Bay of Bengal and Gulf of Mannar, and includes the following districts: Tirunelveli, Ramanathapuram, Madurai, Tanjore, Tiruchirapalli, South Arcot, Chingleput, Madras, North Arcot, Chittoor, Salem and Coimbatore. Three hundred and seven lakhs of people live here on 355 lakhs of acres of land. In terms of India, the population percentage is 8·5 and the land area percentage is 4·4. The land area *per capita* is 115 cents. This breaks up into 76 cents of plains, 28 cents of hills and 11 cents of plateaus. The main hilly country lies in the west and the north-west where the land drops rather abruptly near the

hills and later slopes gradually towards the sea. In addition, there are several isolated hills within this sub-region.

In the major part of the interior of this sub-region, there are red loams, and medium black soils. Coastal alluvium, though relatively smaller in extent is of much value.

Unlike the rest of India, the principal rainy season of this sub-region does not coincide with the south-west monsoon. As the entire area is hiddden by the Western Ghats (*except* for the small opening called the Palghat Gap about 20 miles wide) the full blast of the rain-bearing winds of the south-west monsoon is not felt in this sub-region. October to December is the main rainy season, when about 60% of rainfall occurs in the coastal strip and about 40% in the interior. While the average annual rainfall is 37 inches and the average number of rainy days is 49, there are considerable local variations within the sub-region. The main bulk of the sub-region (275 lakhs of acres) falls in the light green belt, while 70 lakhs of acres fall in the brown belt. Most of the latter and a good part of the former are affected by considerable fluctuations in the amount, timing, and duration of rainfall. Out of the total land area of 355 lakhs of acres 269 are topographically usable. The net area sown is 134 lakhs of acres or 44 cents *per capita*. Fallow land is relatively large, being 38·5 per cent. There is a fair amount of double-crop (16·7 per cent) while the irrigation percentage (33·6) is the highest among all the sub-regions. The percentage of unused land is relatively small (12·8). Of the land area, 14·9 per cent is classed as forest. Fair amounts of varied mineral deposits are known to exist, of which magnesite, chromite, iron ore, lignite, limestone and gypsum are the more important. (Actual working on any significant scale is, however, practically limited to magnesite.) Salt is made all along the coast.

28. North Madras and Orissa Coastal—This sub-region includes all the east coast districts of Orissa and Madras from Balasore in the north to Pulicat lake in the south. The districts are : Balasore, Cuttack, Puri, part of Ganjam, Visakhapatnam, Srikakulam, East Godavari, West Godavari, Guntur, Krishna and Nellore. Two hundred and eleven lakhs of people live here on 293 lakhs of acres of land. In terms of India, the population percentage is 5·8 and the land area percentage is 3·6. The land area *per capita*, is 139 cents. It ranges from 102 cents in the Orissa Coastal division to 156 in North Madras division. The sub-region includes the Eastern Ghats which are of an average height of about 2,000 feet, while some of the peaks are over 5,000 feet in

elevation. The break up of the land area *per capita* is therefore 108 cents of plains, 29 cents of hills and 2 cents of plateaus. There are no mountains.

The alluvial soils of the coast (mainly deltaic) are very fertile. As one goes inland, they give place to black cotton and red ferruginous types.

The average annual rainfall is 57 inches in the Orissa Coastal division and the average number of rainy days is 71. The averages fall to 39 and 50 respectively in North Madras division. The bulk of the land (193 lakhs of acres) falls in the light green belt ; 64 lakhs of acres, mostly in Orissa Coastal division, fall in the dark green belt ; while 35 lakhs of acres (all of which lie in the North Madras division) fall in the brown belt. The rainiest part of the year is from June to September. This sub-region also gets rain from the north-east monsoon during October and November.

Out of the total land area of 293 lakhs of acres, 235 lakhs are topographically usable. The net area sown is 119 lakhs of acres or 57 cents *per capita*. The land classified as fallow is 27·5 per cent. Double-crop is distinctly higher than in South Madras being 22·1 per cent, while irrigation percentage is nearly as high (32·9). The percentage of unused land is practically the same as in South Madras (12·7). Forests are also nearly the same (14·3 per cent). Mineral production is limited to the mining of mica in Nellore, manganese in Visakhapatnam aud a little chromite in Krishna. Salt is made all along the coast.

29. ALL FIVE SUB-REGIONS—If we consider all the five high density sub-regions together and compare the territory with the country as a whole, the main results are as follows :

*I*—The population of the five sub-regions is 1,845 lakhs against India's 3,613 (or 50·1 per cent). The land area is only 1,791 lakhs of acres against India's 8,126 (or 22·0 per cent). So the land area *per capita* is only 97 cents against India's 225 (or 43·1 per cent).

*II*—But the topographical components of the land in the five sub-regions are far more favourable for cultivation, as shown in TABLE 4. If we write-off 95% of mountains, 75% of hills, 25% of plateaus and 5% of plains, we are left with 81 cents of topographically usable land in the high density sub-regions out of 97 cents of the entire land area *per capita*. A similar write-off leaves us only 151 cents out of 225 cents

TABLE 4

| *Topographical components* | *Percentage of total land area* | |
|---|---|---|
| | *High density sub-regions* | *India* |
| Plains | 80 | 43 |
| Plateaus | 3 | 28 |
| Hills | 17 | 18 |
| Mountains | ... | 11 |
| | 100 | 100 |

of land area *per capita* in India. Actually these 151 cents are reduced to 140 cents when such 'land' as the Rann of Kutch and the Thar desert are written off the plains of India. The write-off is only 16% for the five sub-regions, while it is 33 to 38 per cent for India.

*III*—The distribution of the land among different rainfall belts is also more favourable in the high density sub-regions as shown in TABLE 5. It should be noted that the ratios of land falling in the blue belt and the dark green belt are very nearly the same in both cases. The advantage possessed by the high density sub-regions is the smallness of the brown belt and the absence of the yellow belt, and a corresponding excess of the light green belt.

TABLE 5

| *Rainfall belts* | *Percentage of total land area* | |
|---|---|---|
| | *High density sub-regions* | *India* |
| Blue belt | 11 | 11 |
| Dark green belt | 23 | 21 |
| Light green belt | 56 | 37 |
| Brown belt | 10 | 24 |
| Yellow belt | . | 7 |
| | 100 | 100 |

*IV*—When we consider the net area sown *per capita*, we find the difference between the high density sub-regions and the country as a whole is considerably narrowed down. The figure is 50 cents for the former and 79 cents for the latter. From what has already been said it is clear that, acre for acre, the sown area in the high density sub-regions must be more productive than the sown area elsewhere in India, because it includes a much larger proportion of the fertile alluvium of the plains, and a much smaller proportion of the less fertile soils of the plateaus. Higher natural fertility enables less land to be left fallow; while more ample rainfall enables more land to be irrigated and more land to be sown more than once. The comparative figures of land use are shown in TABLE 6 *on next page.*

TABLE 6

| | *Indices of land use* | *High density sub-regions* | *India* |
|---|---|---|---|
| *A* | 1. Percentage of net area sown to total land area | 50 | 35 |
| | 2. Percentage of net area sown to topographically usable area | 62 | 56 |
| | 3. Double-crop percentage | 23 | 13 |
| | 4. Irrigation percentage | 25 | 16 |
| *B* | 1. Fallow percentage | 18 | 22 |
| | Percentage of classified land of— | | |
| | 2. Forests | 11 | 15 |
| | 3. Other land 'unavailable for cultivation' | 17 | 16 |
| | 4. Unused land | 12 | 17 |

## D—*Low Density Sub-Regions*

WE MAY NOW tu n by way of contrast to those sub-regions where density is low and the land area *per capita* is correspondingly high. The extreme instance is the Desert sub-region and next in order are the two Himalayan sub-regions. Lastly, there are three sub-regions in the northern half of the Peninsular Hills and Plateau region—in all of which the density is well below the mean in India. On the whole, the six sub-regions cover a little less than one-half of India's land, and the people living there number only between one-fifth and one-fourth of India's population. The following table shows the population, land area, density and land area *per capita* of these six sub-regions :

TABLE 7

| *Name of sub-region* | *Population* (IN LAKHS) | *Density* (NUMBER PER SQ. MILE) | *Land area* (IN LAKHS OF ACRES) | *Land area per capita* (IN CENTS) |
|---|---|---|---|---|
| The Desert | 46 | 61 | 482 | 1,047 |
| Western Himalayas | 90 | 68 | 852 | 944 |
| Eastern Himalayas | 124 | 118 | 674 | 542 |
| North-West Hills | 104 | 163 | 409 | 394 |
| North Central Hills & Plateau | 138 | 164 | 537 | 389 |
| North-East Plateau | 290 | 192 | 967 | 333 |
| TOTAL 6 SUB-REGIONS | 792 | 129 | 3,921 | 495 |

We shall now examine what are those conditions of topography, soil and rainfall which distinguish these sub-regions from others, the nature of land use and its relation to the density of settlement of the people.

31. THE DESERT—This sub-region consists of the following western districts of Rajasthan : Ganganagar, Bikaner, Churu, Jodhpur, Barmer, Jalore Pali, Nagore and Jaisalmer. The greater part of the sub-region consists of a land surface on which there is no running water. There are some groups of hills occurring in the eastern part of Jodhpur on the western side of the Aravalli range. Out of the total land area *per capita*, namely 1,047 cents, 971 cents are in plains, 63 cents are in plateaus and 13 cents are in hills. Two hundred and fifty four lakhs of acres—that is to say, 552 cents *per capita*—are, as already explained, hardly capable of supporting life to any significant extent. They must be left out of the reckoning. Even of the rest, the soils in the south, central and western areas are mostly light and sandy. Fertile patches increase from west to east.

The greater part of the sub-region (90 per cent) falls in the yellow belt. In fact, it is three-quarters of the entire yellow belt. The remaining ten per cent of the sub-region lies in the brown belt. The average rainfall over the whole area is 11 inches and the average number of rainy days only 13.

Village land records are available for only 81 lakhs of acres out of 482. According to available figures, the net area sown *per capita* is 68 cents. Double-crop is negligible. There is a certain amount of localised irrigations. The fallow percentage is large and forests are non-existent. There are reasons to believe that cultivation acreages of this sub-region are under-stated. So the net area sown *per capita* is probably more than 68 cents. It is difficult to make any sort of estimate as to what the true figure might be, but it seems unlikely that it can be any very considerable proportion of the land area *per capita*. Mineral production in the sub-region consists mainly of salt from Sambhar lake, and gypsum in Bikaner and Jaisalmer (which accounts for most of the country's output). A small quantity of low quality coal is also produced in Bikaner.

32. WESTERN HIMALAYAS—This Sub-region consists of the entire state of Jammu and Kashmir, two districts of the Punjab (Kangra and Simla), Himachal Pradesh, Bilaspur and five districts of Uttar Pradesh (Garhwal, Tehri-Garhwal, Nainital, Almora and Dehra Dun). Ninety lakhs of people live on 852 lakhs of acres here. Jammu and Kashmir accounts for an estimated 44 lakhs of people on 594 lakhs of acres with a land area *per capita* of no less than 1,345 cents. This state is, therefore, even more sparsely populated than

the Desert. In the remaining parts of the Western Himalayan sub-region there are 46 lakhs of people living on 258 lakhs of acres. The land area *per capita* is 560 cents, which is made up of 380 cents of mountains, 150 cents of hills, 10 cents of plateaus and 20 cents of plains.

The soils in the low-lying plains are mostly alluvial. The texture classes are usually loams and clay loams while stiff clay soils are also found in the valleys. On the hills, the surface and sub-surface soils are stony and sandy.

The average annual rainfall in Jammu and Kashmir is 39 inches. In the rest of the Western Himalayas, the average is 50 inches; the average number of rainy days being 70 to 75. Out of 258 lakhs of acres (*exclusive* of Jammu and Kashmir) 134 lakhs fall in the dark green belt and 89 lakhs in the light green belt. A small area of 35 lakhs falls in the blue belt.

Village records are available for 282 lakhs of acres out of 852. If we exclude Jammu and Kashmir, the net area sown *per capita* is 63 cents against a topographically usable area of 83 cents. Double-crop percentage is high (24·5 per cent) as also irrigation (19·7 per cent). Fallow land is relatively small (10·8 per cent).

Limestone and rocksalt are the only minerals which are worked—the former in the Himalayan foot-hills of the Punjab and the latter in Mandi in Himachal Pradesh. Deposits of copper, gypsum, bauxite, bentonite and magnesite are known to exist but are not worked.

33. EASTERN HIMALAYAS—This sub-region includes the whole of Assam, Manipur, Tripura and Sikkim and also three districts of West Bengal (Darjeeling, Jalpaiguri and Cooch Behar). One hundred and twenty-four lakhs of people live here on 674 lakhs of acres; the land area *per capita* is 542 cents which is much the same as in the Western Himalayas (*exclusive* of Jammu and Kashmir). Out of this total, 114 cents are mountains, 260 cents are hills, 3 cents are plateaus and 165 cents are plains. The major part of the plains in this sub-region is found in the Brahmaputra Valley whose alluvial soils vary in colour from red to reddish brown. Other plain soils of Assam consist of red sand and loam types. In the hills, some heavy clays are found. In Manipur, the red soils are deep and in Tripura red loams (laterites) occur.

The rainfall is abundant, and never failing ; it is well over 75 inches in the year in most parts of the sub-region. Owing to the peculiar configuration of the hills in relation to the rain-bearing winds of the south-west monsoon the amount of rainfall varies sharply from place to place. Thus, Cherrapunji in the Khasi and Jaintia Hills receives the world record rainfall of 425 inches per year, while two stations in Nowgong district receive only 48 inches and 60 inches

respectively. The average rainfall for the region as a whole is 108 inches and the number of rainy days is well over 100. Five hundred and seventy lakhs of acres out of 674 fall, therefore, in the blue belt and practically all the remaining land in the dark green belt. A small area of 3 lakhs in the Assam Hills appears to fall in the light green belt.

Village records are available for 391 lakhs of acres out of 674. The net area sown *per capita* is 59 cents against a topographically usable area of 225 cents. Double-crop is 14 per cent and irrigation 16·5. Fallow land is rather high (29·4 per cent). The area classed as forest is relatively small—between one sixth and one-seventh. The percentage of unused land (48·3) is highest among all the sub-regions of India. If these figures are compared with those of Western Himalayas (*exclusive* of Jammu and Kashmir) we arrive at the first indication of the existence of some parts of India where a reserve of cultivable but uncultivated land is still available. This sub-region contains the only petroleum field of India and it supplies 5 per cent of India's requirements. Coal is found in association with petroleum in Lakhimpur district at the eastern end of the Assam Valley. It is also found on the plateau in the Garo Hills and in the Khasi and Jaintia Hills district. Other minerals known to exist but not worked, are sillmanite in Gauhati and copper in Sikkim.

34. North-West Hills- The sub-region is made up of the whole of Madhya Bharat *except* the three lowland districts (Bhind, Gird and Morena), and eight districts in south-eastern Rajasthan (Udaipur, Dungarpur, Banswara Sirohi, Chittorgarh, Kotah, Bundi and Jhalawar). One hundred and four lakhs of people live on 409 lakhs of acres, with a land area *per capita* of 394 cents. The sub-region includes the Aravalli hill ranges which run from north-east to the south-west and form the north-western boundary. It also includes the Vindhya and Satpura ranges running east to west, of which the latter forms the southern boundary. The composition of the land area *per capita* is 296 cents of plateaus, 56 cents of hills and 42 cents of plains. The soils are mostly red and sandy. Medium black soils occur in Chittorgarh district and in Madhya Bharat Plateau. A mosaic of red and black soil is found in the Madhya Bharat Hills division. The average rainfall is 35 inches, varying from 30 inches in the Rajasthan Hills to 37 inches in Madhya Bharat Plateau. The average number of rainy days varies from 34 in Rajasthan Hills to 44 in the Madhya Bharat Hills. Out of 409 lakhs of acres, 235 fall in the light green belt and 174 fall in the brown belt. Approximately 44 lakhs of people living in this sub-region are exposed to the seasonal hazards of the brown belt. The net area sown *per capita* is 144 cents against a topographically usable area of 276 cents. Double-crop

and irrigation are relatively small (6·8 and 3·4 per cent respectively). There is very little forest. The unused land ratio is somewhat on the high side (25·5 per cent).

The sub-region is fairly rich in minerals. There are deposits of mica, lead, zinc, copper, sandstone and other building stones, fire clays and glass sands. India's principal deposits of lead and zinc are found in Zawar in Udaipur (Mewar). Production started during the war; was subsequently discontinued, and recently re-commenced on a small scale. The sub-region yields 10 per cent of the total annual output of Indian mica.

35. NORTH CENTRAL HILLS AND PLATEAU—This sub-region is made up of five districts of Uttar Pradesh (Jhansi, Jalaun, Hamirpur, Banda, and Mirzapur), Vindhya Pradesh, Bhopal and seven north-western districts of Madhya Pradesh (Mandla, Sagar, Jabalpur, Hoshangabad, Nimar, Betul and Chhindwara). One hundred and thirty-eight lakhs of people live on 537 lakhs of acres, with a land area *per capita* of 389 cents. The sub-region is traversed by a number of ranges running from south-west to north-east. In general, the higher elevation is found in the south; and the land slopes gradually towards the north. The composition of the land area *per capita* is 226 cents of plateau-land, 70 cents of hills and 93 cents of plains, yielding a topographically usable area of 276 cents.

There is a considerable area of black cotton soils in this sub-region. Mixed red and black soils and red lateritic loams occur in Vindhya Pradesh and Bhopal.

The rainfall conditions are distinctly better than in the North-West Hills. The general average is 44 inches ranging from 36 in the Uttar Pradesh districts to 48 inches in North-West Madhya Pradesh and 49 inches in Bhopal. Out of 537 lakhs of acres, 396 lakhs fall in the light green belt and 131 lakhs in the dark green belt. Only a small fringe of the land falls in the brown belt.

The net area sown *per capita* is 129 cents against the topographically usable area of 275 cents. Double-crop is 10·8 per cent and irrigation 5 per cent. Fallow land is 18·8 per cent. There are extensive forests—101 lakhs of acres out of a classified total of 526 lakhs of acres. The ratio of classified forests to total land area is large; the sub-region ranks third highest in this respect (Malabar-Konkan and the North-East Plateau alone ranking higher). The ratio of unused land is distinctly high, *viz.*, 28·1 per cent (in fact, the second highest in India—the Eastern Himalayan sub-region ranking first). In view of these facts it is reasonable to suppose that the sub-region contains reserves of cultivable but uncultivated land, in a sense in which it cannot be said of any of the sub-regions considered so far, except the Eastern Himalayas. The sub-region is also definitely rich in mineral resources. Deposits of coal,

manganese, graphite and fire clays are found in North-West Madhya Pradesh. Coal (in the Pench Valley field) and manganese (in the Chhindwara district) are the principal minerals which are worked in fair quantities. Coal is also produced in the Vindhya Pradesh division of this sub-region, where limestone is also worked for the manufacture of cement. Small quantities of diamonds are also found here. Deposits of bauxite are known to exist but are not worked. In the Uttar Pradesh districts of this sub-region, glass sands are worked and form the basis of the glass industry of that state. Limestone is also worked for the manufacture of cement.

36. NORTH-EAST PLATEAU—We now come to the last of our six low density sub-regions. This is made up of three parts : the Chhota Nagpur division of Bihar; the whole of Orissa except four districts (Balasore, Cuttack, Puri and Ganjam Agency); and East Madhya Pradesh (that is to say, the district of Balaghat, Bhandara, Chanda, Raipur, Bilaspur, Durg, Bastar, Raigarh and Surguja). Two hundred and ninety lakhs of people live on 967 lakhs of acres, with a land area *per capita* of 333 cents. The Maikal range of the great Central Indian divide, runs through the north-western part of this sub-region. The range is continued north-eastwards as Korea hills and the divide ends at the Pareshnath hills in Chhota Nagpur. The plateau lies generally at a high elevation in the north, the height being about 2,000—4,000 feet above sea level. From the north the area generally slopes southwards or south-eastwards. The remaining portion of the sub-region is at a height of about 500—1,500 feet above sea level. The composition of the land area *per capita* is, therefore, 125 cents of plateau-land, 110 cents of hills and 97 cents of plains, yielding a topographically usable area of 215 cents.

In Chhota Nagpur the soils vary from red gravelly ferruginous to loams and clays. In East Madhya Pradesh the soils are for the greater part typical black cotton type. Red yellow type occurs at the eastern end. The soils of the inland districts of Orissa are mostly red earths with an occasional mixture of lateritic and black soils.

Rainfall conditions are much better here than even in the North Central Hills and Plateaus. The annual average is 56 inches ranging from 54 in Chhota Nagpur to 59 in Orissa Inland. The average number of rainy days varies from 63 in East Madhya Pradesh to 75 in Orissa Inland. Most parts of the sub-region fall in the dark green belt and a relatively small area in the light green belt.

The net area sown *per capita* is 94 cents as against 215 cents which are topographically usable. Double-crop is 14·4 per cent and irrigation 10·8 per cent. Fallow land is slightly on the high side (22·7 per cent). Out of the total area of





962 lakhs of acres, village records are available for 771 lakhs of acres. They show that nearly 240 lakhs of acres are classified as forest. This is the largest area in any sub-region of India. The proportion of classified forests to total land area is also high, being in fact the second highest in India (Malabar-Konkan is first). The unused land ratio is 23·3 per cent. These figures indicate that there is probably still some reserve of cultivable but uncultivated land.

This sub-region is distinguished from all others by its abundance of mineral wealth. One of the three divisions of this sub-region—Chhota Nagpur—produces 82 per cent of India's coal; 57 per cent of India's mica; 46 per cent of India's iron ore; the entire output of India's copper ore; and fairly significant quantities of manganese, graphite, bauxite, limestone and other minerals. Another division—East Madhya Pradesh—produces 46 per cent of India's manganese and a little over 4 per cent of India's coal. It is also known to have large deposits of iron ore and some bauxite, but these are not worked. A third division of this sub-region—Orissa Inland—produces over one-half of India's iron ore, one-sixth of India's manganese and some coal also.

37. ALL SIX SUB-REGIONS—We may now consider all the six low density sub-regions together and compare the conditions prevailing in that group with those of the country as a whole. The results are as follows:

*I*— The total population of the six sub-regions is 792 lakhs against India's 3,613 (21·9 per cent). The land area is, however, 3,921 lakhs of acres against India's 8,126 (48·3 per cent). The land area *per capita* is 495 against India's 225.

*II*— The topographical conditions which define the usability of land for cultivation purposes are dissimilar in the different sub-regions. One sub-region where topography is eminently favourable is largely unusable because of the desert. A heavy write-off is necessary in two others on account of mountains. The other three are mainly plateau-land with a considerable proportion of hilly tracts. The topographical components of land area *per capita* are compared in TABLE 8. Out of the total land area *per capita* of 495 cents the topographically usable area *per capita* is 235 cents (*including* Jammu

TABLE 8

| *Topographical components* | *Percentage of total land area* | |
|---|---|---|
| | *Low density sub-regions* | *India* |
| Plains . . . | 29 | 43 |
| Plateaus . . . | 26 | 28 |
| Hills . . . | 23 | 18 |
| Mountains . . | 22 | 11 |
| | 100 | 100 |

and Kashmir). The write-off is 53 per cent against India's 34 per cent. On balance, it is clear that the topographical conditions are definitely less favourable.

*III*— The distribution of land among the different rainfall belts in these six sub-regions compares with India as shown in TABLE 9. On the whole, it seems that rainfall conditions are somewhat more favourable here than in the country as a whole. The blue belt and the dark green belt are distinctly larger but this might not make much difference, for where the rain falls copiously, suitable land is difficult to find. The topographical write-off is heavy. There is a small deficit of 5 per cent in the light green belt but this is offset by a substantial drop in the brown belt. It is this which indicates that these sub-regions are certainly not worse off and probably slightly better off as regards rainfall than the country as a whole. (The yellow belt is slightly large, but the effect of this factor has already been taken into account when the worst part of the desert was omitted from the reckoning.)

TABLE 9

| *Rainfall belt* | *Percentage of total land area* | |
|---|---|---|
| | *Low density sub-regions* | *India* |
| Blue belt . . . | 16 | 11 |
| Dark green belt . . | 33 | 21 |
| Light green belt . . | 32 | 37 |
| Brown belt . . . | 7 | 24 |
| Yellow belt . . . | 12 | 7 |
| | 100 | 100 |

*IV*— The net area sown *per capita* is 96 cents as against India's 79 cents. It is difficult to say whether the advantage of the larger area is or is not offset by somewhat lower average of soil quality. It is probable there is some offsetting, but it is not complete. The comparative figures of land use are shown below :

TABLE 10

| | *Indices of land use* | *Low density sub-regions* | *India* |
|---|---|---|---|
| A | 1. Percentage of net area sown to total land area | 19 | 35 |
| | 2. Percentage of net area sown to topographically usable area . . . . . | 40 | 56 |
| | 3. Double-crop percentage . . . . . | 12 | 13 |
| | 4. Irrigation percentage . . . . . | 10 | 16 |
| B | 1. Fallow percentage . . . . . | 22 | 22 |
| | Percentage of classified land of— | | |
| | 2. Forests . . . . . | 22 | 15 |
| | 3. Other land 'unavailable for cultivation' . . | 16 | 16 |
| | 4. Unused land . . . . . | 27 | 17 |

It should be noted particularly that the proportion of net area sown to the topographically usable area is significantly smaller and the unused land ratio is significantly higher. From this it would follow that the low density is not entirely a matter of the available resources being poorer. Such a statement would be certainly true of the Desert, probably also of the North-West Hills and possibly the Western Himalayas. The Eastern Himalayas, the North-East Plateau and the North Central Hills and Plateau sub-regions fall in a different category. It seems probable, as already mentioned, that they contain some reserve of cultivable but uncultivated land.

What is perhaps even more significant is the fact that these sub-regions and more especially the last two among them possess mineral resources of a distinctly higher range and value than anywhere else in India. Today, that fact seems to have very little influence on the relative distribution of people on the land. But it might well make a difference in the future, when the possibilities of industrial development—so clearly indicated by these resources—are more fully utilised.

### E—*Medium Density Sub-Regions*

IN THE LAST two sections, we have completed the review of 11 out of 15 sub-regions of India. The other four sub-regions are shown in the table below together with particulars of their population, land area and land area *per capita:*

TABLE 11

| *Name of sub-region* | *Population* (IN LAKHS) | *Density* (NUMBER PER SQ. MILE) | *Land area* (IN LAKHS OF ACRES | *Land area per capita* (IN CENTS) |
|---|---|---|---|---|
| Trans-Gangetic Plains . . | 259 | 332 | 499 | 193 |
| South Deccan . . . | 315 | 247 | 817 | 259 |
| North Deccan . . . | 239 | 246 | 621 | 260 |
| Gujrat-Kathiawar . . | 161 | 226 | 456 | 283 |
| TOTAL 4 SUB-REGIONS | 974 | 260 | 2,393 | 246 |

39. TRANS-GANGETIC PLAINS—This sub-region consists of (*i*) the whole of the Punjab *except* the two Himalayan districts (Kangra and Simla); (*ii*) the Patiala and East Punjab States Union ; (*iii*) Delhi ; (*iv*) three lowland districts of Madhya Bharat (Bhind, Gird, Morena); (*v*) eight eastern districts of Rajasthan (Jaipur, Tonk, Sawai Madhopur, Bharatpur, Alwar, Sikar, Bhilwara, Jhunjhunu) ; and (*vi*) Ajmer. Two hundred and fifty-nine lakhs of people live here on 499 lakhs of acres with a land area *per capita* of 193 cents. The entire sub-region lies between about 600-1,500 feet above sea level except in the south-west where a part of the Aravalli ranges enters into Ajmer division. The composition of the land area *per capita* is, therefore, 124 cents of plains, 61 cents of plateaus and 8 cents of hills, yielding 110 cents as the topographically usable area. The Punjab Plain consists mostly of alluvium of the same origin as in the Gangetic plains, generally sandy loam. Mixture of alluvial and aeolian soils cover Delhi, East Rajasthan, Patiala and East Punjab States Union and the low land districts of Madhya Bharat. To the south and east of Jaipur, the soils are either black cotton or a rich alluvial loam. In Ajmer the soils are mostly sandy.

We have already seen how average annual rainfall diminishes sharply as we move westward up the Gangetic plains. When we reach the Trans-Gangetic Plain the amount becomes quite small. The average ranges from 19 inches in Patiala and East Punjab States Union to 28 inches in Madhya Bharat Lowland. The average number of rainy days ranges from 26 in Ajmer to 36 in Madhya Bharat Lowland. Out of a total of 499 lakhs of acres, only 26 lakhs lie in the light green belt. Four hundred and twelve lakhs of acres lie in the brown belt and 61 lakhs in the yellow belt. A large part of the sub-region is, therefore, exposed to the hazards of drought. Part of the affected area is, however, protected by irrigation.

The net area sown *per capita* is 95 cents against the topographically usable area of 110 cents. Double-crop is fairly high (19 per cent) and irrigation is distinctly high (28 per cent). [The sub-region ranks third highest in India in the ratio of irrigated acreage to the gross sown area.] Fallow land is on the low side (15·8 per cent). Forest land is negligible. The unused land ratio is distinctly small (13·9 per cent).

As in the Gangetic plains, mineral resources are unimportant. Some lime-stone is produced in the foot hills of the Himalayas and there is some mica production in Ajmer.

40. SOUTH DECCAN—This sub-region consists of four divisions, *viz.*, Mysore, Madras Deccan, South Hyderabad, and Bombay Deccan Southern. The Madras districts are : Bellary, Anantapur, Cuddapah, and Kurnool. The

Bombay districts are : Belgaum, Bijapur and Dharwar. All the districts of Hyderabad *except* Aurangabad, Parbhani, Nanded, Bidar, Bhir and Osmanabad, are included. The general elevation of the sub-region is 1,000—3,000 feet in the north and 2,000—3,000 feet in the south, with a gentle slope towards the east. Three hundred and fifteen lakhs of people live on 817 lakhs of acres with a land area of 259 cents *per capita*. The composition of this area is 175 cents of plateaus, 41 cents of hills and 43 cents of plains—thus yielding 183 cents as the topographically usable area.

In the districts of South Hyderabad and Bombay Deccan Southern the land is covered by medium black soils, red loams and lateritic soils. In Mysore, the soils are predominantly red sand loam type. In the four districts of Madras Deccan, black cotton soils are associated with red loams and sandy loams.

The average rainfall is 32 inches ranging from 24 inches in the Madras Deccan to 35 inches in Hyderabad and 36 inches in Mysore. The average number of rainy days is 39 in Madras Deccan and 56 in Mysore. Approximately 277 lakhs of acres out of 817 fall in the light green belt. Nearly twice that area or 520 lakhs of acres fall in the brown belt. Some parts of the area—notably the districts of Madras and Bombay—are especially exposed to the hazards of drought. Rainfall is not only scanty but capricious; and, in consequence, severe scarcities and famines occur, not merely frequently, but more or less regularly.

The net area sown *per capita* is 114 cents against 183 cents which are topographically usable. Double-crop is almost negligible (2.7 per cent) and irrigation is relatively small (8·9 per cent). The fallow percentage is high (34·7 per cent). A fair amount of land is classed as forest—123 lakhs of acres out of classified total of 806 lakhs. This might be one reason why the unused land ratio is very small (6·6 per cent).

This sub-region is fairly important for its mineral resources. Coal is produced in South Hyderabad (3·6 per cent of India's output). The entire output of Indian gold is produced in Mysore. Mysore has fairly large deposits of high quality iron ore but production is small because there is no coal field in the vicinity. Magnesite and chromite are other minerals produced in Mysore. Manganese is worked in Madras Deccan. Iron ore, limestone, gold and asbestos are known to exist in this area, though not worked. Small quantities of bauxite are produced in Bombay Deccan Southern division.

41. NORTH-DECCAN—There are three divisions in this sub-region, *viz.*, South-West Madhya Pradesh, North Hyderabad and Bombay Deccan Northern. Amraoti, Buldana, Akola, Yeotmal, Wardha and Nagpur are the Madhya

Pradesh districts. West Khandesh, East Khandesh, Dangs, Nasik, Ahmednagar, Poona, Satara North, Satara South, Kolhapur and Sholapur are the Bombay districts. Aurangabad, Parbhani, Nanded, Bidar, Bhir and Osmanabad are the Hyderabad districts. Two hundred and thirty-nine lakhs of people live on 621 lakhs of acres with an average land area *per capita* of 260 cents. The sub-region is bounded on the north by the Satpuras and on the west by the Western Ghats. The land generally slopes from west to east except in the north where the river Tapti, flowing westward, enters the Arabian Sea. The land area *per capita* is composed of 184 cents of plateaus, 46 cents of hills and 30 cents of plains, yielding 214 cents as topographically usable area.

Heavy black cotton soils occur in South-West Madhya Pradesh and North Hyderabad. The rest of the sub-region contains medium black soils with a fairly considerable area carrying red loam (lateritic) soils. Except in the narrow strip near the ghats, the major portion of this sub-region lies in the rain shadow of the Western Ghats, and the rainfall is therefore low. The general rainfall is 36 inches and varies from 30 inches to 37 inches in Bombay Deccan Northern. The average number of rainy days ranges from 44 to 50. Approximately 303 lakhs of acres out of 621 lakhs fall in the light green belt and 275 lakhs fall in the brown belt. This part of the sub-region is exposed to hazards of drought, though not so severely as parts of South Deccan.

The net area sown *per capita* is 157 cents as against 214 cents of topographically usable area. Double-crop is negligible (1·9 per cent) and the irrigation percentage is exceedingly small (4·2). Fallow land is 25 per cent. The forest area is small and the unused land ratio is extraordinarily small (2·6 per cent, which is the lowest ratio among all the sub-regions in India).

This sub-region is perhaps the poorest in mineral resources—poorer even than the Northern Plains. This is because the sub-region is covered, for the most part, by volcanic lavas. Situated just outside the lava tracts, there is a manganese field in Nagpur district of Madhya Pradesh, which is an outlier of the main fields of Balaghat and Bhandara districts to the east.

42. GUJRAT-KATHIAWAR—This sub-region consists of Kutch, Saurashtra and the districts of Bombay to the north of the Daman Ganga river (*viz.*, Banaskantha, Sabarkantha, Mehsana, Ahmedabad, Kaira, Panch Mahals, Baroda, Broach, Surat and Amreli). The north-eastern tracts of the sub-region consist of portions of the Satpuras, the Vindhyas and the Gujrat-Malwa hill ranges. They focus the drainage of the eastern part of this sub-region on to the Gulf of Cambay by a fan of major rivers of which the most famous are the Narbada and the Tapti. One hundred and sixty-one lakhs of people live here on 456

lakhs of acres of land with a land area *per capita* of 283 cents. This is composed of 255 cents of plains, 27 cents of hills and one cent of plateau. The plains, however, include 75 lakhs of acres of purely nominal land, mostly marshy wastes which includes 59 lakhs of acres in the Rann of Kutch. If this is also written off along with the normal percentages of the different topographical components, the topographically usable area *per capita* is 207 cents.

The sub-region consists of deep black and medium black and alluvial soils. Patches of mixed red and black soils and lateritics also occur. Ninety per cent of the rainfall occurs during the monsoon season—June to September. The southern Gujrat plain and the Tapti Valley receive a moderate rainfall of 30 inches to 40 inches, which increases further towards the Satpuras and the north eastern highlands. Further north in Gujrat, there is a steady decline from 40 inches to 25 inches. There is a steep fall along the Saurashtra coast; and Kutch is semi-desert. The sub-region enjoys a curious distinction. It is the only sub-region which has some part of its land in all the five rainfall belts. The total land area (456 lakhs of acres) is distributed as follows : blue belt (4), dark green belt (17), light green belt (107), brown belt (247) and the yellow belt (81).

The net area sown *per capita* is 129 cents against the topographically usable area of 207 cents. Double-crop and irrigation are very small (3·7 per cent and 3·9 per cent respectively). Fallow land is 20·5 per cent. Forests are negligible. The unused land ratio is much the same as in the Upper Gangetic Plains (14·5 per cent).

Manganese is worked in the Panch Mahals district of Bombay. Other minerals known in the sub-region are gypsum, bauxite and limestone. Salt is made all along the coast, and the output is very large, nearly one-half of the total production of the country.

43. ALL FOUR SUB-REGIONS—Considering all four medium density sub-regions together, the results are as follows :

*I*—The total population of the four sub-regions is 974 lakhs against India's 3,613 lakhs (or 27·0 per cent). The land area is 2,393 lakhs of acres against India's 8,126 (or 29·4 per cent). The land area *per capita* is 246 cents against India's 225.

*II*—TABLE 12 on opposite page compares the topographical components of the land area *per capita* in these four sub-regions with those of the country as a whole.

TABLE 12

| *Topographical components* | *Percentage of total land area* | |
|---|---|---|
| | *Medium density sub-regions* | *India* |
| Plains . . . | 39 | 43 |
| Plateaus . . . | 48 | 28 |
| Hills . . . | 13 | 18 |
| Mountains . . . | .. | 11 |
| | 100 | 100 |

From the point of view of topography, the medium density sub-regions are perhaps slightly better off than the country as a whole. As compared with the total land area of 246 cents, the topographically usable area is 174 cents. The write-off is only 29 per cent against 34 per cent for the country as a whole.

*III*—But this advantage is heavily offset partly because the soil is, on the average, poorer; and even more, because the rainfall is much more unfavourable. This is seen from TABLE 13.

TABLE 13

| *Rainfall belts* | *Percentage of total land area* | |
|---|---|---|
| | *Medium density sub-regions* | *India* |
| Blue belt . . . | 1 | 11 |
| Dark green belt . . | 2 | 21 |
| Light green belt . | 30 | 37 |
| Brown belt . . | 61 | 24 |
| Yellow belt . . | 6 | 7 |
| | 100 | 100 |

The brown belt dominates. Sixty-one per cent of the land in these four sub-regions falls in the brown belt, the corresponding ratio for the country as a whole being only 25 per cent.

IV—The net area sown *per capita* is 122 cents out of a total land area of 246 cents. In the country as a whole the net area sown *per capita* is only 79 cents against a total land area of 225 cents. Quite clearly, there is not only no under-utilization of land, there is clear evidence of excessive use. TABLE 14 on next page compares the main indices of land use as between these four sub-regions jointly and the country as a whole.

TABLE 14

| | Indices of land use | Medium density sub-regions | India |
|---|---|---|---|
| A | 1. Percentage of net area sown to total land area | 50 | 35 |
| A | 2. Percentage of net area sown to topographically usable area | 70 | 56 |
| A | 3. Double crop percentage | 6 | 13 |
| A | 4. Irrigation percentage | 11 | 16 |
| B | 1. Fallow percentage | 26 | 22 |
| B | Percentage of classified land of— | | |
| B | 2. Forests | 11 | 15 |
| B | 3. Other land 'unavailable for cultivation' | 15 | 16 |
| B | 4. Unused land | 8 | 17 |

The figures converge and yield a coherent picture, which is that the pressure of population on land is even greater on these medium density sub-regions than in the high density sub-regions. Though the rainfall is scanty, it is not so small as to forbid cultivation altogether as in the Desert. So, the people have settled and grown in numbers. But the capriciousness of the rainfall and other difficulties of cultivation seem only to provide the people with a strong incentive for attempting cultivation over as large an area as possible.

The fact that the fallow percentage is higher than the average for India not only does not contradict these conclusions, but rather tends to confirm them. Extension of cultivation over sub-marginal land of low productivity must necessarily entail a higher fallow percentage.

## F — *India and the World*

WE HAVE SEEN in the last three sections how the distribution of the people on the land—measured by our chosen index, the land area *per capita*—varies from one sub-region to another. It stands to reason that there must be a fairly close connection between the size of the index and the usefulness of land to provide the food needed by the people who live on it. And we have found, by reference to the simplest of known facts about the topography, nature

of soil, the amount of rainfall, and the nature of land use—that the figures do hang together. Without attempting anything in the nature of a mathematical correlation—and the data at our disposal are hardly suitable for that purpose —we can perceive how in some areas the people can and do live on less land per head than elsewhere.

45. We have indeed been led beyond this point to the conception of different degrees of utilisation of usable resources. We noticed the apparently anamolous (but, nevertheless, credible) circumstance that the people living in the medium density sub-regions with apparently more abundant land than in the high density sub-regions have in fact had to contend against greater difficulties and exerted themselves more and achieved an even higher degree of utilisation of usable land.

At this stage, it is appropriate that we should carry our review from within our country to the world as a whole, and attempt to form an idea of our own position in distribution of humanity over the land area of the world.

46. The following table shows the basic facts of comparison between India and the World :

TABLE 15

| —— | *India* | *World* |
|---|---|---|
| Population (IN CRORES) | 36 | 240 |
| Land area (IN CRORES OF ACRES) | 81 | 3,251 |
| Area *per capita* (IN CENTS) : | | |
| All land | 225 | 1,354 |
| Agricultural area | 97 | 351 |
| Arable land | 97 | 126 |

Humanity consists of not less than six and not more than seven persons for every person living in India. But the total land area of all the countries of the world is well over forty times as extensive as India. So, the land which would fall to the share of each of us, if the entire world were evenly divided, would measure 13½ acres—or an area which is six times as large as our own land area *per capita*. In that event, would we be six times as well off as at present ? That seems hardly likely, if we look at the figures of 'agricultural area' and more particularly 'arable land'.

47. The foregoing figures have been taken from the Year Book of Food and Agricultural Statistics issued by the Food and Agriculture Organisation of the United Nations. What is referred to here as 'arable land' should be deemed to include not only all land actually used for growing food or other crops, (which is what we have hitherto considered as net area sown) but also fallow lands.

'Agricultural area' according to these publications includes all such land and in addition, what are called 'permanent meadows and pastures'. We have apparently got no land of this distinctive description: our equivalent of such land is included within our total of 'net area sown' and 'fallow land'.

It appears that the average citizen of the world uses only a quarter of the land on which he lives as 'agricultural area'; and he uses only about a third of this agricultural area as crop-land and fallow. On the other hand, we use over two-fifths of the entire land on which we live for 'agricultural' purposes and we cultivate almost all of it. In the result, the world citizen cultivates 126 cents against our 97 cents. The difference between the areas which are cultivated is already very much less than the difference between the areas which are available.

What is the explanation for this ? One explanation may be that our land area *per capita* includes a somewhat higher proportion of the more productive land. Another may be that we are over-crowded on too little land and are, therefore, unable to pick and choose and have been already compelled to bring under cultivation a good deal of poor land which the average world citizen leaves waste or uses for rough grazing. It may be that the true explanation consists in part of both.

Here we are faced with much the same questions with which we started when we observed the inequality of distribution of people on the land in different zones within India itself.

48. It is not very easy to answer the questions firmly, because we are even less certain about the relevant facts of other countries than we are of different parts of our own.

So far as topography is concerned, it does not appear that the average Indian citizen is better off than the average world citizen. It is reckoned that the world consists of : 12 per cent of mountains, 14 per cent of hills, 33 per cent of plateaus and 41 per cent of plains. Our country consists of : 11 per cent of mountains, 18 per cent of hills, 28 per cent of plateaus and 43 per cent of plains. The write-off, purely on account of topography, is much the same. It seems likely, however, that the proportion of land which has to be written off as arid or frozen land is somewhat smaller in India, than in the world as a whole.

49. While we cannot be sure whether or not the average land of the world is better or worse fitted for cultivation than our land, it is fairly certain that the average land of Europe is definitely better fitted. Europe has fewer land-forms* that curtail food production, than other continents. Europe has also got 'the highest proportion of well-watered land'. Not only is rainfall both adequate and reliable, the rains are gentle and the temperature moderate—the soils are not leached by heavy rains that wash out most of the fertility. The table below shows the comparison between India and Europe :

TABLE 16

| | *India* | *Europe* (EXCLUSIVE OF EUROPEAN U.S.S.R.) |
|---|---|---|
| Population (IN CRORES) | 36·1 | 39·6 |
| Land area (IN CRORES OF ACRES) | 81·3 | 121·8 |
| Area *per capita* (CENTS) : | | |
| All land | 225 | 307 |
| Agricultural area | 97 | 153 |
| Arable land | 97 | 92 |

The figures of this table merit our very close attention. They show the following :

*First,—Europe (which is the most densely populated continent of the world) is less densely populated than India.* The average European has more land *per capita* than the average Indian—the excess held by the former is well over a third of all the land held by the latter.

*Secondly,—The average European has brought only* 30 *per cent of his land under the plough. The average Indian, on the other hand, has brought under the plough* 43 *per cent of his land* (even though it has a far larger proportion of thin and poor soils, and a less adequate and less evenly distributed rainfall). Only thus is the average Indian able to get 97 cents of cultivated and fallow fields against 92 cents of the average European.

* The exact proportion of European land (*exclusive of* European U.S.S.R. which should be classed as plain or mountain is not clearly known. If European U.S.S.R. is also included, two-thirds of the land surface has been reckoned as plains and only four percent as mountains.

*Thirdly,—Because he has got more and better land and has used only a smaller fraction of it for cultivation, the average European is able to have, and does have in addition,* 61 *cents of agricultural land under 'permanent meadows and pastures'.*

These are important facts. They have a direct bearing on the issue much debated these days—whether the problem in India is one of 'over-population' or 'under-development' ; and whether food is short because there is not enough land or because of the alleged 'inefficiency' and 'archaic methods' of Indian farming. Whether or not the assumption be true that the methods of Indian farming are 'archaic' or 'inefficient', *no such assumption is necessary for explaining the difference in the nutritional standard of the average European and the average Indian.* Even in the absence of any difference in farming efficiency, Europe can produce more plant food *per capita* than India because much the same area of arable land *per capita* is available in Europe as in India but with more favourable rainfall and soil conditions. In addition, Europe has got 'permanent meadows and pastures' which *must* provide a supply of milk, milk products, beef, mutton and other foodstuffs of animal origin—for which there can be no parallel in India. Thus out of his own resources, the average European can produce not merely more food than the average Indian (this he needs, in any event, because of the climate) but also better food—richer, better balanced, and more nutritious food. Actually, the average European consumes more food than his land produces. He has managed to do this with the help of overseas imports of food (of the order of about one-fifths of his total consumption).

50. This comparison between India and Europe (on this fundamental issue of the relationship between the land and the people) is so important that we might dwell a little longer on it and carry the analysis a stage further.

There are, of course, many countries in Europe; and conditions differ from one to the other, in much the same way as we have seen that they differ from one sub-region to another in India. We may institute a closer comparison between India and Europe by considering groups of European countries which might correspond to our high density sub-regions and low density sub-regions separately. The United Kingdom, France, Germany, Belgium, Netherlands and Luxemburg form a group of European countries (call this *Group A*) which has almost exactly the same population as our five high density sub-regions, *viz.*, the Lower-Gangetic Plains, the Upper Gangetic Plains, Malabar-Konkan, South Madras and North Madras & Orissa Coastal. Another group of European countries (let us call it *Group B*) consisting of Greece, Bulgaria, Yugoslavia,

Albania, Spain, Ireland, Norway, Sweden and Finland contain almost exactly, the same population as our six low density sub-regions, *viz.*, the Desert, Western Himalayas, Eastern Himalayas, North-West Hills, North Central Hills Plateau, and North-East Plateau. The two sets of territories are compared in the table below :

TABLE 17

| | *High density sub-regions of India* | *European countries of Group A* | *Low density sub-regions of India* | *European countries of Group B* |
|---|---|---|---|---|
| Population (IN CRORES) | 18·5 | 18·6 | 7·9 | 7·9 |
| Land area (IN CRORES OF ACRES) | 17·9 | 23·9 | 39·2 | 55·3 |
| Area *per capita* (IN CENTS) : | | | | |
| All land | 97 | 154 | 495 | 700 |
| Agricultural area | 59 | 127 | 101 | 257 |
| Arable land | 59 | 56 | 101 | 115 |

The figures in this table show that all the conclusions which were drawn in the last paragraph about Europe and India as a whole may be substantially repeated with complete validity about each of the two groups of European countries and their counterpart sub-regions of India separately. In the face of these figures there can be no reasonable doubt that, in relation to the natural resources available for the production of food, India is even more heavily over-populated than Europe.

51. We may now conclude this review with a brief glance at two great countries—the United States of America and the Soviet Union—where the relationship between the land and the people is incomparably more favourable. The total number of people living in both these countries put together is slightly smaller than the total number of the people of India. But the land area of these two countries is far more than nine times as large and not far short of ten times as large as India. The basic facts of the comparison are given in TABLE 18 on next page.

TABLE 18

| — | *India* | *U.S.A.* | *U.S.S.R.* |
|---|---|---|---|
| Population (IN CRORES) | 36·1 | 15·1 | 19·4 |
| Land area (IN CRORES OF ACRES) | 81·3 | 190·5 | 590·4 |
| Area *per capita* (IN CENTS) : | | | |
| All land | 225 | 1,264 | 3,046 |
| Agricultural area | 97 | 741 | 448 |
| Arable land | 97 | 302 | 287 |

The figures tell their own story. It is true that the Soviet Union and even the United States of America have a clearly larger proportion of arid and frozen lands than Europe or even India. We have no information of a precise and quantitative character which can help us to make the correct allowance for the overall differences in topography, climate and soil. Even so, the observed differences in *per capita* availability of all land, agricultural area, and arable land are so large that they cannot be attributed entirely or even in large measure to soil differences. The outstanding fact must be recognised—the peoples of the United States of America and Soviet Russia have at their disposal a definitely larger share of the usable land of the World than the peoples of Europe and India.

## CHAPTER II

# The Pattern of Living—1951

### A—*Villages and Towns*

ARRANGEMENTS for the census count were made village by village and town by town. We have thus got a count of all the different places where people live. The total number of such places is 561,107—558,089 villages and 3,018 towns. Out of 3,569 lakhs of people whom we counted, 2,950 lakhs were found in villages and 619 lakhs in towns.

2. Let us suppose that the entire country is divided by lines drawn from north to south at regular intervals of five miles and by other lines drawn from east to west similarly at regular intervals of five miles. Then, the entire territory over which the census was taken would be divided into 47,074 squares, each of which will be five miles long and five miles broad. Let us refer to the villages falling within each of these squares as a 'village group'. We shall then have 558,089 census villages combined into 47,074 'village groups'. An average Indian 'village group' will consist, in round figures, of a dozen villages, each with rather more than 500 inhabitants. There will be rather more than six thousand villagers in all in each 'village group'.

3. The following table shows how this pattern of 'village groups' differs in different zones :

TABLE 1

| Zone | Average number of villagers per village | Villages and villagers in an average village group (25 SQ. MILES) | |
|---|---|---|---|
| | | Number of villages (ROUND FIGURE) | Number of villagers (IN THOUSANDS) |
| North India | 489 | 25 | 12·2 |
| East India | 433 | 18 | 7·8 |
| South India | 1,052 | 9 | 9·0 |
| West India | 708 | 7 | 5·0 |
| Central India | 431 | 9 | 3·9 |
| North-West India | 447 | 8 | 3·6 |
| INDIA | 529 | 12 | 6·3 |

TABLE 1 brings out a puzzling fact. Either the size of the village is very large in some zones and very small in others ; or what is called a 'village' means one thing in one zone and another thing in another zone. Let us look at the figures of this table more closely. The figures in the last column are the most straightforward. They show how many thousand villagers are likely to be found in every 'village group'—the imaginary square, five miles long and five miles broad. It is less than four thousand in North-West India and Central India, while it is twelve thousand in North India. The differences between one zone and another simply show that the villagers are more densely settled in one zone than in another. The figures of the last column yield no new information; they throw up in another form, the familiar fact of unequal distribution of people over the land (which has been thoroughly analysed in the last chapter). But there is one difference : the figures are limited to villagers only, town dwellers not being counted.

The next question is the meaning of the figures in the second and third columns. Why is it, that the average South Indian village has such a large number of people (1,052) ? After South India, West India stands out as the zone with large villages, while all other zones have villages with average population ranging between four and five hundred people only. Is there a real difference in the living pattern ? Are the villagers in some parts of the country more gregarious than in other parts ? Density of settlement and gregarious living are two quite different things. An area may be sparsely settled but the few people in it may be living together in a relatively small number of settlements each with a relatively large number of people. Is this the kind of difference we are observing when we look at the second and third columns of the TABLE 1 ?

4. It would not be safe to read any such meaning into the figures, mainly because what is reckoned for all administrative purposes (and consequently also for the census) as a 'village' may or may not be the same as what we normally have in mind when we speak of a village. A village in the latter sense, means or should mean a cluster of houses (or more than one closely adjoining cluster of houses), whose inhabitants are regarded by themselves as well as by others as a distinctive social unit with its identity marked by a distinctive local name. The village in the administrative sense is the '*mauza*'—a settled area with defined boundaries, for which village records have been prepared. In the south, there is a further development by which contiguous administrative villages defined by land records have been grouped together for purposes of land revenue administration, and the group is referred to as the 'village'. The variations in the

figures, therefore, merely bring out the differences in the delimitation of administrative villages. This does not, of course, mean that real differences in the social unit—based on the house-cluster and local name—do not also exist. They do. Thus, for instance, in Travancore-Cochin and West Madras where the average number of inhabitants per village is perhaps the largest, the houses do not cluster at all. The 'village', as it is understood in the rest of India, is scarcely to be found there.

5. In the light of this explanation, it will be easier to understand the variations in the size pattern between different zones, which is shown by the following table :

TABLE 2

| Zone | *Percentage of rural population living in* | | | |
|---|---|---|---|---|
| | *Small villages* (UNDER 500) | *Medium sized villages* (500 2000) | *Large villages* (2000-5000) | *Very large villages* (OVER 5000) |
| North India | 29·8 | 55·3 | 13·5 | 1·4 |
| East India | 33·8 | 48·6 | 14·3 | 3·3 |
| South India | 9·4 | 38·5 | 35·3 | 16·8 |
| West India | 18·1 | 55·0 | 23·9 | 3·0 |
| Central India | 35·7 | 50·4 | 13·0 | 0·9 |
| North-West India | 30·4 | 50·9 | 16·4 | 2·3 |
| INDIA | 26·5 | 48·8 | 19·4 | 5·3 |

The table shows that the medium-sized village—with inhabitants numbering between 500 and 2,000—is the dominant type in all the six zones. As a general statement, this is perhaps no less true of the village—in its natural sense—than of the administrative village, on which it is actually based.

6. The total number of people living in towns, as mentioned already, is 619 lakhs; a number which is larger than the entire population of Great Britain or France. In terms, however, of India's total of 3,569 lakhs, the urban population is relatively small—the all-India percentage is 17·3—just a little more than one in six. The proportion varies from zone to zone. It is as high as 31·2 per cent in West India and as low as 11·1 in East India. The other four zones, in order, are : North-West India (21·4), South India (19·7), Central India (15·8) and North India (13·6).

Within the zones, there are large variations from state to state and division to division. Thus Greater Calcutta is situated in East India—the zone with the smallest proportion of town-dwellers. The average for West Bengal Plain is as high as 26·1, because of Greater Calcutta. But the zonal average is low because it includes the very large population of Bihar (with only 6·7 per cent in towns), Orissa (with 4·1 per cent) and Assam (with 4·6 per cent). In West India, on the other hand, consistently high ratios are found in different parts of the zone. The urban population ratio is 33·7 per cent in Saurashtra, 26·5 per cent and 26·2 per cent in the Northern and Southern divisions of Bombay Deccan and 25·6 per cent in Bombay Gujrat. Within the limits of one state (Madhya Pradesh), we have such large variations as 26·1 per cent in the South West Madhya Pradesh division, 15·3 per cent in the North-West Madhya Pradesh division and 5·7 per cent in the East Madhya Pradesh division.

The growth of towns has largely depended, at any rate in the past, on the accidents of history and geography. There is, therefore, no particular order or system observable in their distribution.

7. Towns vary in number of inhabitants even more widely than villages. We may adopt a simple four-fold classification and refer to all towns with a population of one lakh and over as 'cities', those with a population range of 20,000 to a lakh as 'major towns', those with a population range of 5,000 to 20,000 as 'minor towns', and those with a population under 5,000 as 'townships'. Then, the pattern of India's urban population is as shown in TABLE 3.

TABLE 3

| | *Number of towns* | *Number of town dwellers* (IN LAKHS) | *Urban population percentage* |
|---|---|---|---|
| Cities . . | 73 | 235 | 38·0 |
| Major towns . | 485 | 186 | 30·1 |
| Minor towns . | 1,848 | 178 | 28·6 |
| Townships . . | 612 | 20 | 3·3 |
| | 3,018 | 619 | 100 0 |

8. The question arises—if there are 'very large villages' with more than 5,000 inhabitants in each, how are they distinguished from minor towns which might also have the same number and more particularly, how are villages distinguished from the townships which have a smaller population than even 5,000.

The answer is that a hard and fast line is very difficult to draw. Some criteria were laid down and the towns were specified at the early censuses. These criteria are reapplied at every census and additions and alterations are made

to the lists of towns in each state. Generally speaking, it is much more common at each successive census for villages to be reclassified as towns, than the other way about.

9. The tests prescribed for distinguishing towns from villages in different states are based on ideas common to all states, but they are not identical nor have they been applied with meticulous uniformity. Thus, Uttar Pradesh classifies as a town : "(*a*) every Municipality, (*b*) every notified area, (*c*) every town area, (*d*) cantonment and (*e*) any other continuous group of houses permanently inhabited by usually not less than 5,000 persons which (having regard to the character of the population, the relative density of the dwellings, the importance of the place as a centre of trade and its historic associations), the State Superintendent of Census Operations decided to treat as a Census Town". In West Bengal, the definition is somewhat stricter. There, a town is : "(*a*) an area, irrespective of population, which has been declared by the Government to be a municipality, and (*b*) where a municipality has not been established and yet the Government decides to call it a town for the ensuing census, if the area has satisfied the following tests : (*i*) it has a population of not less than 5,000, (*ii*) a density of not less than 1,000 inhabitants to the square mile, (*iii*) the area has some importance as a centre of trade or distribution or administration, and (*iv*) about three-quarters of the adult male population are chiefly employed in pursuits other than agriculture". "The fundamental criterion" in Madras is reported to be " the existence of urban features—which can be judged by the way in which the houses are situated and how they have been built and the availability of urban amenities (such as a bazar where one could buy one's normal requirements throughout the year, facilities for education, recreation and medical treatment)".

The percentage of urban population living in townships reflects, to some extent, the differences in these definitions. It ranges from 6·2 per cent in North India to 1·3 per cent in East India. The other zones, in order, are : North-West India (5·9), Central India (4·6), South India (2·0), and West India (1·9).

10. It is possible that places which would have been classified as villages in one state may be classified as towns in others. But the proportion of the urban population living in such places is very small. If we neglect the figures for townships, there is little doubt, the numbers of minor towns, major towns and cities and the statistics of inhabitants of such towns do present a comparable picture of the pattern of urban life in different parts of India.

Minor towns, as mentioned already, account for 28·6 per cent. of India's urban population. They seem to be most important in Central India (where

the ratio is 35·3 per cent.) and least in East India (where the ratio is 19·1 per cent). The ratios in other zones, in order, are : South India (31·5), West India (30·1), North-West India (27·7), and North India (26·4). The people living in 485 major towns and 73 cities (who number 421 lakhs) are distributed among the zones as shown below :

TABLE 4

| Zone | Cities | | Major towns | |
|---|---|---|---|---|
| | Number | Population (IN LAKHS) | Number | Population (IN LAKHS) |
| North India . . . . | 14 | 33 | 62 | 24 |
| East India . . . . | 13 | 46 | 82 | 34 |
| South India . . . . | 18 | 49 | 133 | 50 |
| West India . . . . | 11 | 55 | 84 | 32 |
| Central India . . . . | 8 | 26 | 62 | 23 |
| North-West India . . . | 9 | 26 | 62 | 23 |
| INDIA . . . . | 73 | 235 | 485 | 186 |

11. In Great Britain and other countries where the urban population is far more numerous than the rural population, towns have expanded so greatly that they have joined up into continuous built-up areas with inhabitants numbering crores. These gigantic house-clusters are referred to as 'conurbations'. We have no such places. But we do have some towns which adjoin one another so closely that it becomes somewhat artificial to refer to them as separate towns. Greater Calcutta is an outstanding instance. It consists of six cities (Calcutta, Howrah, Tollyganj, Bhatpara, Garden Reach and South Suburbs), twenty-one major towns and eight minor towns. Delhi consists of two cities, three major towns and one minor town. There are a number of other instances. A beginning has been made at this census to locate such places, name them as

'town groups', and to compile information about them as inhabited localities.

TABLE 5

| *Town group* | *Population* (IN LAKHS) |
|---|---|
| 1. Greater Calcutta . . . | 45·78 |
| 2. Greater Bombay . . . | 28·39 |
| 3. Madras . . . . . | 14·16 |
| 4. Delhi . . . . . | 13·84 |
| 5. Hyderabad . . . . | 10·86 |
| 6. Ahmedabad . . . . | 7·24 |
| 7. Bangalore . . . . | 7·79 |
| 8. Kanpur . . . . . | 7·05 |
| 9. Poona . . . . . | 5·89 |
| 10. Lucknow . . . . . | 4·97 |
| TOTAL . . . | 146·67 |

12. TABLE 5 shows the ten largest inhabited localities arranged in order of population (on the 'town group' basis).

It is worth noting that though there are only 73 cities among 3,018 towns, the total number of inhabitants of these cities exceeds one-third of the total urban population of India. Very nearly one-fifth of the entire city population of India is found in one inhabited locality, *viz.*, Greater Calcutta.

## B—*Houses and Households*

EVERY CENSUS of population begins as a census of houses. The people know that a census is coming when an officer comes round to number the houses. Unfortunately, however, it is not usual to organise the work as a census of houses. If this had been done, we might have had very useful information about the houses themselves—with what materials they are built, the accommodation they provide, their sanitation, ventilation etc. All that we do have, at this census as in previous censuses, is just the number of 'occupied houses' among those which were numbered at the census. There were 644 lakhs of occupied houses—541 lakhs in villages and 103 lakhs in towns.

14. That gives us almost exactly 6 persons to a house in towns; and 11 persons for two houses in a village. A 'house' seems a simple enough thing, like a 'village' or a 'town'. But if we are to make serious use of statistics, we have to be very precise in defining our terms. Just as we had to enquire what a 'village' was and what a 'town' was, we have also to ask what we mean by a 'house'? In most cases—where there is only one building and it is occupied by only one family—that building is the house and it is the end of the matter.

But we may have a house and one or more out-houses occupied by different families. We may have one building where two or more families live. In some cases the parts of the building in which the different families live may be structurally separated from one another so that in fact they serve as different dwelling places. In some cases there may be no such separation. When we come to cities, we have very large structures—blocks of flats—of which each is a quite distinct dwelling unit. In dealing with such different classes of buildings no uniform system was followed in giving census numbers in the past. At some time and in some places a number was given to each building as such. At other times and places a number was given to every part of a building where a family lived.

At this census we attempted to follow a single system throughout the country. We defined a 'house' and a 'household' separately. A 'household' was a group of people who lived together and took their food from a common kitchen. A 'house' was a building within which people lived; provided that if different parts of the building were structurally separated and provided with *separate main entrances* so as to give independent access to each part, then each such part was to be recognised and numbered as a separate 'house'. In the result, every household must have a house in which its members live. Every house would, in most cases, have only one household living in it. But cases would occur where a house may have more than one household living in it, if the people go in and out of it by the same main entrance but nevertheless keep separate mess within it. The statistics were collected on this basis in all states except West Bengal. In that state a local instruction was issued (for reasons which are not altogether clear) varying the definition of the house, with the result that in urban areas of that state there are more houses than households.

15. One reason for attempting such uniformity was to collect information at this census relating to the 'household' as a distinct unit and not merely for individuals separately. In all censuses upto 1931, the information was, in fact, collected on what was called a 'schedule' where the identity of the household was clear. But a change of system brought about in 1941 did away with this 'schedule'. The system of enumeration became completely individualistic with a separate 'slip' for each individual as the sole record of his enumeration. It saved some time and money, but there were counterbalancing disadvantages —one of which was the loss of information about the 'household'.

So, at this census, a partial reversion to the 'schedule' was made under a new name the 'National Register of Citizens'. The information about 'households' which is furnished in this section has been compiled for sample households read off from the National Register of Citizens. In Bihar, the household

data—though collected on the all India basis—were not compiled. In view of this and the difficulty already mentioned about West Bengal's definition of a 'house ', the figures for East India are not referred to in this section for purposes of comparison with other zones.

16. *Houses and households*—There are, to begin with, 112 households in every 100 houses of a typical Indian village and 124 households in every 100 houses of a typical Indian town. Families occupying the same house but living and messing separately in different parts of that house (which are not structurally separated from one another and provided with separate main entrances) are thus more common in the town than in the village—the difference being represented by 12 per cent in the village and 24 per cent in the town.

17. *Number of persons in households*—In every hundred households in the village there are 491 persons; in every hundred households in the town, the number is 471 . The difference, though small, is probably not insignificant.

18. *Number of persons in houses*—If we combine the two foregoing sets of data it may be inferred that in every hundred houses in a village 550 people must be living, while in every hundred houses of a town 584 people must be living. These figures are somewhat smaller than one would get if the entire rural population of 2,950 lakhs and the entire urban population of 619 lakhs were divided up among the occupied houses mentioned in para 12 (*viz.*, 541 lakhs of houses in villages and 103 lakhs of houses in towns). There are two reasons for this. One is that the household data are based on a sample and a sampling error is unavoidable. Another (and probably the more important) reason is that the sample household data are *exclusive* of people living in boarding houses, hostels, hospitals, jails and other institutions as well as of people living in camps, members of wandering tribes and other homeless persons.

19. *Males and females*—Out of 491 people in every hundred rural households, 252 are males and 239 are females—there is a male excess numbering 13 in 100 households.

Out of 471 people in every hundred urban households, 248 are males and 223 are females—there is a male excess numbering 25 in 100 households.

It should be noted that there is a male excess both in the village and in the town; the excess is, however, larger in the town than in the village.

20. *Types of households (differentiated by size)*—Let us refer to a household which has 3 members or less as a 's m a l l' household; one which has 4 or

5 or 6 members, as a 'medium' household; one which has 7, 8 or 9 members, as a 'large' household; and one which has 10 or more members, as a 'very large' household. How many households of each type would be found among 100 households is shown in TABLE 6 separately for the typical village and typical town. Of the four types, medium households are most numerous, which is what one would expect. That 'very large' households with 10 or more members number only about one in sixteen is also not unexpected. But it seems a little surprising that every third household in a village should be a 'small household' with three members or less. Such a large proportion of small households is a *prima facie* indication that families do not continue to be 'joint' according to the traditional custom of the country and the habit of breaking away from the joint family and setting up separate households is quite strong. Unfortunately we do not have similar information for past censuses. So, we cannot say whether the percentage of 'small households' has or has not been increasing and we cannot measure the differences in the rate of change in different parts of the country.

TABLE 6

| *Type of household* | *Number of households in a* | |
|---|---|---|
| | *Typical village* | *Typical town* |
| Small . . . | 33 | 38 |
| Medium . . . | 44 | 41 |
| Large . . . | 17 | 16 |
| Very large . . | 6 | 5 |
| TOTAL . | 100 | 100 |

21. Information has been collected and compiled about the pattern of household relationship. This is available for households in general—but not separately for rural and urban households. If we consider 100 households (taken proportionately from villages as well as towns) there are 487 persons in them and their household relationship is as shown below :

TABLE 7

| | *Household relationship* | | *Number in 100 households* |
|---|---|---|---|
| A | Heads of households : | Male (married) . . . . . | 71 |
| | | Male (widowers) . . . . . | 19 |
| | | Females . . . . . | 10 |
| | Wives of heads of households . . . . . | | 71 |
| | | | 171 |

TABLE 7—*concluded*

| | *Household relationship* | | *Number in 100 households* |
|---|---|---|---|
| *B* | Sons of heads of households | | 108 |
| | Daughters of heads of households | | 81 |
| | | | **189** |
| *C* | Male relatives of heads of households (other than sons) | | 48 |
| | Female relatives of heads of households (other than daughters) | | 72 |
| | | | **120** |
| *D* — Persons unrelated to the head of the household : | Males | | 4 |
| | Females | | 3 |
| | | | **7** |
| | GRAND TOTAL | | **487** |

22. So much for the India pattern. We may now consider the variations of this pattern in different zones for which comparison is possible. The total number of households living in every 100 houses of a village varies from 108 in West India to 118 in North India. The intermediate figures are 109 in Central India, 111 in South India and 113 in North-West India.

In every zone, the number of households per 100 houses is larger in the town than in the village. The excess is almost negligible in North-West India. In other zones it ranges from 5 per 100 houses in Central India to 10 in West India, 13 in North India and 24 in South India.

23. The total number of members of 100 rural households ranges from 473 in Central India to 511 in North-West India as well as North India. It is 483 in South India and 500 in West India. There is practically no difference in the number of members of rural households and urban households in South India. In other zones the number is smaller in urban households.

24. There is an excess of males over females both in the village and the town in every zone. The difference is negligible in South India, but very conspicuous in North-West India and North India. The excess is larger in

the towns than in the villages, in all zones except one. The figures are shown in TABLE 8 below :

TABLE 8

| Zone | *Excess of males over females in* | |
|---|---|---|
| | *100 Rural households* | *100 Urban households* |
| North India . . | 27 | 46 |
| South India . . | 1 | 7 |
| West India . . | 4 | 38 |
| Central India . . | 9 | 21 |
| North-West India . | 29 | 18 |
| INDIA . . | 13 | 25 |

25. TABLE 9 at the bottom shows the size-pattern of rural and urban households in different zones. We have noted already that the size pattern of rural as well as urban households presented two main features in the country as a whole. *First*,—medium households (with 4, 5 or 6 members) are the dominant type ; and *Secondly*,—small households (with 3 members or less) are more numerous than large and very large households with 7 or more members. This table shows that these two generalisations are true of every zone. A review of data relating to the states and divisions of a state within each zone shows that these features are observable everywhere except in six divisions, *viz.*, West Madras, Travancore-Cochin, Coorg, Vindhya Pradesh, Patiala and East Punjab States Union and Sikkim. It is only in the rural areas of these six divisions that one finds the small household to be less numerous than large and very large households.

TABLE 9

| Zone | *100 Rural households* | | | | *100 Urban households* | | | |
|---|---|---|---|---|---|---|---|---|
| | *Small* | *Medium* | *Large* | *Very large* | *Small* | *Medium* | *Large* | *Very large* |
| North India . . | 33 | 44 | 17 | 6 | 41 | 38 | 15 | 6 |
| South India . . | 34 | 44 | 17 | 5 | 34 | 44 | 17 | 5 |
| West India . . | 31 | 45 | 18 | 6 | 38 | 40 | 16 | 6 |
| Central India . . | 36 | 44 | 15 | 5 | 40 | 38 | 16 | 6 |
| North-West India . | 31 | 44 | 19 | 6 | 38 | 41 | 16 | 5 |

26. *Heads of households and their wives*—The total number per 100 households varies from 167 in North India to 176 in Central India. For other zones, the figures are 170 in North-West India and West India and 175 in South India. We may deduce from these figures that the number of widowers who are heads of households must be 33 in North India, 30 in North-West India and West India, 29 in South India and 25 in Central India.

Female heads of households are fewest in North India and Central India (7 per hundred households) and largest in South India (14). Other figures are: 8 in North-West India and 11 in West India.

27. *Sons and daughters of heads of households*—The total number of sons in 100 households varies from 103 in Central India to 116 in North-West India. In other zones the number is : 105 in North India, 110 in West India and 111 in South India.

Sons outnumber daughters in every zone. The difference is largest (34) in North-West India and North India and smallest (22) in South India. The differences in the other zones are : 30 in West India and 28 in Central India.

28. *Persons related to the head of the household (other than sons and daughters)*—The total number of such persons in 100 households is largest in North India (137) and smallest in South India (109). Elsewhere, it ranges as follows : 132 in North-West India, and 119 in West India and Central India.

In every zone, female relatives (other than daughters) outnumber the male relatives (other than sons).

29. *Persons unrelated to the head of the household*—The number per 100 households is smallest in North-West India (1), and largest in North India (13). For other zones the figures are: 7 in West India, 5 in South India and 4 in Central India.

30. This completes our account of the internal structure of the household based on a very brief review of sample households as recorded in the National Register of Citizens. It should be emphasized that the figures given in this section are based on *sample* households taken from the National Register of Citizens and that there are no similar figures of prior censuses with which to compare them. They give a broad picture which is probably reliable. Much closer study, supplemented by local enquiries, is necessary before one can analyse the similarities and differences disclosed by this review and correlate

them with the similarities and differences independently ascertained to exist in respect of social habits and customs in different parts of the country. Only then we shall be able to appreciate the full significance of the data and form a clear mental picture of the pattern of household life in all parts of the country.

## C—*Sex Ratio*

IT IS PERHAPS natural that people should expect to find that males and females are equal in number everywhere and at all times. Some surprise is always expressed when the census figures show the contrary. The census figures show not only that males and females are unequal in numbers but also that the magnitude of this inequality is also different in different parts of the country. The difference between the numbers of the two sexes is negligible or relatively small in some parts of the country and quite substantial in others. The difference tends to get larger from one census to another at some places; it tends to get smaller elsewhere.

32. It is usual to measure the difference in numbers between the sexes by an index number called the sex ratio. In the United Kingdom 'the number of females per 1000 males' is used as the index number. In the United States of America 'the number of males per hundred females' is used for the same purpose. The Census of India is used to the former and we shall therefore refer to the 'number of females per 1000 males' as the sex ratio.

33. In the country as a whole the sex ratio was 947—according to the 1951 Census. It varied widely among the zones. The lowest value was 883 in North-West India. The highest value was 999 in South India where practical equality of the sexes was attained. The other four zones varied thus : 910 in North India, 938 in West India, 945 in East India and 973 in Central India.

34. The sex ratio was found to be less than 1000 in every division of North India and North-West India without any exception. In the other four zones, it is possible to locate divisions where the females outnumber males. Such divisions are specified in TABLE 10 on opposite page, together with their sex ratio.

TABLE 10

| *Zone* | *Natural division* | *Females per 1000 males* |
|---|---|---|
| EAST INDIA | Orissa Coastal | 1040 |
| | Manipur | 1036 |
| | North Bihar Plain | 1013 |
| | Orissa Inland | 1007 |
| SOUTH INDIA | West Madras | 1054 |
| | Travancore-Cochin | 1008 |
| | South Madras | 1006 |
| | North Madras | 1001 |
| WEST INDIA | Kutch | 1079 |
| | Bombay-Konkan | 1047 |
| CENTRAL INDIA | East Madhya Pradesh | 1017 |

35. In general, the sex ratio is smaller in towns than in villages. For the country as a whole, the sex ratio in villages is 966, while that in towns is 860.

The sex ratio in villages is lowest in North-West India (895). In the villages of South India, females outnumber males, the sex ratio is 1004. In other zones, the rural sex ratio varies thus : 925 in North India, 977 in East India, 979 in Central India and 987 in West India.

The urban sex ratio is lowest in East India (719) reflecting the deeply disturbing influence of Greater Calcutta. The urban sex ratio is highest in South India (977). It varies in other zones as follows : 820 in North India, 838 in West India, 843 in North-West India and 939 in Central India.

The difference between the rural sex ratio and the urban sex ratio is very large in East India (258). It is smallest in South India (27). In other zones it varies from 40 in Central India to 52 in North-West India and 105 in North India to 149 in West India.

36. The low sex ratio of towns is further emphasized if the ratio is computed separately for cities, that is to say, towns with a population of one lakh and over. In the country as a whole, as mentioned already, there are 235 lakhs of people living in cities—of whom 132 lakhs are males and 103 lakhs are females. The sex ratio for all cities of India is 787. It is lowest for East India

(641) and highest for South India (940). In other zones, the city sex ratio varies as follows : 712 in West India, 801 in North India, 813 in North-West India and 934 in Central India.

The sex ratios for the ten largest cities (town groups) of India are shown in TABLE 11. The enormous differences between Greater Calcutta and Greater Bombay on the one hand and Madras and Hyderabad on the other are worth noting.

TABLE 11

| *Town group* | *Sex ratio* |
|---|---|
| 1. Greater Calcutta | 602 |
| 2. Greater Bombay | 596 |
| 3. Madras | 921 |
| 4. Delhi | 750 |
| 5. Hyderabad | 989 |
| 6. Ahmedabad | 764 |
| 7. Bangalore | 883 |
| 8. Kanpur | 699 |
| 9. Poona | 833 |
| 10. Lucknow | 783 |

37. Are these differences in numbers between males and females really true, or are they merely errors in counting ? Some 50 years ago, scholars of western Europe, who studied the results of the Indian Censuses, took the view that the figures could not be correct. They were accustomed to an excess of females over males in western Europe and thought that a large difference in sex ratio between India and western Europe was unnatural. A number of considerations—it seemed to them—supported their conclusion. The author of the 1911 Census Report summarised these considerations as follows :

> "It is well known that the natives of India are reticent regarding their women and that in some parts women are regarded as of very little account. It is, therefore, natural to suppose that the return of them at the Census should be incomplete.
>
> The age statistics show that the proportion of females is lowest between the ages 10 and 20. This is the time of life when it might be supposed that there would be a tendency to conceal the existence of unmarried females.
>
> The increasing accuracy of each succeeding census has been accompanied by a rise in the proportion of females. It is only reasonable to suppose that there is a connection between the two phenomena.
>
> The vital statistics for the decade 1891-1900 disclosed a relatively low female mortality and in this respect they were confirmed by the mortality rates deduced from the age return of the last Census."

38. A reasoned refutation of all these arguments is furnished at some length in the 1911 Census Report. The main point was that if the female deficiency was due to omissions, then omissions must be of the order of 9 per-cent which—in view of the arrangements which had been perfected by 1911—

was altogether out of the question. The theory of omissions was also contradicted by internal evidence :

> "The Census staff being more largely composed of permanent officials, was more efficient in the Punjab than in most other parts of India, but it is here that the deficiency of females is most marked.... If reticence 'regarding women had any effect, it would reduce the proportions for Muhamedans more than those for Hindus but in almost all parts of India the proportion of females among the adherents of that religion is relatively high.... In the Punjab, where the general proportion is very low, it is lowest among the Sikhs, who on the whole, are least reluctant to talk about their women.... There is a difference of more than a hundred in the proportions per *mille* between two of the natural divisions in the Madras Presidency although women hold exactly the same position in both. The animistic tribes neither scorn nor seclude their women, but there are extraordinary differences among such tribes in different parts of India."

The reality of female deficiency, where this is shown by census figures to be very pronounced, was also independently attested by certain social conditions which were known to exist "such as the very high bride-prices which are commonly paid....."

39. In 1911 it was necessary to establish the reality of female deficiency in India by elaborate arguments. This is no longer necessary for two reasons :

*First,*—Successive censuses have since repeated and confirmed the pattern of difference in the sex ratio. This is seen from the following table :

TABLE 12

| *Zone* | *Sex ratio* (GENERAL POPULATION PER 1000 MALES) | | | |
|---|---|---|---|---|
| | *1921* | *1931* | *1941* | *1951* |
| North India | 909 | 904 | 907 | 910 |
| East India | 986 | 967 | 951 | 945 |
| South India | 1011 | 1010 | 1001 | 999 |
| West India | 941 | 941 | 941 | 938 |
| Central India | 972 | 968 | 966 | 973 |
| North-West India | 853 | 863 | 871 | 883 |
| INDIA | 956 | 951 | 946 | 947 |

*Secondly,*—We have carried out an actual verification of the 1951 Census count, organised on a random sample basis throughout most parts of the country.

We know not only that the people who were omitted from the count were relatively few—we know with reasonable certainty what proportion of the population they actually were. We also know the sex ratio of the people who were ascertained, by verification, to have been omitted. It is true that among those who were omitted, there were more females than males in all zones (with the exception of Central India where there were a few more males than females). But we know what the differences were. We can calculate (from the ascertained figures) that if allowance were made for the omission, the sex ratio for India should be 949 instead of 947; 1001 instead of 999 in South India; and 885 instead of 883 in North-West India. The difference involved in making or not making an allowance for omissions is thus altogether negligible. We may proceed on the basis that *the numbers of the sexes do, in fact, differ in the manner indicated by the published census figures.*

40. In recent years, figures have been furnished for a great many countries of the world. There are, however, still very large gaps and the statistics of all countries cannot be regarded as equally reliable. Such as they are, the figures show that in the world as a whole, the sex ratio is probably 992—that is to say, there is perhaps a male excess in the world as a whole; but, if there is, it is very very small. It is certain that the sexes are more nearly equal to one another in the world as a whole than they are in India. We have seen that there are large variations in the sex ratio between different parts of India. In the same way, there are also large variations between different parts of the world. In all countries of Europe (except Ireland and Bulgaria) there is an excess of females. This seems to be true also of the Soviet Union. In the United States of America there used to be an excess of males among the people of European descent and an excess of females among the negroes. In Canada, Australia, New Zealand and South Africa there has always been a male excess among people of European descent. The South American countries show instances both of male excess and female excess. A large female excess seems to be a general characteristic of many peoples of Africa. It is found in the Gold Coast, Nigeria, Uganda and Tanganyika. In Morocco and Tunisia, however, there is a male excess.

41. How do such differences arise? It is easy enough to see why a female deficiency should be found in cities and the major towns. It arises mainly by migration of people who go there in search of livelihood. These are, in the first instance, mostly men. It is true that when the men settle down the women may move up to join them—but this does not happen invariably, and there is always a very considerable time-lag. So long, therefore, as towns continue to grow ; they are apt to have a diminishing sex ratio. When this

process stops, and the towns grow mainly by the excess of births over deaths, the sex ratio tends to change in the opposite direction and towards equality. Somewhat similar considerations apply to a whole area (including villages and towns) if it is receiving migrants in large numbers. An important reason for the female excess of Europe and the male excess of people of the same stock in America, Oceania and Africa must no doubt be found in the selective character of migration.

42. This would not, however, explain the female deficiency of India, much less of North India because the migratory movements in question are too small in relation tc the total population.

The true explanation has to be found in two facts : *First*,—Males and females are not born in equal numbers; and *Secondly*,—They do not die in equal numbers either in infancy and childhood or in old age or in any particular age-group, or at all ages taken together.

43. If we examine the statistics of registration of births in Madras for 10 years preceding the 1951 Census, we find that for every 1000 male children born during the decade, only 948 female children were born. The ratio was as high as 959 in one year (1941) and as low as 937 in another year (1949). These figures—which are not very different from one another—represent the extremes; the ratios for all other years fell between these two limits.

A similar examination of the statistics of ten years in three other states besides Madras, gives us the following results :

TABLE 13

| *State* | *Sex ratio at birth during 1941-50* | | |
|---|---|---|---|
| | *Average* | *Highest during decade* | *Lowest during decade* |
| Madras . . | 948 | 959 | 937 |
| Madhya Pradesh . | 939 | 946 | 921 |
| Bombay . . . | 935 | 937 | 931 |
| Uttar Pradesh . . | 857 | 874 | 843 |

These figures are very instructive and three points should be noted about them :

*First*,—In every case, there is a definite excess of male births over female births ;

*Secondly,*—The excess is very much more pronounced in Uttar Pradesh (North India) than in the other three states (which may be taken to be broadly representative of South India, Central India and West India) ; and

*Thirdly,*—The lowest and highest values recorded over a period of ten years do not differ very much; and this fact shows that the occurrence of an excess at birth is not an accident, nor is the fact that this excess is much more pronounced in Uttar Pradesh than in the other states. It would seem that we are face to face with the working of some biological law. Is that conclusion valid or is it vitiated by the fact that all births do not get registered? We know there are omissions in the registration of births. It is also true that the extent of such omissions is not the same in all the states. It cannot, therefore, be denied that it is difficult to be certain on the conclusion stated. It is, however, exceedingly unlikely that the omitted births, if registered, would alter the pattern so materially as to invalidate the conclusion. The causes which lead to the omissions of registration of births are not peculiar to female births. Female births are not much more likely to get omitted than male births. It is difficult to think of any kind of systematic bias which would lead to continuous and universal suppression of female births in such large numbers.

44. We must accept the existence of a male excess at birth as a fact. A deficiency of females arises in all parts of India as a biological phenomenon. It is believed that this happens in almost all parts of the world. Nature having given rise to inequality, then appears to set about redressing it. There is a bias in infant deaths just as there is a bias in births. Male infants die in larger numbers than female infants before completing the first year of life. The following table shows the figures for the same four states for which data regarding sex ratio at birth were given already :

TABLE 14

| State | *Sex ratio of infants who died within one year of birth during 1941-50* | | |
|---|---|---|---|
| | *Average* | *Highest during decade* | *Lowest during decade* |
| Madras . . . . | 870 | 878 | 840 |
| Madhya Pradesh . . | 844 | 859 | 828 |
| Bombay . . . | 866 | 883 | 841 |
| Uttar Pradesh . . . | 790 | 812 | 765 |

Here again the question arises, can we be sure that we are not being misled by the selective omission of female infant deaths ? All things are possible—but we have to judge what is probable. Large and consistent differences such as we see in TABLE 14 cannot be attributed to this cause. There is, fortunately, some corroborative evidence. If it is really true that fewer female infants die than male infants, then the sex ratio of all infants living at any one time must be closer to 1000 (the index of equality) than the sex ratio at birth. This is exactly what the census figures show, as may be seen from the table below :

TABLE 15

| *State* | *Sex ratio at birth (1950 Registration data)* | *Sex ratio among infants (1951 Census data)* |
|---|---|---|
| Madras . . . . . | 940 | 1006 |
| Madhya Pradesh . . . . | 921 | 946 |
| Bombay . . . . . | 931 | 980 |
| Uttar Pradesh . . . . . | 843 | 941 |

It will be observed that of all the four states, Madras had the smallest excess of males at birth. Within a year, the inequality is wiped out and female infants outnumber male infants. On the other hand, Uttar Pradesh—which had the largest male excess—has got this excess somewhat diminished, but yet male infants outnumber female infants decisively. [Here again rigorous logic demands that we should make allowance for possible errors in the statement of age at the census. But most people would agree that even if the figures are not exactly correct, they provide good enough corroboration.]

45. In the next section, we shall see that just as the proportion of males and females alters during the first year of life, it alters continually from year to year as people grow older. The strain of life and the risk of death tell heavily on women at some ages and on men at others. This causes inequality in the numbers of males and females dying at different ages. There seems to be no uniform rule governing this inequality at all places and times—conditions differ in different parts of the country at the same time and they have, no doubt, changed from time to time even at the same place. There is, however, a very near approach to uniformity towards the end of life, just as there was at the beginning of life. Among the very old (as in the first year of life) the hand of death falls on men more frequently than on women.

46. What has been said so far is applicable mainly to what may be called 'normal' mortality. In the past, different parts of the country used to suffer from 'abnormal' mortality. Once every few years, the hand of death fell more heavily than normally—famine and pestilence occurred in extensive areas and took a heavy toll. On these occasions, it has been observed and recorded that deaths took place in notably unequal numbers among males and females. Men used to die more than women when great famines occurred. On the other hand, many forms of pestilence, especially plague, took a far heavier toll of women than of men.

When, therefore, we observe the sex ratio at any one time and any one place we should remember that it is the result of a long previous history of unequal numbers of male births and female births at times corrected and at other times aggravated by unequal incidence of death—normal as well as abnormal. In some places the ratios may have been further modified by emigration or immigration.

47. When all this has been said, people will still want to know why male births should persistently exceed female births, in all states ? Why should this excess of male births over female births be persistently larger in Uttar Pradesh and persistently smaller in other states ? Again it may be asked, why is it that the hand of death spares females more than males at the beginning and the end of life; and why the chances of death throughout life, should favour the females more in some states than in others ?

It is possible that some completely satisfactory explanation of these facts has been propounded by scientists who may have made a special study of them, but the present writer (who has been not able to make a detailed enquiry) has not come across any such explanation.*

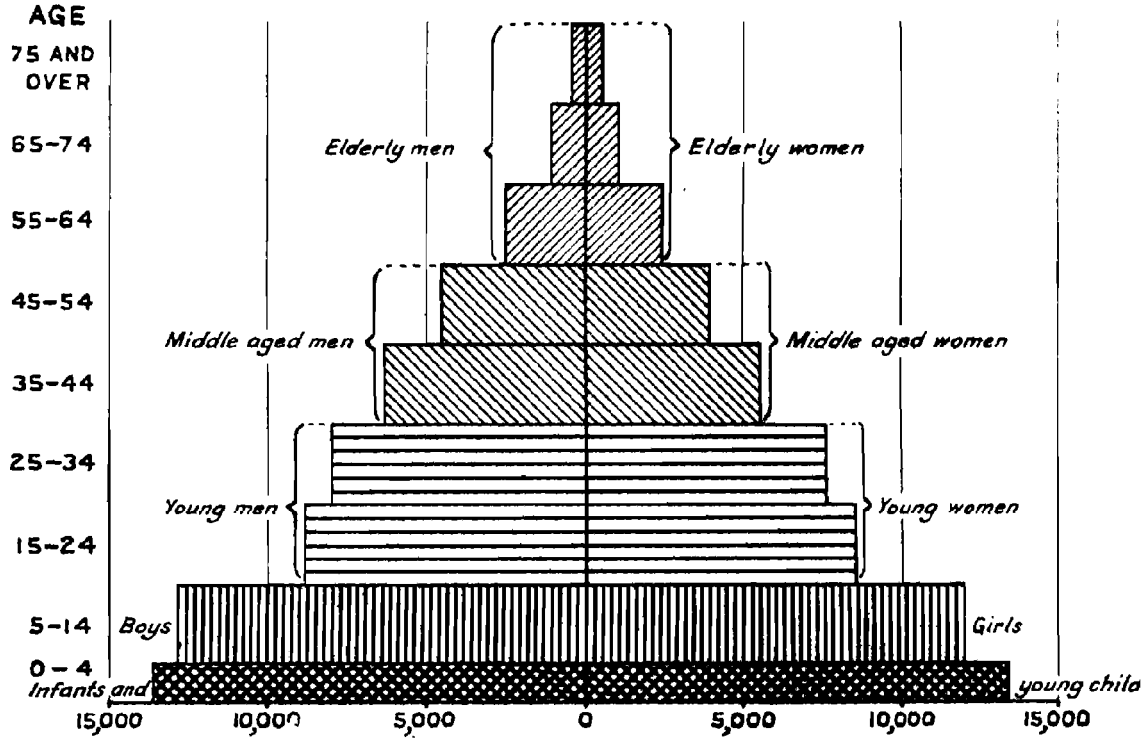
*Mention should be made of an opinion which has been frequently advanced. It is said (on the basis of general impression) that male children receive better care and attention in households than female children and it is surmised that this must have a significant effect on mortality at early age and again after infancy and consequently on the sex ratio. The implication is that this is a more pronounced characteristic of Indian household than of European households; and, within India, of North Indian and North-West Indian households than households in other zones of India. All this seems plausible but it is to be doubted whether the surmise is correct. So long as females survive better than males (and this occurs during and for sometime after the first year of life) the fact is attributed to nature. When the opposite occurs, it is attributed to nurture.

FIG. 1

AGE PYRAMIDS

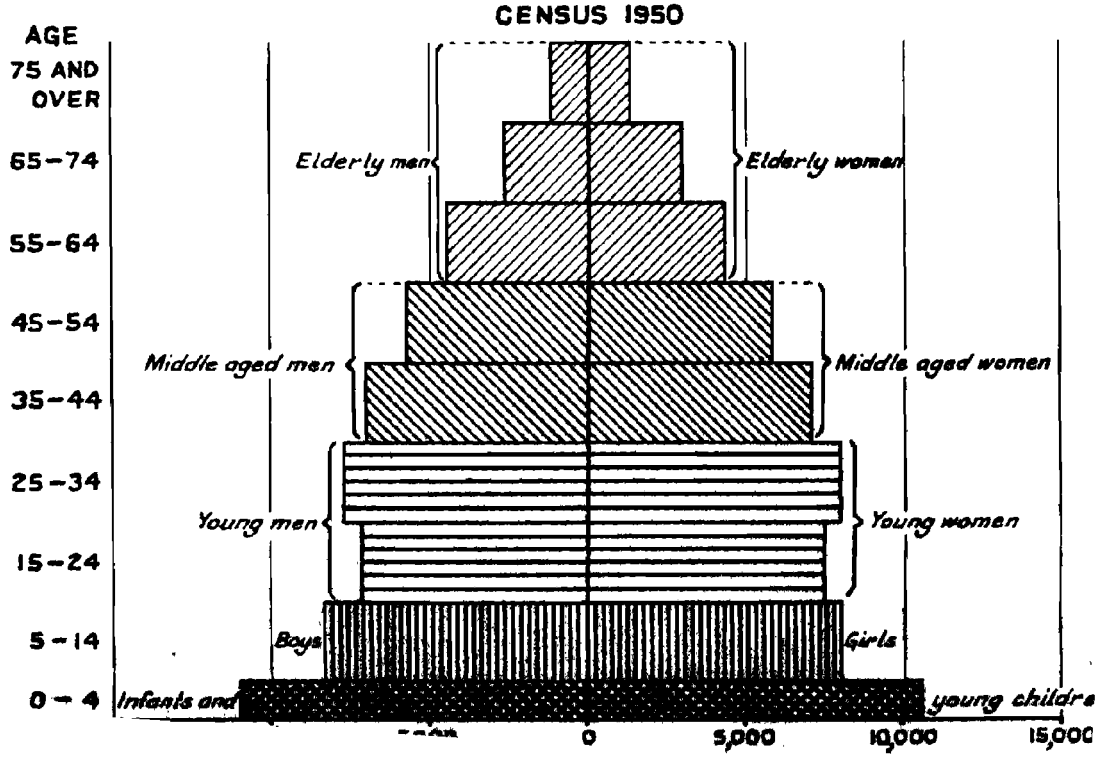
INDIA

CENSUS 1951




U. S. A.

CENSUS 1950



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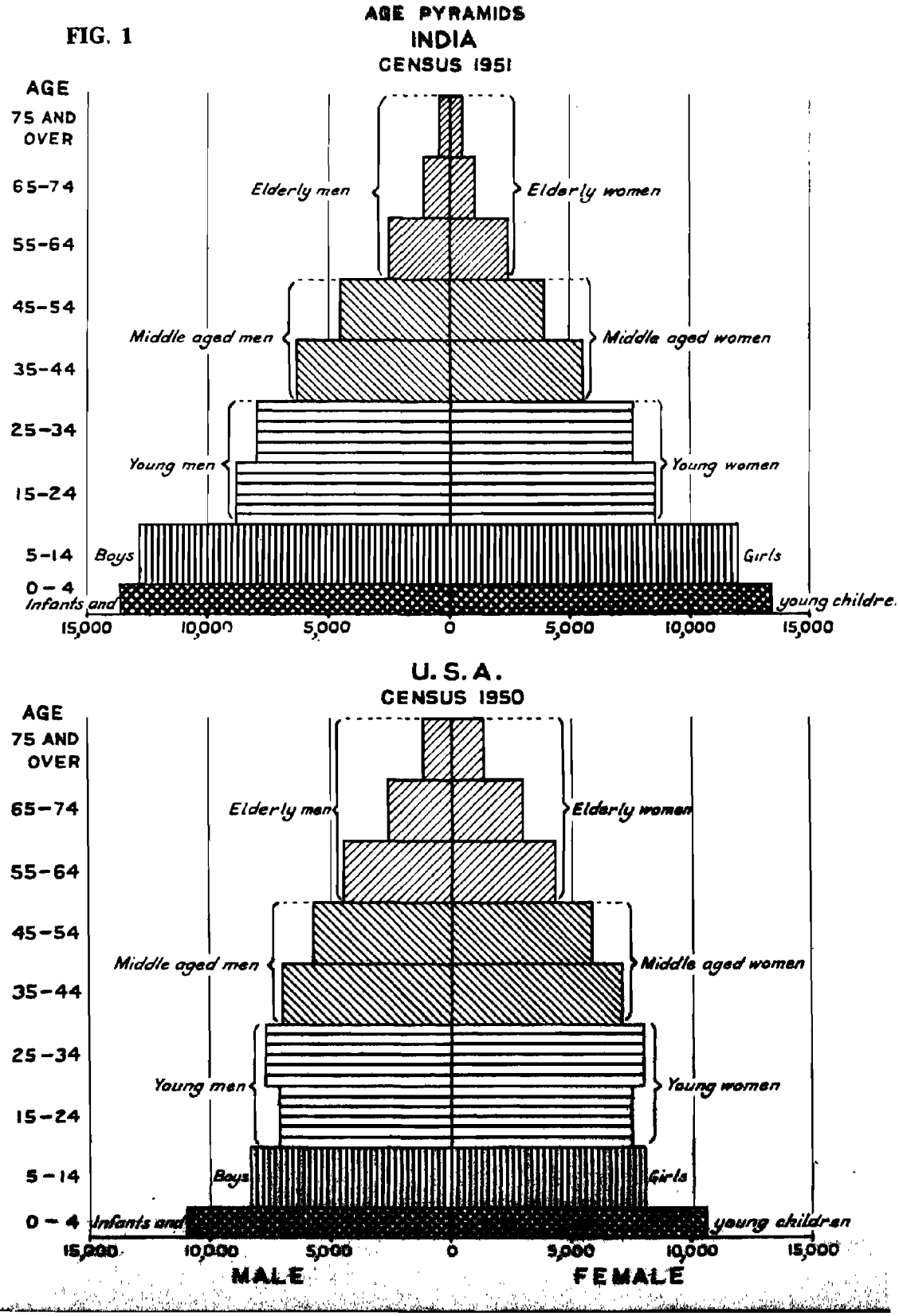
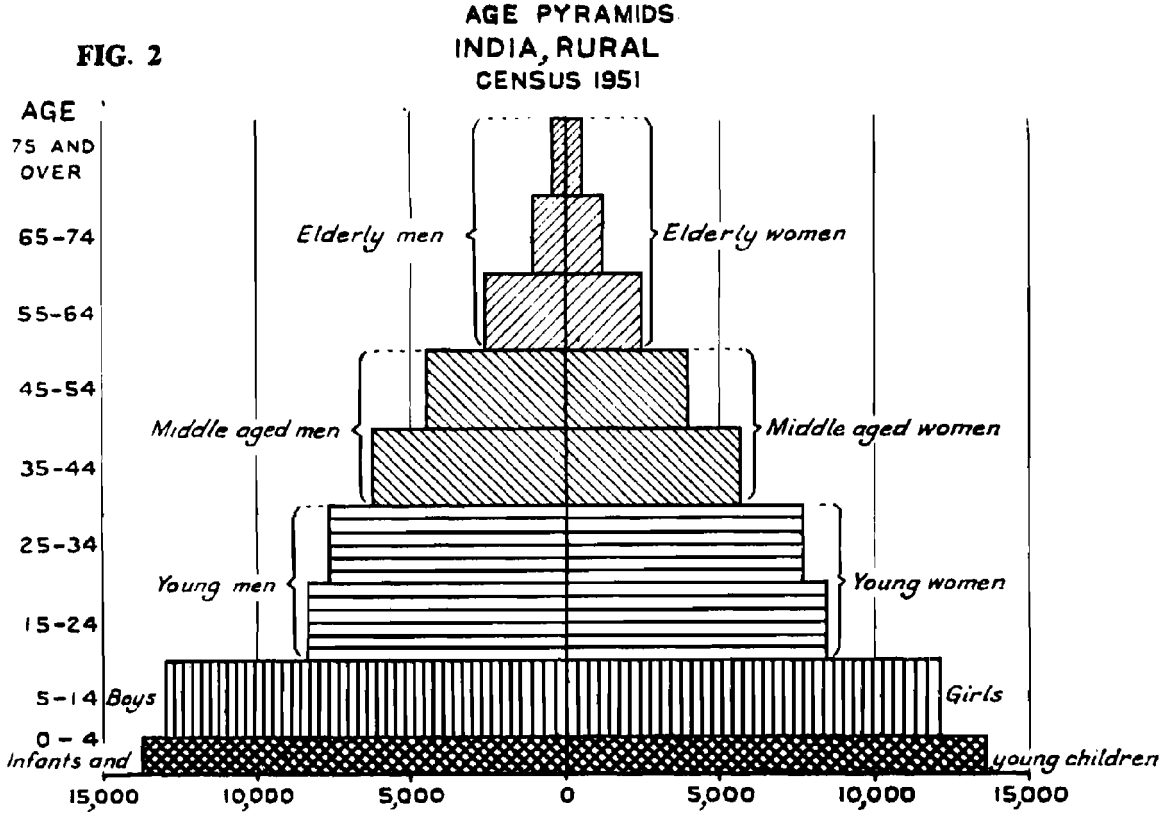

AGE PYRAMIDS
INDIA
CENSUS 1951
AGE
75 AND OVER
65-74
55-64
45-54
35-44
25-34
15-24
5-14
0-4
Elderly men
Elderly women
Middle aged men
Middle aged women
Young men
Young women
Boys
Girls
Infants and
young children
15,000
10,000
5,000
0
5,000
10,000
15,000
U.S.A.
CENSUS 1950
AGE
75 AND OVER
65-74
55-64
45-54
35-44
25-34
15-24
5-14
0-4
Elderly men
Elderly women
Middle aged men
Middle aged women
Young men
Young women
Boys
Girls
Infants and
young children
15,000
10,000
5,000
0
5,000
10,000
15,000
MALE
FEMALE

FIG. 2

AGE PYRAMIDS



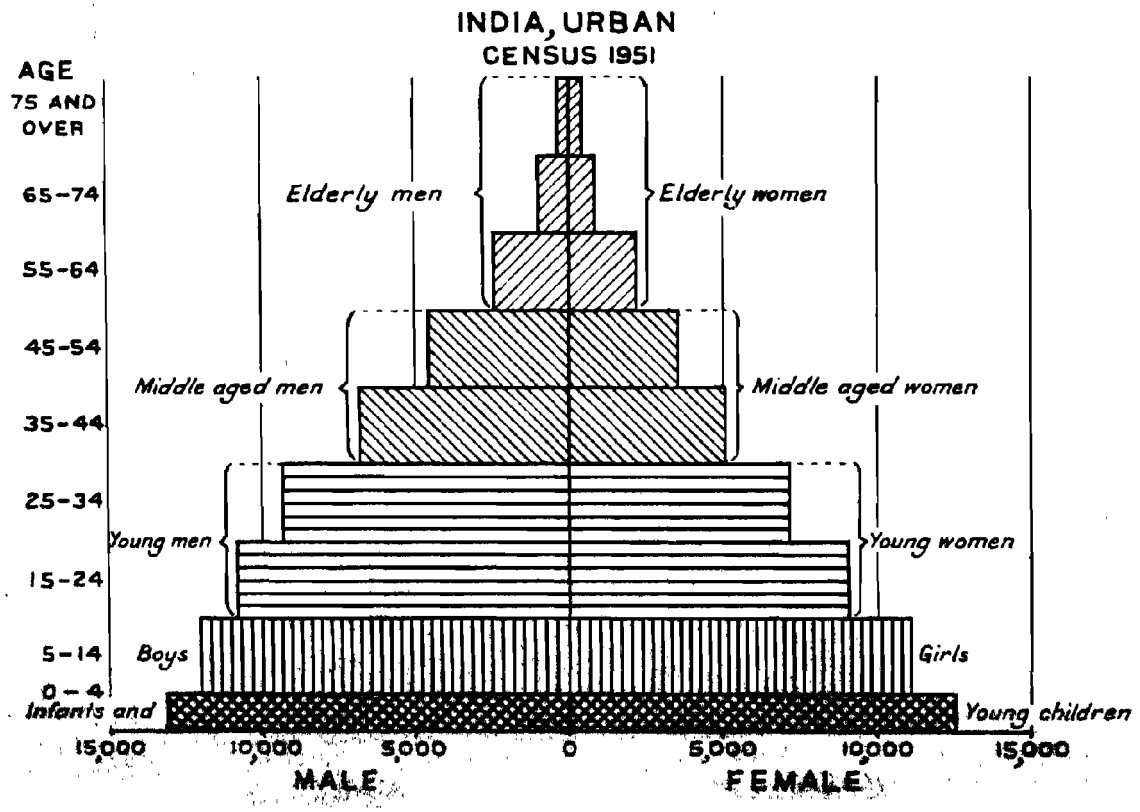
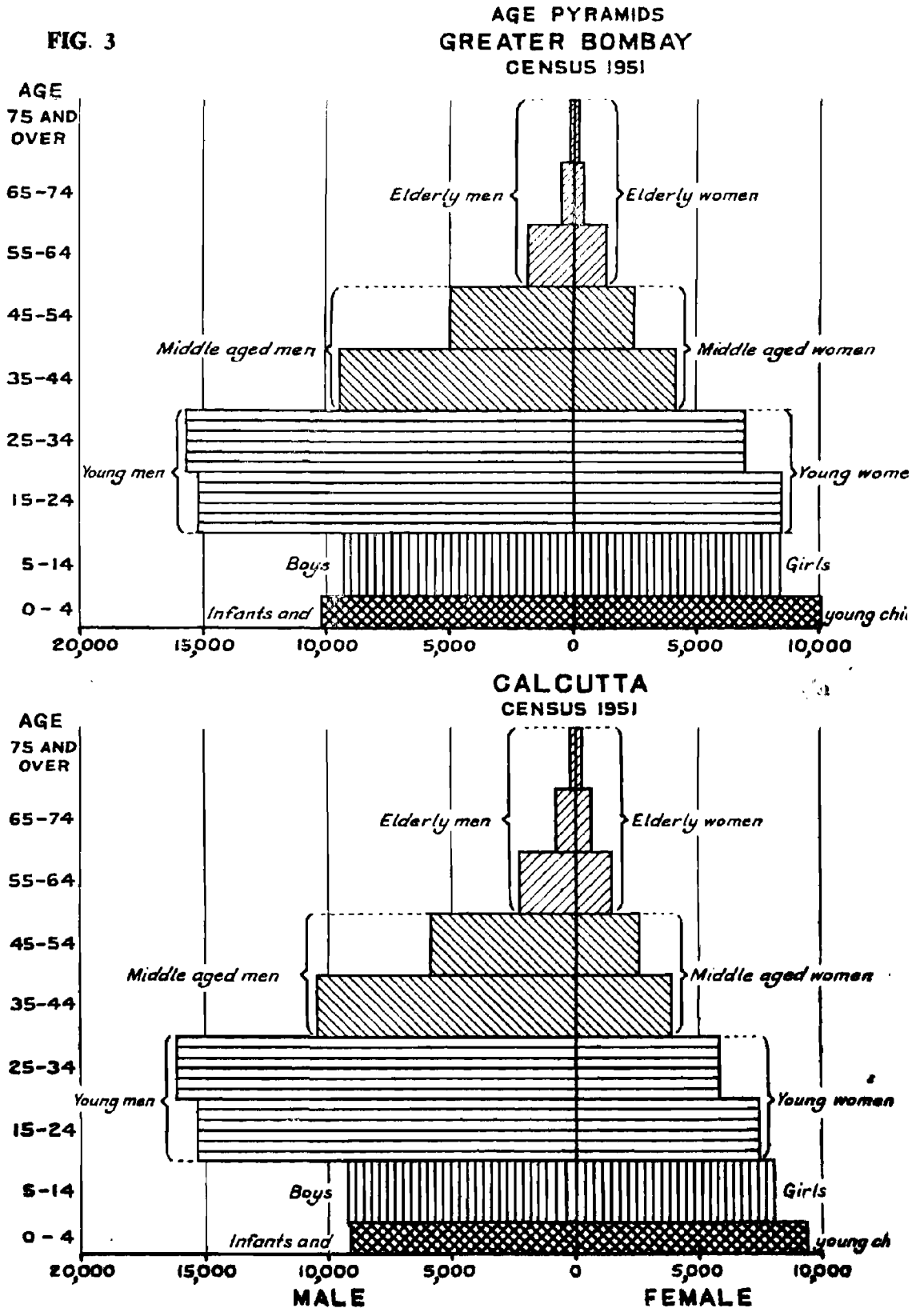



FIG. 3


AGE PYRAMIDS
GREATER BOMBAY
CENSUS 1951
AGE
75 AND OVER
65-74
55-64
45-54
35-44
25-34
15-24
5-14
0-4
Elderly men
Elderly women
Middle aged men
Middle aged women
Young men
Young wome
Boys
Girls
Infants and
young chi
20,000
15,000
10,000
5,000
0
5,000
10,000
CALCUTTA
CENSUS 1951
AGE
75 AND OVER
65-74
55-64
45-54
35-44
25-34
15-24
5-14
0-4
Elderly men
Elderly women
Middle aged men
Middle aged women
Young men
Young women
Boys
Girls
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20,000
15,000
10,000
5,000
0
5,000
10,000
MALE
FEMALE

## D—*Age Structure*

AT THIS CENSUS, as in all previous censuses, the age of every citizen was ascertained and recorded. In some countries, the actual date of birth is sought to be ascertained—not always very successfully. This is out of the question in India, as the number of people who recollect or keep a record of their date of birth is altogether negligible. We seek only to ascertain the age in number of years. There used to be some difficulty of definition—whether age meant the number of completed years at the birthday preceding the enquiry, or the birthday succeeding the enquiry or at the birthday which is nearest to the enquiry. In India, we have settled down to the first of these three definitions of age. An infant is defined as "a child which has not yet completed 12 months of life."

49. Specifications of this kind have value only at very young ages—where a few months more or less may make a large difference to the numbers. But, in general, so few people know their age correct to the nearest year that the errors which may arise out of an unprecise definition are small in comparison with the errors which arise out of ignorance of the actual age. All the world over people seem to make much the same kind of error about age. In some countries, the people err in large number than in others. In general, the people who do not know their own age exactly tend to estimate it by quinquenniums or decades. The people who have returned ages ending in 0 or 5 are very much more numerous than those who have returned ages ending in adjoining digits. Others who try to make a closer approximation prefer to think of their age as an even number rather than any odd number (except five). At lower ages, there are some preferences which are even more well-marked. Age 12 is extremely popular and age 18 is nearly so. We do not apparently share, however, one weakness which is prominently observed in some other countries. Our women folk—speaking generally and in large numbers—are not keen on being recorded as younger than they are.

The real difficulty in our country has been not so much the tendency to prefer particular digits (of which we have very much more than our fair share), as complete inability to make any returns at all. A surprisingly large number of people decline even to make the attempt to figure out their own age. As part of a regular routine based on experience, the enumerators were warned in advance against this contingency and clearly instructed that they must make an effort to make the best possible estimate of age in such cases with the help of bystanders. They were equipped for this purpose, with a 'calendar of important events'—events of such local notoriety that every one

could be expected to remember one or other of them, and recall what he was like when the event occurred. The enumerator would then work out the age for him.

Information about women is frequently obtained second-hand. So the estimates are apt to be cruder for women than for men.

50. In spite of all difficulties, we have got a very complete return of age—the number of persons for whom age was not recorded works out to only about 6 per 10,000. It was the practice (followed at the 1931 Census as well as some earlier censuses) to submit the returns of age thus secured to a kind of purification ceremony. The high priest must be an actuary who can use complicated mathematical formulae in order to purge the returns of irregularities caused by biases for particular digits and thus produce 'smoothed' Age Tables. This was a necessary preliminary to a further process of calculation which yielded 'Life Tables'. The practice was followed at this census also. The examination of returns was carried out by Shri S. P. JAIN of the Ministry of Labour, Government of India. He has carried out this work with great thoroughness and prepared 'smoothed' Age Tables and Life Tables. They have been published separately along with detailed explanatory reports submitted by the officer. In addition, the original returns furnishing the figures for each year of age, as recorded, have also been published so that users of census statistics may study for themselves the nature of the biases which were present and make their own independent calculations, if so desired.

While these elaborate precautions are necessary before the data can be used for refined computations, where single year age returns are significant, it is found that figures for each and every year of age are unnecessary for most purposes: figures for broad age-groups of ten years each (or even broader) are ample at the higher ages and five year groups are sufficient at younger ages after the fifth year. As the original returns (whether furnished by the citizen himself or estimated for him by the enumerator) are generally correct to this degree of approximation, it will be found that the 'unsmoothed' figures are good enough—provided they are not relied on for individual ages or narrower age-groups than those mentioned above.

51. The picture presented by these returns may be readily grasped by reference to the 'age pyramid' diagrams preceding this section. Let us follow the first of these diagrams—which relates to the country as a whole, including towns as well as villages.

The bottom slab of the pyramid, it will be observed, is half as broad as all the other slabs above it. This is because it stands for infants and young

children—those who are 0, 1, 2, 3 or 4 years old (a five-year age-group). All other slabs (which are twice as broad as the bottom slab) stand for ten-year age-groups, *viz.*, 5-14, 15-24, 25-34 and so on except the top-most slab which stands for all ages above 74.

The first fact to be noticed is that the length of every higher slab is smaller than that of the lower slab for there were fewer people in it. The number in each slab, is shown below as a percentage of the total number of all ages:

TABLE 16

| — | *Age-Group* | *Percentage* |
|---|---|---|
| Infants and young children | 0 to 4 | 13·5 |
| Boys and girls | 5 to 14 | 24·8 |
| Young men and women | 15 to 24 | 17·4 |
| | 25 to 34 | 15·6 |
| Middle-aged men and women | 35 to 44 | 11·9 |
| | 45 to 54 | 8·5 |
| Elderly persons | 55 to 64 | 5·1 |
| | 65 to 74 | 2·2 |
| | 75 and over | 1·0 |
| | | 100·0 |

52. Let us now compare the age pyramid of India with that of the United States of America. First we note that the bottom slab in America, is shorter than in India. In America infants and young children are 10·8 per cent while they are 13·5 per cent in India. Looking up, we find the next slab to be even shorter. American boys and girls number 16·3 per cent only, while Indian boys and girls number 24·8 per cent. If we combine the two slabs together they are 26·3 per cent under age 15 in America, while the corresponding number in India is 38·3 per cent.

The next two slabs stand for 'young men and women'. The lower slab of America is somewhat shorter than ours, while the higher slab is the first to be somewhat larger. Adding up, young men and women are 30·4 per cent in America against 33·0 per cent in India. The next two slabs of middle-aged men and women are both larger in America than in India—the total number in America is 25·6 per cent against India's 20·4 per cent.

The last three slabs of elderly persons are similarly larger in America than in India. The total number in America is 16·9 per cent against India's 8·3 per cent.

53. It is very important that we should take note of the enormous difference between India and America in respect of the area of the two bottom slabs. Out of every 1,000 persons, there are 271 people under age 15 in America and there are 383 in India. The number is nearly one-half as large again in India as in America. This means—even if an average Indian married couple had the same resources to spend on bringing up their children as an average American married couple, each Indian child can only get a much smaller share of these resources than each American child, because the same resources have to be spread over a large number. Actually, of course, the resources available to an average Indian married couple are very much smaller—which makes the disparity in the number to be looked after, all the more serious. The dry figures tell their story quite clearly—in terms of food, shelter, care and attention during illness, education and every kind of preparation for life, the Indian child is handicapped unmistakably and of necessity.

54. The following table shows, in one view, how the juvenile proportion varies in different zones of India and compares it with that of Japan, and a few European countries :

TABLE 17

| | | *Percentage to total population of* | | |
|---|---|---|---|---|
| | | *Persons under age 15* | *Infants and young children* | *Boys and girls* |
| ZONES OF INDIA* | North India | 38·5 | 13·5 | 25·0 |
| | East India | 37·9 | 13·7 | 24·2 |
| | South India | 36·9 | 12·5 | 24·4 |
| | West India | 39·5 | 13·8 | 25·7 |
| | Central India | 38·7 | 13·4 | 25·3 |
| JAPAN | | 35·4 | 13·5 | 21·9 |
| EUROPEAN COUNTRIES | Germany | 23·5 | 7·0 | 16·5 |
| | United Kingdom | 22·5 | 8·6 | 13·9 |
| | Italy | 26·3 | 9·2 | 17·1 |
| | France | 21·8 | 7·2 | 14·6 |

*The proportions for the zones of India have been worked out from age tables which excluded displaced persons. The figures for North-West India which are inclusive of displaced persons are as follows :

| | |
|---|---|
| Persons under age 15 | 39·6 |
| Infants and young children | 14·5 |
| Boys and girls | 25·1 |

It may be observed that the juvenile proportion is very similar in all the zones ; it is somewhat smaller in Japan but not very different ; the proportions for all the four European countries are very much smaller.

55. Infants numbered 3·3 per cent of the population (or almost exactly one in thirty) among the people of India.

The highest proportion was found in North-West India (4·1) and the lowest in South India (2·6). The figures for other zones, in order, were : East India (3·7), North India and West India (3·3) and Central India (3·0).

It might seem at first sight that this is probably also the order in which the zones would be placed if arranged according to their birth rate. But this does not follow, necessarily. For one thing, the number of infants counted at the census represents the number born during the preceding 12 months *less* those among them who died during the preceding 12 months. The rates of infant mortality need not differ from one zone to another in the same manner as the birth rate—in fact, they do not. So, the proportion of the net number of infants found and counted need not indicate the order among zones as regards children born.

Again, as noted already, there is need for caution in acting on figures for single years. Though there is little difficulty about recollecting whether a child had completed 12 months or not, one cannot be sure that significant errors did not creep in. A consistent error of even one month in either direction might make a sizeable difference in the resulting number and percentages.

There is also a special difficulty. In compiling the tables on which these results are based, displaced persons were excluded. Such exclusions make little difference to the relative proportions of different age-groups in most parts of the country. But in North-West India where the upheaval was greatest, the figures are bound to be distorted. The distinction must be specially observable among infants and young children since the children of displaced persons are not reckoned as displaced persons and have been counted in.

56. *Infants and young children*—These are all children under 5. They number 13·5 per cent of the total population—that is to say, rather more than one in eight and less than one in seven.

The proportion is 15·6 per cent in North-West India where it is accidentally exaggerated for the reasons already noticed. It is lowest in South India where it is 12·5 per cent. In the other four zones, it is very nearly the same : West India (13·8), East India (13·7), North India (13·5) and Central India

(13·4). The low figure for South India—as we shall see presently—is corroborated by corresponding differences in birth rates and death rates.

57. *Infants, young children, boys and girls*—These include all people under age 15. In the country as a whole, they number 38·3 per cent of the total population. As in the younger groups the proportion is lowest in South India (36·9) and accidentally exaggerated in North-West India (40·4). In other zones, the proportions are as follows : West India (39·5), Central India (38·7), North India (38·5) and East India (37·9).

58. *Comparison with other countries of the world*—Relevant figures are unavailable for Soviet Russia and some other important countries of the world. The figures for some other countries may be affected by error in varying degrees. Such as they are, the information made available in publications of the United Nations shows that in the world as a whole, infants number 2·8 per cent against India's 3·3 ; infants and young children number 12·4 per cent against India's 13·5 ; and all people under age 15 number 33·9 per cent against India's 38·3. Those parts of the world where the proportions are low can be distinguished from those parts of the world where the proportions are high as shown below :

TABLE 18

| LOW JUVENILE PROPORTIONS | | | | HIGH JUVENILE PROPORTIONS | | | |
|---|---|---|---|---|---|---|---|
| | *Percentage to total population of* | | | | *Percentage to total population of* | | |
| *Territory* | *Infants* | *Infants and young children* | *Persons under age 15* | *Territory* | *Infants* | *Infants and young children* | *Persons under age 15* |
| Europe | 2·0 | 9·8 | 26·9 | India | 3·3 | 13·5 | 38·3 |
| Germany | 1·5 | 7·0 | 23·5 | Japan | 2·8 | 13·5 | 35·4 |
| U. K. | 1·5 | 8·6 | 22·5 | South-East Asia | 3·3 | 15·1 | 40·9 |
| Italy | 1·8 | 9·2 | 26·3 | South-West Asia | 3·1 | 16·7 | 40·6 |
| France | 1·6 | 7·2 | 21·8 | South & Central America | 3·1 | 14·6 | 40·1 |
| North America | 2·2 | 10·9 | 27·6 | Africa | 2·9 | 13·7 | 39·1 |
| U. S. A. | ? | 10·8 | 27·1 | | | | |
| Oceania | 2·5 | 10·5 | 26·0 | | | | |

59. *Elderly persons*—At the other end of the scale we may compare the variations in the proportion of elderly persons to the total population. For the

country as a whole, the figures were 8·5 per cent—or very nearly one in twelve. Among the zones, the highest proportion is found in East India (8·9) and the lowest in West India (7·1). The proportions in the other zones are: North-West India (8·6), South India (8·5), North India (8·4), and Central India (7·8).

If we compare with other countries of the world, we get the result that the proportion of people who live beyond middle age is generally high in those parts of the world where the juvenile proportion is low, and the converse is also true. This is seen from the table below:

TABLE 19

| *Territory* | *Percentage to total population of people aged 55 and above* | *Territory* | *Percentage to total population of people aged 55 and above* |
|---|---|---|---|
| Europe | 17·2 | India | 8·3 |
| Germany | 19·1 | Japan | 11·0 |
| U.K. | 21·1 | South-East Asia | 7·3 |
| Italy | 12·0 | South-West Asia | 9·5 |
| France | 21·4 | South & Central America | 7·4 |
| North America | 16·5 | Africa | 8·5 |
| U. S. A. | 16·9 | | |
| Oceania | 17·8 | | |

For the world as a whole, the proportion is 12·0 per cent.

60. We may now turn to the age pyramid for villages and towns of India—separately shown as the third and fourth of the series of 'age pyramid' diagrams. The following table shows the comparative figures:

TABLE 20

| | *Percentage to total population in* | |
|---|---|---|
| | *Villages* | *Towns* |
| Infants and young children | 13·7 | 12·9 |
| Boys and girls | 25·1 | 23·2 |
| Young men and women | 32·3 | 36·5 |
| Middle-aged men and women | 20·4 | 20·1 |
| Elderly persons | 8·5 | 7·3 |
| | 100·0 | 100·0 |

This table might suggest the presence of a tendency in towns to diminution in the juvenile proportion. This might easily lead to incorrect inferences

about the effect of urban life on the birth rate. It should be borne in mind that the relevant figures are a corollary of two facts: *first* that towns have fewer women relatively than villages and so relatively fewer children are born; and *secondly*, towns grow in part by migratory movements in which persons under age 15 tend to be under-represented.

61. The differences in age-structure between the rural and urban population become greatly exaggerated in the cities. This is clearly brought out by the fantastic distortions of the age pyramid for Greater Bombay and Calcutta cities—the last two of the series of 'age pyramid' diagrams. The abnormal excess of males over females is, of course, the main cause of these distortions. Even when allowance is made for this fact, and the age-structure is analysed separately for males and females, the following differences appear :

TABLE 21

| | *Percentage to population of* | | | *Percentage to population of* | |
|---|---|---|---|---|---|
| *Males* | *India* (GENERAL) | *Bombay and Calcutta* | *Females* | *India* (GENERAL) | *Bombay and Calcutta* |
| Infants and young children | 13·2 | 7·7 | Infants and young children | 13 9 | 13·4 |
| Boys | 24·9 | 14·5 | Girls | 24·7 | 22·7 |
| Young men | 32·6 | 49·1 | Young women | 33·3 | 40·0 |
| Middle-aged men | 21·0 | 24·1 | Middle-aged women | 19·6 | 18·0 |
| Elderly men | 8·3 | 4·6 | Elderly women | 8·5 | 5·9 |
| MALES (all ages) | 100·0 | 100·0 | FEMALES (all ages) | 100·0 | 100 0 |

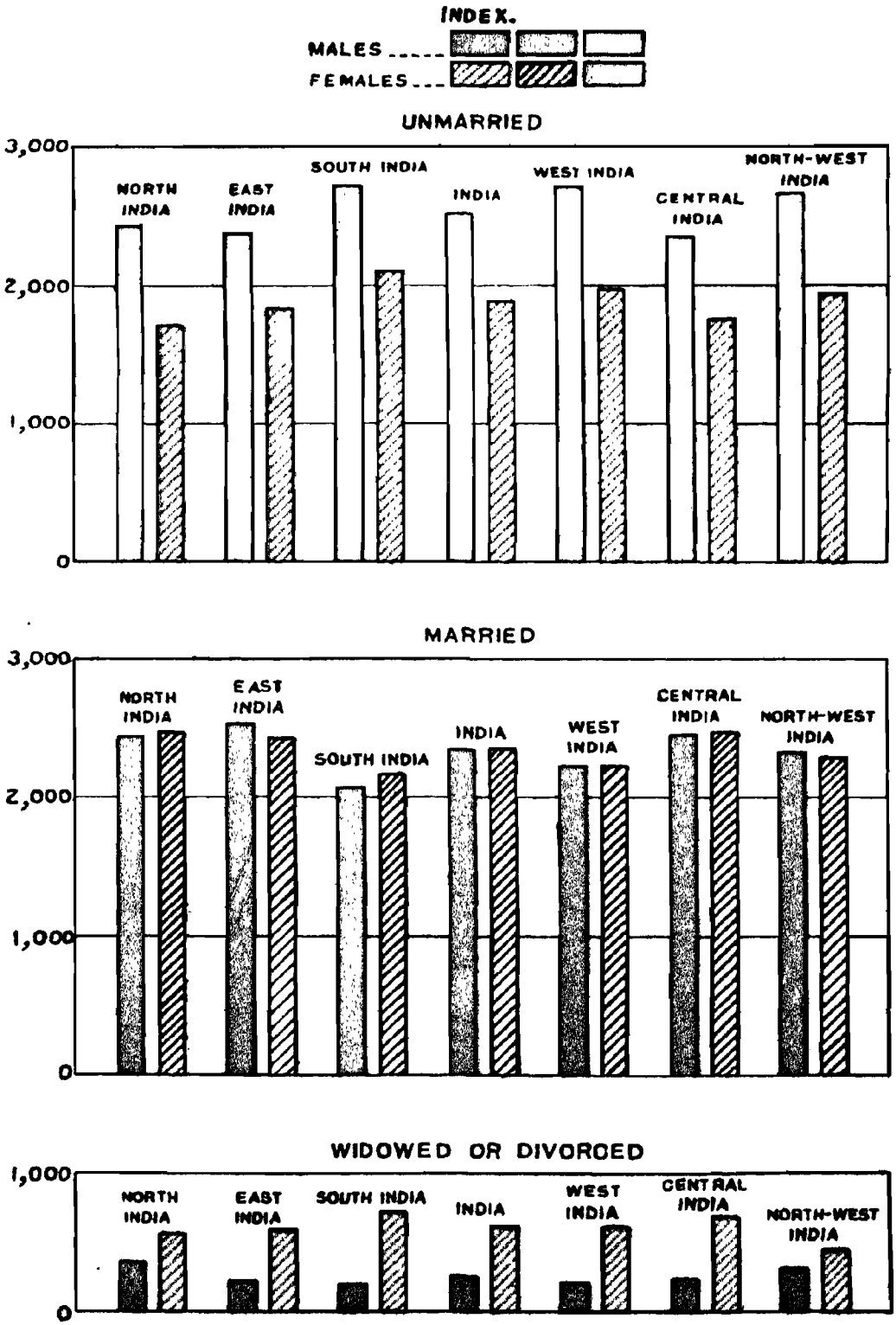
Young men, young women and middle-aged men are (in that order) over-represented in the two large cities. All other age-groups are more or less under-represented in both sexes.

## E — *Marital Status Pattern*

OUT OF EVERY 10,000 persons in India (not reckoning displaced persons), there are 5,133 males and 4,867 females. Among them 2,521 males and 1,886 females are unmarried. If we reckon males and females together, the unmarried people are 44·1 per cent of the population.

FIG. 4

# DISTRIBUTION BY CIVIL CONDITION OF 10,000 PERSONS IN INDIA AND THE SIX ZONES



The proportion of unmarried people is highest in South India (48·2 per cent) and is lowest in Central India (41·1 per cent). In other zones, it varies as follows : West India (47·0), North-West India (46·1), East India (42·2), and North India (41·4). The proportion must, obviously, be different for males and females. In the country as a whole, roughly every other male person is unmarried ; while rather less than two out of five females are unmarried. The actual percentage for each zone and for India are shown in TABLE 22. South India, it will be noted, stands first as regards proportion of unmarried people even when males and females are considered separately. The order in other zones is : West India, North-West India, Central India, North India and East India, if unmarried males are considered separately; and North-West India, West India, East India, North India and Central India, if unmarried females alone are considered.

TABLE 22

| *Zone* | *Percentage unmarried among males* | *Percentage unmarried among females* |
|---|---|---|
| North India | 46·3 | 35·9 |
| East India | 46 3 | 37·8 |
| South India | 54·3 | 42·1 |
| West India | 52 6 | 40·9 |
| Central India | 46·5 | 35·6 |
| North-West India | 59·1 | 41·4 |
| INDIA | 49·1 | 38·8 |

63. According to the law* of the land, child marriages are punishable offences. At the 1951 Census we counted 28 lakhs and 33 thousand married

*Extract from the Child Marriage Restraint Act, 1929 (Act No. XIX of 1929) :*

"2. In this Act, unless there is anything repugnant in the subject or context,—

(a) "Child" means a person who, if a male, is under eighteen years of age, and if a female, is under fourteen years of age ;

(b) "Child marriage" means a marriage to which either of the contracting parties is a child ;

(c) "contracting party" to a marriage means either of the parties whose marriage is thereby solemnised ; and

(d) "minor" means a person of either sex who is under eighteen years of age.

3. Whoever, being a male above eighteen years of age and below twenty-one, contracts a child marriage shall be punishable with fine which may extend to one thousand rupees.

4. Whoever, being a male above twenty-one years of age, contracts a child marriage shall be punishable with simple imprisonment which may extend to one month, or with fine which may extend to one thousand rupees, or with both.

5. Whoever performs, conducts or directs any child marriage shall be punishable with simple imprisonment which may extend to one month, or with fine which may extend to one thousand rupees, or with both unless he proves that he had reason to believe that the marriage was not a child marriage.

[*Footnote continued*

males, 61 lakhs and 18 thousand married females, 66 thousand widowers and 134 thousand widows—all between the ages of 5 and 14. We do not know the number of married females aged 14 nor of married males aged 15, 16 and 17. The latter marriages are punishable under law, while the former are not. If we may set off one against the other, the total number counted under age 15—nearly 92 lakhs—may be regarded as the approximate number of marriages contracted in contravention of the law. This number was distributed among the different zones as shown in TABLE 23. North India leads among the six zones, with one person out of every 25 married in contravention of the law. Central India (with one in 27) and East India (with one in 31) are not far behind.

TABLE 23

| Zone | *Married and widowed persons under 15 years of age* | |
|---|---|---|
| | *Number* (IN LAKHS) | *Percentage to total population of the zone* |
| North India | 25·7 | 4·1 |
| East India | 27·6 | 3·2 |
| South India | 5·2 | 0·7 |
| West India | 6·8 | 1·7 |
| Central India | 19·2 | 3·7 |
| North-West India | 7·0 | 2·2 |
| INDIA | 91·5 | 2·6 |

With reference to these deplorable figures, however, it should be mentioned that there is clear evidence that the child marriage rates are diminishing. Married females under 15 were 9·6 per cent of all married males in 1941 and this dropped to 7·4 per cent in 1951. There is a similar drop in North India (from 10·9 to 10·1), in East India (from 10·5 to 8·2), in South India (from 5·0 to 2·6), in West India (from 9·5 to 6·0), in Central India (from 12·8 to 10·6), and in North-West India (from 7·4 to 6·5).

64. If we exclude all persons under age 15 and consider only persons aged 15 and over, the results will be as shown in TABLE 24 on opposite page.

*Footnote concluded*]

6. (1) Where a minor contracts a child marriage any person having charge of the minor, whether as parent or guardian or in any other capacity, lawful or unlawful, who does any act to promote the marriage or permits it to be solemnised, or negligently fails to prevent it from being solemnised, shall be punishable with simple imprisonment which may extend to one month or with fine which may extend to one thousand rupees, or with both :

Provided that no woman shall be punishable with imprisonment.

(2) For the purposes of this section, it shall be presumed, unless and until the contrary is proved that, where a minor has contracted a child marriage, the person having charge of such minor has negligently failed to prevent the marriage from being solemnised."

TABLE 24

| Zone | Percentage unmarried among Males aged 15 and over | Females aged 15 and over |
|---|---|---|
| North India | 17·9 | 4·0 |
| East India | 17·5 | 6·0 |
| South India | 27·9 | 10·1 |
| West India | 23·0 | 6·5 |
| Central India | 15·8 | 4·0 |
| North-West India | 19·3 | 6·2 |
| INDIA | 20·3 | 6·4 |

If we compare the figures for women, we find that the India percentage is 6·4; that is to say, out of every 16 women aged 15 and over one is unmarried. In two zones—North India and Central India—unmarried women are fewer; they are only about one in 25 among women aged 15 and over. South India has the largest number—about one in 10. The other three zones—West India, North-West India and East India—are round about the India average of one in 16.

The following table shows how India compares with other countries of the world in this respect :

TABLE 25

| Country | Percentage unmarried among Males aged 15 and over | Females aged 15 and over |
|---|---|---|
| India | 20·3 | 6·4 |
| United Kingdom 1931 | 36·6 | 36·2 |
| United Kingdom 1951 | 26·9 | 25·5 |
| Italy (1936) | 37·4 | 33·0 |
| West Germany (1946) | 28·9 | 29·0 |
| France (1946) | 30·5 | 25·0 |
| U.S.A. (1940) | 33·2 | 25·8 |
| Canada (1941) | 39·8 | 33·0 |

65. It should not be supposed that the percentages shown in TABLES 24 and 25 represent the numbers of women who never marry and remain spinsters for life. If the percentages are taken in later years, they will be smaller

because more and more of them would get married in later years. Thus, for instance, the proportion of unmarried women to the total population of India diminishes rapidly, with successive age-groups as shown below :

TABLE 26

| *Age-group* | *Percentage of total population of women who remain unmarried* | |
|---|---|---|
| | *in the age-group* | *in all age-groups subsequent to the age-group in the first column* |
| 0-4 | 6·7 | 12·1 |
| 5-14 | 10·2 | 1·9 |
| 15-24 | 1·5 | 0·4 |
| 25-34 | 0·2 | 0·2 |
| 35-44 | 0·1 | 0·1 |

66. We have seen already in TABLE 22 that, in the country as a whole, 49·1 per cent of all males and 38·8 per cent of all females are unmarried. It follows that 50·9 per cent of all males must be either married men or widowers. Similarly, 61·2 per cent of all females must be either married women or widows. [There is very small number* of men and women, who are divorced persons and who have not re-married. Their number is included among those of widowers and widows.] The following table shows the proportions of married men and married women, widowers and widows separately for India and the zones :

TABLE 27

| *Zone* | *Percentage of all males who are* | | *Percentage of all females who are* | |
|---|---|---|---|---|
| | *Married* | *Widowers* | *Married* | *Widows* |
| North India | 46·6 | 7·0 | 52·1 | 12·0 |
| East India | 49·3 | 4·4 | 50·1 | 12·1 |
| South India | 41·5 | 4·2 | 43·4 | 14·3 |
| West India | 43·2 | 4·2 | 46·0 | 13·1 |
| Central India | 48·6 | 4·9 | 50·3 | 14·0 |
| North-West India | 43·7 | 6·0 | 48·8 | 9·8 |
| INDIA | 45·8 | 5·0 | 48·4 | 12·8 |

*The number of divorced persons in India is 144,786—0·4 per cent of the total population.

South India, Central India and West India have rather more widows than East India, North India and North-West India. There is one widow for every three married women in South India—while the India ratio is very nearly one to four.

67. It may seem a bit odd that there should be an appreciable difference in numbers between married males and married femles—as polygamy, though it exists, is known to be very rare. The explanation is to be found in the fact that the percentages refer to males and females separately and the sexes are unequal in number. Actually married males and married females are almost exactly equal in number in the country as a whole. Out of every 10,000 persons in India, there are 2,353 married males for every 2,357 married females. But the corresponding figures for zones are not nearly so close to one another as the following table shows :

TABLE 28

| *Zone* | *Number per 10,000 persons who are* | | *Column 3 minus column 2* |
|---|---|---|---|
| | *Married males* | *Married females* | |
| *1* | *2* | *3* | *4* |
| North India | 2,441 | 2,482 | +41 |
| East India | 2,532 | 2,438 | —94 |
| South India | 2,074 | 2,169 | +95 |
| West India | 2,228 | 2,228 | .. |
| Central India | 2,463 | 2 483 | +20 |
| North-West India | 2,326 | 2,291 | —35 |
| INDIA | 2,353 | 2,357 | + 4 |

West India is remarkable for its balanced numbers. There is a small, but nevertheless curious, excess of married females in South India. On the other hand, there is an almost equal excess of married males in East India. Similarly, there is an excess of married males in North-West India, matched by somewhat smaller excesses of married females in North India and Central India.

As there is no suggestion of polyandry in East India, it may be assumed that the main explanation for these minor differences must be found in migration. It is probable that a good many missing husbands of South India are earning a living in other zones or outside India, while the wives are at home.

This fact of temporary separation of husbands and wives is brought out more prominently when we consider the figures for villages and towns. Out of 10,000 persons in all the villages of India 2,338 are married males and 2,407 are married females. The excess of married females in villages is of the order of

69 per 10,000. Among 10,000 persons in all the towns of India, there are 2,429 married males and only 2,105 married females. The excess of married males in towns is of the order of 324 per 10,000.

There are very wide differences in this respect between the zones. Thus in South Indian towns, the number of husbands (2,078) does not exceed the number of wives (2,124) ; while in the towns of East India there are as many as 2,992 husbands and only 1,909 wives.

68. We may conclude this section with a reference to a somewhat important change that appears to be taking place in marital status pattern, *viz.*, a fall in the proportion of widows.

The following table compares the proportion of widows and widowers between 1931 and 1951, and shows that the proportion of widows has decreased in every zone :

TABLE 29

| Zone | *Percentage of widowers to all males* | | *Percentage of widows to all females* | |
|---|---|---|---|---|
| | 1931 | 1951 | 1931 | 1951 |
| North India . . . | 7·9 | 7·1 | 15·1 | 12·0 |
| East India . . . | 4·7 | 4·4 | 16·8 | 12·1 |
| South India . . . | 4·1 | 4·2 | 17·2 | 14·3 |
| West India . . . | 5·6 | 4·2 | 16·1 | 13·1 |
| Central India . . . | 5·4 | 4·9 | 15·4 | 14·0 |
| North-West India . . . | 8·5 | 6·1 | 12·7 | 9·8 |
| INDIA . . . | 5·6 | 5·0 | 16·1 | 12·8 |

The proportion of widowers has also dropped in five out of six zones but the difference is small. The decreases in the percentage of widows between 1931 and 1951 are too large and too consistent to be dismissed as accidental. They are clearly significant ; but what do they signify ? Do they mean that husbands tend to live longer than they used to and so the proportion of widows is falling ? Or do they mean that the custom of non-remarriage of widows is weakening and more women tend to remarry after widowhood than before ? There are some valuable indications pointing to increasing longevity as a fact, while there is little evidence of any very striking departures from custom in respect of remarriage of widows. On the whole, one is inclined to accept the former as the main, if not the sole, explanation of the fall in the proportion of widows.

In that case, it may be objected, why is there no similar fall of a substantial nature in the proportion of widowers? In support of this objection, it may be contended that it is very unlikely that the conditions which have favoured an increase in the length of life are specially favourable to males only and have not benefited females equally. The objection, though apparently strong, is not conclusive. Since there is no custom of non-remarriage of widowers the small proportion of widowers represents mainly the hard core of old men who will not remarry because they are too old, and also a number of others who have become widowers but have not yet remarried but would do so sooner or later. Women may tend to live longer than before, without making any difference to the latter class of widowers and they may not also make a difference to the former if the improved expectation of life is evenly spread over all ages and not concentrated at old ages. The objection is not sustainable.

It is quite possible that both men and women have equally benefited by conditions favouring a longer life than formerly; and yet the result is made visible by a substantial drop in the proportion of widows, and only a very small one in the proportion of widowers. It is probably correct to hold that the drop in the proportion of widows need not necessarily have been caused by any very material change in the custom of non-remarriage of widows. It should, on the other hand, be accepted as one of the indications that fewer people die prematurely and more people tend to live long; or, in other words, a modest improvement in the expectation of life has taken place within the last two decades.

## F—*Birth Rates and Death Rates*

BIRTHS AND DEATHS are among the most important events which occur in the life of every household. Our knowledge of how the number and the living pattern of our people have changed in the past and, therefore, our opinion about how they may be expected to change in the future are bound to be vague and sketchy, if not incorrect, unless we achieved a clear understanding of the relationship between these vital events and the changing pattern of life.

70. Government have made arrangements for securing that births and deaths are reported as and when they occur and the occurrences are placed on record together with essential minimum information regarding date and place

and parties concerned. There is the system of official registration of births and deaths. The primary data thus secured are then compiled and returns showing the numbers of births and deaths in different parts of the country as well as birth rates and death rates computed from them, are published at regular intervals by State Governments, for each State and by the Central Government, for India.

If reporting is complete and the basic records are correctly maintained, the changes in numbers recorded by the census at ten-yearly intervals should tally with the balance of births and deaths during the ten-year period, leaving only a relatively small margin to be explained by the net balance of migration of people, in and out of the territory in question.

71. Let us take Uttar Pradesh as an illustration. In 1951 the state had a total population of 632 lakhs. Ten years earlier, according to the 1941 Census, there were 565 lakhs of people in the same territory. The number had grown by 67 lakhs in ten years. There were arrangements for registration of births and deaths in most villages and towns of the state—but some small bits of territory (of the princely states which were 'merged' in Uttar Pradesh shortly before the 1951 Census) did not have them. This is a complication but a small one—because the population of the area where there was no registration was a little under one-fortieth of the whole state and we may make allowances accordingly.

During ten years preceding the 1951 Census the authorities of Uttar Pradesh registered 145 lakhs of births. They also registered 97 lakhs of deaths. The excess of births over deaths being 48 lakhs, the population must have increased by that number. According to the census, the increase was 67 lakhs. How are we to account for the remaining 19 lakhs ? Were they displaced persons who had come into the state from Pakistan ? No, we have counted them; they are only 5 lakhs. We also know that at about the time they came in, others migrated to Pakistan from Uttar Pradesh. Though we do not know this number precisely, we have reasons to believe that it was not perhaps far short of the number who came in. So the question about the 19 lakhs remains to be answered. Evidently, a great many births escaped registration ; and so also, no doubt, deaths. The basic record is materially incomplete.

This incompleteness is indicated by census results in another way also. The births registered during 10 years work out to a rate (in round figures) *of 25 thousand people per annum.* We have already noted in the last section, however, that the count of infants in this state yielded 33 per thousand. May be, this number was somewhat swollen by counting 13 month old babies also, as

infants. But, even so, if we make allowance for the number of infants who must have died during the year preceding the census, the census count of infants is a clear indication that actual births must have exceeded registered births fairly substantially.

The problem is—how are we to have a reasonably close estimate of the actual number of births and the actual birth rate as against the registered birth rate ? There is a similar problem about deaths and death rates.

The importance of solving this problem cannot be over-stressed. To illustrate, the registration figure of Uttar Pradesh show that in each of the two previous decades 1931-40 as well as 1921-30, registered births were working out to an average rate (in round figures) *of 34 per thousand people per annum.* There is a sharp difference between 25 (the registered birth rate during 1941-50) and 34 (at each of two preceding decades). If this difference is real and if similar drops were observed in other states, the figures will prove that there is no such thing as a population problem in India ; and if there was, the problem was solving itself. That is, in fact, what a number of people think and say. But suppose the difference is due merely to the fact that the registration system has become less efficient than before; and so more births escaped registration during the last decade than during two previous decades. Suppose further, that we could form a reliable estimate of the extent of omission in different decades. Then the inferences to be drawn from the figures will be very different. Our appreciation of the problem and our approach to its solution will turn out to be very different.

72. Uncertainties of this kind are present in every state. Among the major states, Madras, Bombay, Madhya Pradesh and the Punjab are the only four states where the registration system functions reasonably well and omissions are not unduly large. The other states fall into three groups—those for which figures are available over a long period, though they are not very good figures; those for which figures (not very good) are available now for some recent years but not over a long period ; and those for which there are no figures at all even now. If we exclude the last two categories, we are left with a territory which contains roughly three-quarter of India's population.

It was no use merely saying that we do not have complete information and can, therefore, come to no conclusion. It will take a long time before we get data which are free from all uncertainties. Meanwhile, we have to form as good a judgment as we can—on all the materials before us—about how the observed growth of population as disclosed by censuses should be split up into births, deaths, and the net balance of migration. To this end, it was necessary

to bring together all available data thrown up by registration of births and deaths as well as by the census and subject them to close and careful study and use every scrap of collateral information which can help us to piece together this jig-saw puzzle.

73. Such a study has been carried out, and it has yielded results which serve our present purpose. The nature of this study, and the results, are set out in detail in a self-contained paper* which is printed as APPENDIX II to this report. The conclusions reached in this paper may be thus stated :

*I*—The India picture is as follows :

(*i*) Births have occurred (during the ten years 1941-50) at an average rate of *40 per thousand per annum.*

(*ii*) Deaths have occurred (during the ten years 1941-50) at an average rate of *27 per thousand per annum.*

(*iii*) Hence, the natural increase of the population has been occurring (during the ten years 1941-50) at an average rate of *13 per thousand per annum.*

We may refer to these rates as the birth rate (40), death rate (27) and natural increase rate (13). They relate to India within her present boundaries during the decade preceding the 1951 Census.

*II*—The zonal variations of the India picture are as follows :

(*i*) The highest birth rate is found in Central India (44), and the lowest birth rate in South India (36 to 37). The birth rates of other zones, in order, are : West India (42), North-West India (41 or 42), North India and East India (for both of which the birth rates are 38 or 39).

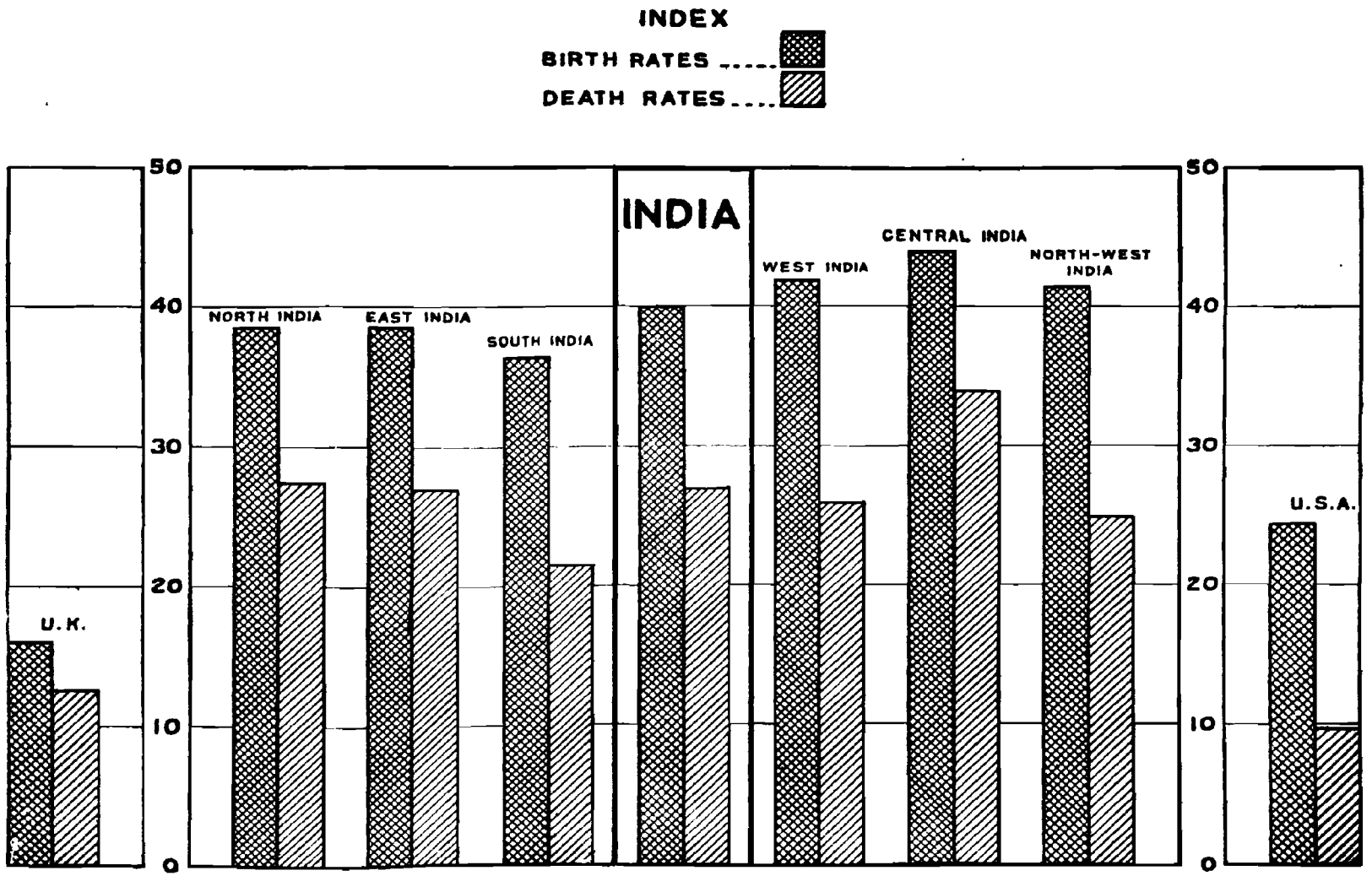
(*ii*) The highest death rate is found in Central India (34), and the lowest death rate in South India (21 or 22). The death rates of other zones, in order, are : North India (27 or 28), East India (26 or 27 or 28) West India (26) and North-West India (24 or 25 or 26).

(*iii*) The highest natural increase rate is found in North-West India (16 or 17) and West India (16), and the lowest natural increase rate is found in Central India (10). The natural increase rates of other zones, in order, are : South India (15), East India (11 or 12) and North India (11).

*The paper is not unduly technical and it is hoped it will be read. A technical analysis made by Shri S. P. Jain, the Census Actuary, who prepared the Age and Life Tables of the 1951 Census, is printed as an *Annexure* to this paper.

FIG. 5

# BIRTH RATES AND DEATH RATES INDIA AND ZONES, U. K., U. S. A.



74. The foregoing figures do not represent a simple computation from census data or registration data or both. They are something more complex than a computation, they constitute a judgment. They represent what, the present writer considers to be most probably what occurred during 1941-50 in India and the six zones. All the evidence which has led him to form this judgment is fully set out in print; so, it is possible for readers (if they disagree with the conclusions) to form their own judgment.

It will be noted that in some cases, more than one figure have been given —this represents what seems to the present writer to be the unavoidable residuum of uncertainty, which has to be accepted.

The diagram preceding this page shows the birth rates and death rates of India and the zones and compares them with the rates for the United Kingdom and the United States of America. The diagram tells its own story of the avoidable waste of life occurring among us all the time.

## G—*Maternity Pattern*

WHY DOES the birth rate vary from 44 in Central India to 36 or 37 in South India? The birth rate—by definition—is the number of births which occur among 1,000 people during one year. But as births occur only to married women of certain ages it is their number which is really relevant. It is true that the limiting ages cannot be precisely laid down. It is also possible that some births occur to women who are not married. But where we are striking a rate for 1,000 people, we do not base ourselves on the actual occurrences of birth among 1,000 people only, but among lakhs and even crores of people. We may, therefore, disregard exceptional occurrences and treat *married women of age 15* to *44* as the people who alone are relevant in this context.

It would follow that if one part of the country contained more married women of age 15 to 44 per 1,000 people than another, then, other things being equal, the former would have a higher birth rate than the latter. The same would be true of the same territory at different times—a change in the proportion of married women of age 15 to 44 would, other things being equal, be accompanied by similar change in the birth rate.

76. What is the meaning of this escape clause—'other things being equal'? In what circumstances could we have the same proportion of married

women of age 15 to 44 in different parts of the country (or at different times in the same part of the country) and yet have different birth rates ? Two sets of circumstances may be named. *First*,—the age structure within this group may be materially different. Thus, if we have one lakh of married women of age 25 to 34 and another lakh of married women of age 35 to 44 drawn from the same part of the country, we may be fairly certain that the number of births occurring among the first group in the course of a year will be larger than the number of births occurring among the second group. *Secondly*,—it does not follow that if we compared two groups of married women of the same number and the same age-group (say 25 to 34)—but selected the groups from two different parts of the country, we would get the same number of babies born among them in any one year. Apart from purely accidental and personal differences between one women and another, it seems possible that there are statistically significant differences between different groups of women : but why should they be ? It is difficult to be sure—there may be something in the blood, or the climate, and there may be more in the prevailing habits of conjugal life.

At this census we have been able to collect some information on these matters—in part, through a local census question (which was put in some states only); and in part, through an 'Experimental Census of Birth and Deaths' carried out in a few states, sometime after the main census was over.

Let us begin with a review of the facts which we have ascertained in Travancore-Cochin, about *all women who have had at least one child-birth and who remained married on census day.*

77. Among these mothers, those who were 45 years old or older were separated. The total number of children born to all of them was divided by the total number of such mothers. The result was 6·6. This shows that on an average, a Travancore-Cochin mother who lives to complete her child-bearing period gives birth to more than 6 children but not more than 7. Out of this number (6·6), the average number actually alive on census day was 4·6. Among the children born alive 2 had died, predeceasing their mothers. Let us call these figures—the child birth index (6·6), the child survival index (4·6), and the child loss index (2·0).

78. These indices relate to what may be called the completed maternity experience. The numbers, naturally, increase gradually with age. If we isolate all mothers of age 20 or under the child birth index is 1·2, the child survival index is 1·0, and the child loss index is 0·2. The indices increase at five-yearly intervals as shown in TABLE 30 on opposite page.

TABLE 30

| | *Age-group of mothers* | *Child birth index* | *Child survival index* | *Child loss index* |
|---|---|---|---|---|
| Incomplete maternity experience | Under 20 | 1·2 | 1·0 | 0·2 |
| | 20 to 24 | 1·8 | 1·4 | 0·4 |
| | 25 to 29 | 2·9 | 2·3 | 0·6 |
| | 30 to 34 | 4·2 | 3·2 | 1·0 |
| | 35 to 39 | 5·3 | 4·0 | 1·3 |
| | 40 to 44 | 6·2 | 4·6 | 1·6 |
| Completed maternity | 45 and over | 6·6 | 4·6 | 2·0 |
| | AVERAGE FOR ALL AGES | 4·3 | 3·2 | 1·1 |

Note how the tempo of child-bearing accelerates. The addition to the family between about 17 (the mean of the under 20 group) and about 22 (the mean of the 20-24 group) is 0·6. Between 22 and 27, the addition is 1·1. Between 27 and 32 it is 1·3. Then the retardation begins. Between 32 and 37 it is 1·1. The additions to the family tend to become fewer as age advances after what may be called a mid-maternal age—round about age 30.

79. Information was available about the means of livelihood of these mothers. So it is possible to separate them into three groups as members of (*i*) agricultural landholders and tenants' families, (*ii*) agricultural labourers families, and (*iii*) non-agricultural families. It was also possible to separate the mothers who lived in villages from those who lived in towns. The child birth indices were separately calculated for these groups and are shown below:

TABLE 31

| *Maternal group* | *Child birth indices* | |
|---|---|---|
| | *Age 45 and over* | *All ages* |
| Agricultural landholders and tenants' families | 6·7 | 4·5 |
| Agricultural labourers' families | 6·3 | 4·1 |
| Non-agricultural families | 6·6 | 4·2 |
| Rural | 6·6 | 4·3 |
| Urban | 6·4 | 4·2 |

It is sometimes stated—on the basis mainly of European experience—that the classes which are at the bottom of the social scale have more children and grow in number faster than others. There is little doubt about the place of the agricultural labourer in the social scale anywhere in India. The figures for agricultural labourers' families in Travancore-Cochin do not show that this generalisation is true in that state.* The urban index is slightly smaller than the rural. But the difference is so small that it is probably not significant.

80. One other separation was effected among the mothers : those who commenced child-bearing during ages 15 to 19 and those who commenced child-bearing during ages 20 to 24. Let us call them *Maternity Types A* and *B*. Their child birth indices differed from age-group to age-group as shown in the table below :

TABLE 32

| *Age-group* | *Child birth indices* | |
|---|---|---|
| | *Maternity Type A* | *Maternity Type B* |
| Under 20 | 1·2 | .. |
| 20 to 24 | 2·0 | 1·3 |
| 25 to 29 | 3·6 | 2·3 |
| 30 to 34 | 4·8 | 3·7 |
| 35 to 39 | 6·0 | 4·9 |
| 40 to 44 | 6·8 | 5·8 |
| 45 and over | 7·3 | 6·4 |

The figures of this table indicate the result to be expected if by raising the age of marriage (or by other means) the first maternity of all mothers of *Type A* got postponed uniformly by five years. The result would be a reduction of maternity among mothers of *Type A* by approximately one-eighth. The reduction in the birth rate will be even smaller, this depending on the proportion which mothers of *Type A* bear to the total number of mothers.

81. The child birth indices were also calculated for mothers who had become widows by census day. It was found that on an average for all ages, the child birth index of widowed mothers was larger—4·9 against 4·3 of the still-married. This is, of course, due to the fact that the higher age-groups predominate among widows. The comparison for ages 45 and over yields 5·5 as the index for widowed mothers against 6·6 for mothers who remained married on census day.

*Nor is it true of any of the three divisions of Madhya Pradesh *vide* para 83.

FIG. 6

# LOGISTIC GRADUATION OF MATERNITY DATA

## MATERNITY TYPE A

AVERAGE NUMBER OF CHILDREN BORN

*Crosses represent observed values*

*Dots represent graduated values*

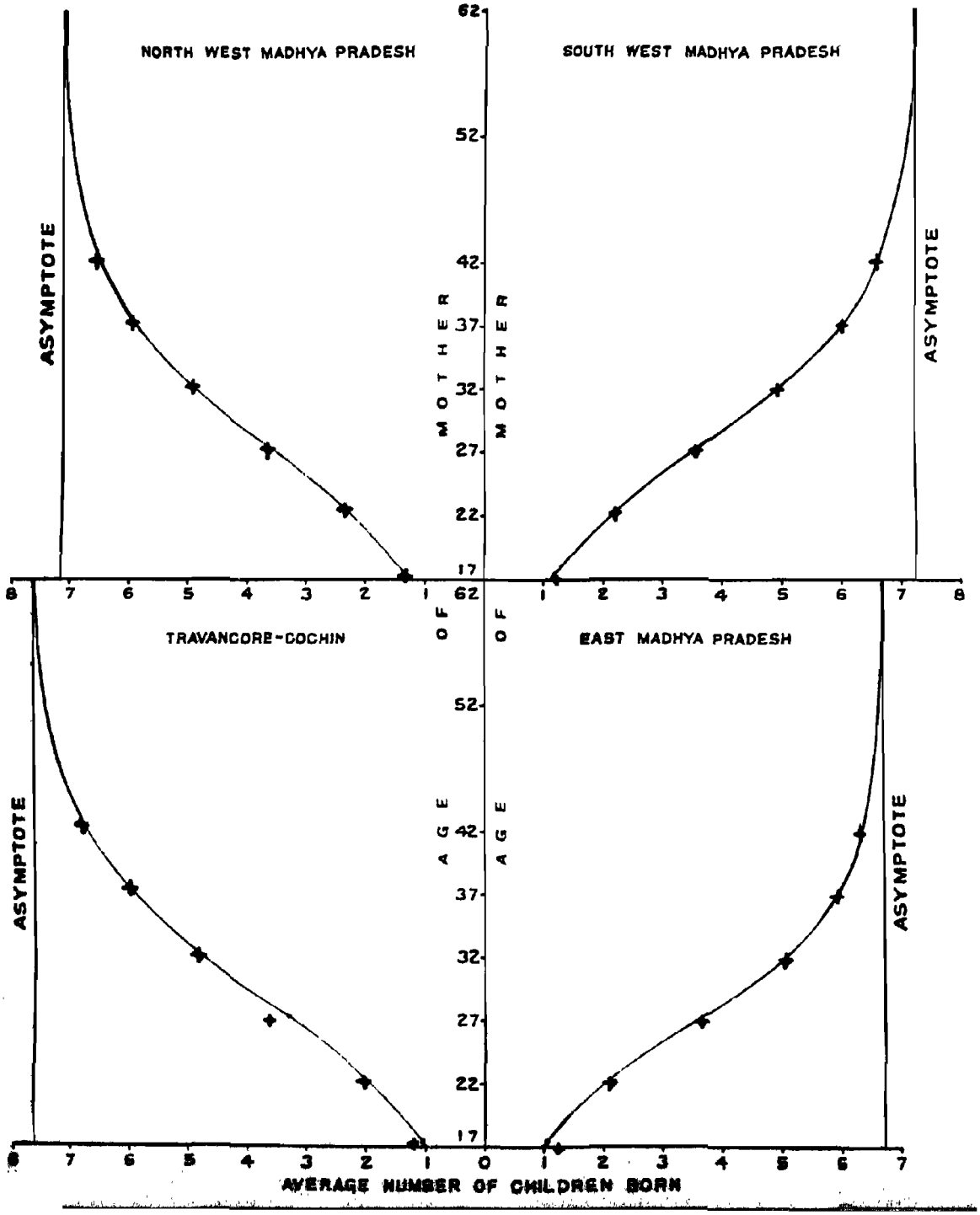


FIG. 7

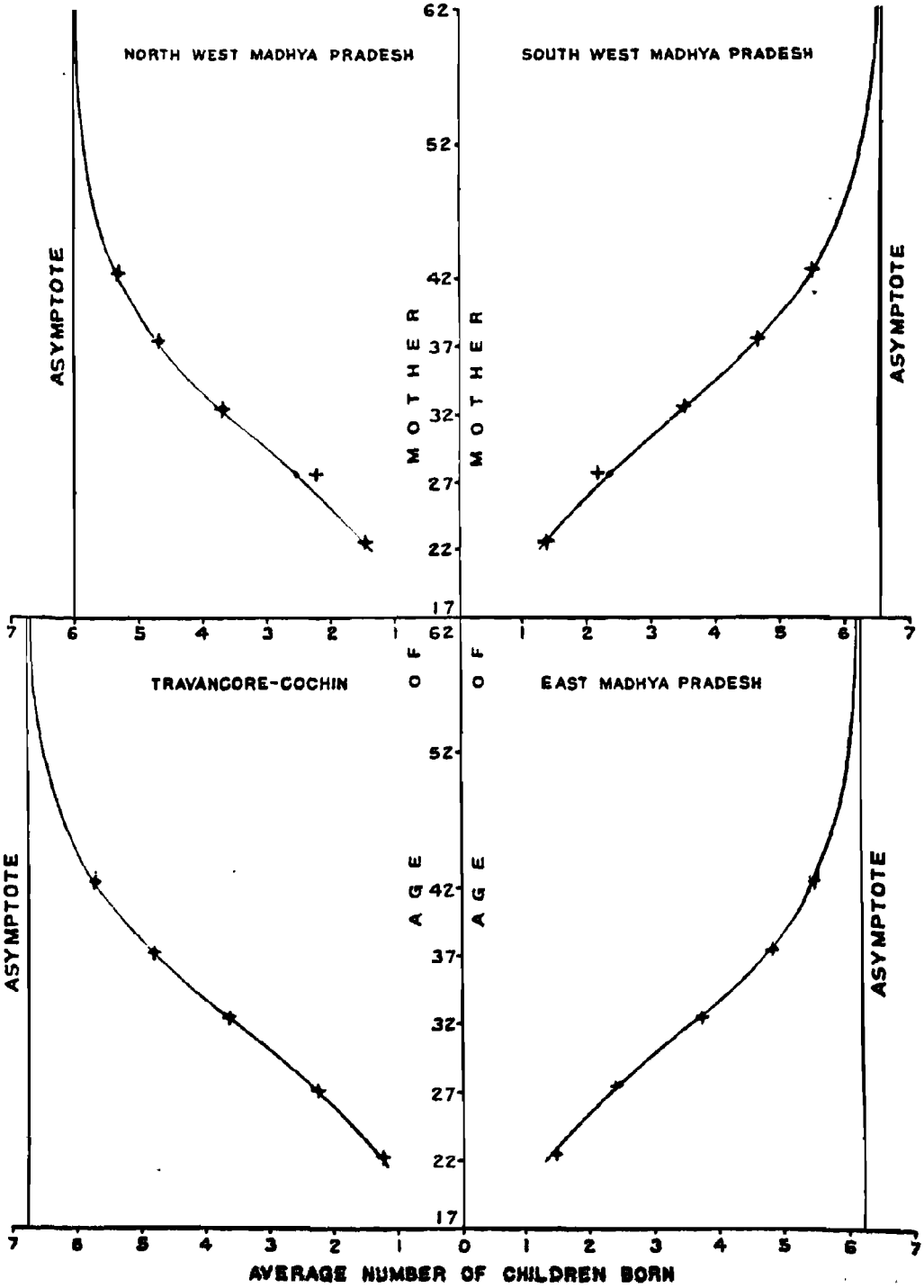
# LOGISTIC GRADUATION OF MATERNITY DATA

## MATERNITY TYPE B

AVERAGE NUMBER OF CHILDREN BORN

*Crosses represent observed values*

*Dots represent graduated values*



82. Data of the same nature as those reviewed above were also collected and compiled for three divisions of Madhya Pradesh. The comparison is shown below in respect of completed maternity experience of still-married mothers (age 45 & over) :

TABLE 33

| *Natural division* | *Child birth index* | *Child survival index* | *Child loss index* |
|---|---|---|---|
| East Madhya Pradesh . . . | 6·1 | 3·6 | 2·5 |
| North-West Madhya Pradesh . | 6·3 | 3·6 | 2·7 |
| South-West Madhya Pradesh . | 6·6 | 3·6 | 3·0 |
| Travancore-Cochin . . . | 6·6 | 4·6 | 2·0 |

Two features of this table are noteworthy :

*First,*—It will be seen that the number of children borne by mothers aged 45 and over is not higher in any of the divisions of Madhya Pradesh than in Travancore-Cochin. In fact, the figure is slightly smaller in two divisions of Madhya Pradesh. Yet there is no doubt that the birth rate in Madhya Pradesh is very distinctly higher than in Travancore-Cochin. It is clearly verifiable that the difference is caused by differences in the proportion of married women of different age-groups to the total population.

*Secondly,*—The child loss index is unmistakably higher in all the three divisions of Madhya Pradesh than in Travancore-Cochin. This fact is in accord with much other evidence which points to Madhya Pradesh as having a very high death rate.

83. A comparative study of the figures of Madhya Pradesh with those of Travancore-Cochin indicates that the features already noticed in Travancore-Cochin are also observable in Madhya Pradesh divisions. The tendency for the tempo of child-birth to accelerate until a mid-maternal age is reached and then to relax as age advances, is clearly observed. In general, the 'rural/urban differentials' and 'social class differentials' do not appear to be important. There is a diminution in the total number of children born when the age of commencement of child-birth is postponed, but the difference is not very striking.

It may be mentioned that a sample enquiry made in villages in two groups of districts of West Bengal also brought out data which exhibit the same

features. The child birth index of mothers aged 45 and over came out to be 6·3 in both groups of districts.

The extent to which the census figures of Travancore-Cochin and Madhya Pradesh divisions, as well as the sample enquiry figures of West Bengal might be affected by error has not been studied in detail. It is noticed, however, that they hang together so well as to justify confidence. In general, it may be observed that there is little likelihood of significant error in the child survival index. It is practically certain that the child birth indices are not overstated. At older ages, some women may have forgotten to count the number of children borne by them, completely. The true figures might, therefore, be somewhat higher than those given above. But judging from the graphs furnished in the diagrams given earlier in this section it seems likely that the allowance required to be made on account of such error is probably not large.

[For fuller information on all these data, reference may be made to the brochure on 'Maternity Data—1951 Census' issued as Census of India Paper No. 5 of 1953. Some extracts are also given in APPENDIX II.]

84. Information of this kind is not available for many countries of the world. But very detailed data have been published for the United Kingdom among the papers accompanying the Report (issued in the year 1949) of the Royal Commission on Population. The relevant figures of that country have been extracted and included for reference in APPENDIX VII.

*It would seem that the child birth index, i.e., average number of live births per mother after completion of her child-bearing period, exceeded six—in much the same way as in India—for those mothers of the United Kingdom who married in or about 1860. The index has fallen steadily since. It was reduced to 4·0 for women who married in the first decade of this century and is now about 2·4 or not more than two-fifths of the figures observed in different parts of India. It will be noted that the relation between the India Birth Rate (40) and the U. K. Birth Rate (16) is more or less of the same order.*

85. There is another—and even more instructive—way in which the salient features of the maternity pattern can be expressed.

Out of all the births which take place during one year, how many are first births, how many are second births, how many are third births, and how many are births of the fourth and higher order ? In a paper* published in 1951 by Shri S.P. JAIN, these questions have been answered on the basis of an

*"A study of birth order statistics of India" published in the *Indian Journal of Medical Research* No. 39, April 1951.

analysis of registration data in thirty municipal towns of India. The 'Experimental Census of Births and Deaths' has yielded some more data for 27 districts of South India, 7 districts of West India, 22 districts of Central India and 5 districts of North-West India. These data relate to the population as a whole—including villages and towns-people in due proportion.

The results are shown in the table below :

TABLE 34

| | *Number per 1,000 births which are* | | | |
|---|---|---|---|---|
| | *First births* | *Second births* | *Third births* | *Fourth births and births of higher order* |
| South India (27 DISTRICTS) | 228 | 215 | 181 | 376 |
| West India (7 DISTRICTS) | 209 | 180 | 167 | 444 |
| Central India (22 DISTRICTS) | 210 | 189 | 162 | 439 |
| North-West India (5 DISTRICTS) | 231 | 206 | 151 | 412 |
| Thirty Municipal Towns of India | 209 | 196 | 167 | 428 |

The figures hang together very well indeed and there is little doubt that we may place confidence in the correctness of the picture which emerges. South India presents a slightly different pattern from West, Central and North-West India, but the difference is consistent with the known differences in birth rates. Speaking generally, first births account for rather more than one-fifth of all births ; second births account for very nearly another one-fifth; third births account for about one-sixth of all births; well over two-fifths of all births are fourth births or births of a higher order. We can put the matter even more simply. *The total number of births which occur in the course of one year among about 1,000 people of India is 40. Among these 40 births, 8 births are first births ; 16 births are either first births or second births ; 23 births are either first, second or third births ; and 17 births out of 40 are either fourth births or births of higher order.*

86. For reasons which should be sufficiently obvious and which we shall discuss in the last chapter of this report, *we may refer to births occurring to mothers who have already given birth to three or more children as 'improvident maternity'*

(except in the altogether exceptional circumstance where all previously born children are dead). We may refer to the percentage of such maternities to all births as the 'Incidence of Improvident Maternity'. It is extremely important that the attention of the people should be focussed on this factor— the *incidence of improvident maternity.* The figures for all those countries of the world for which this information is available have been extracted and furnished in APPENDIX VII. It will be seen that the latest figures compare as shown in TABLE 35. In most of these countries, moreover, the incidence of improvident maternity is steadily decreasing. We are not aware of any evidence that this is happening in India.

TABLE 35

| *Country* | *Incidence of improvident maternity* |
|---|---|
| India | 42·8 |
| U.S.A. | 19·2 |
| U.K. | 14·3 |
| France | 19·7 |
| Germany (FEDERAL REPUBLIC) | 12·3 |
| Japan | 33·9 |

FIG. 8

# NUMBER OF FIRST BIRTHS, SECOND BIRTHS, THIRD BIRTHS, FOURTH AND HIGHER ORDER BIRTHS OUT OF 1,000 BIRTHS IN INDIA, U. K. AND U. S. A.

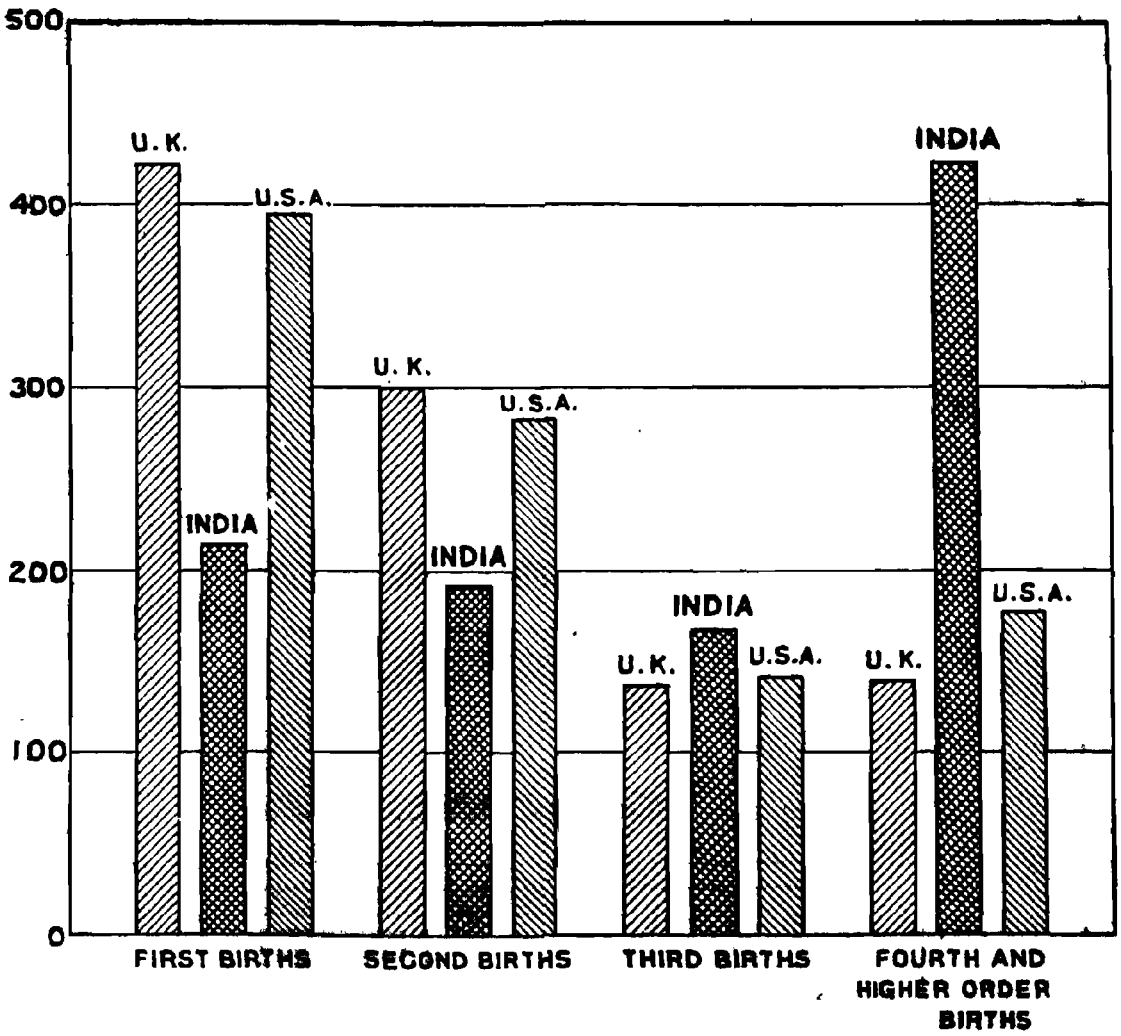


FIG. 9

## DISTRIBUTION OF 10,000 PERSONS BY SEX AND HOUSEHOLD ECONOMIC STATUS

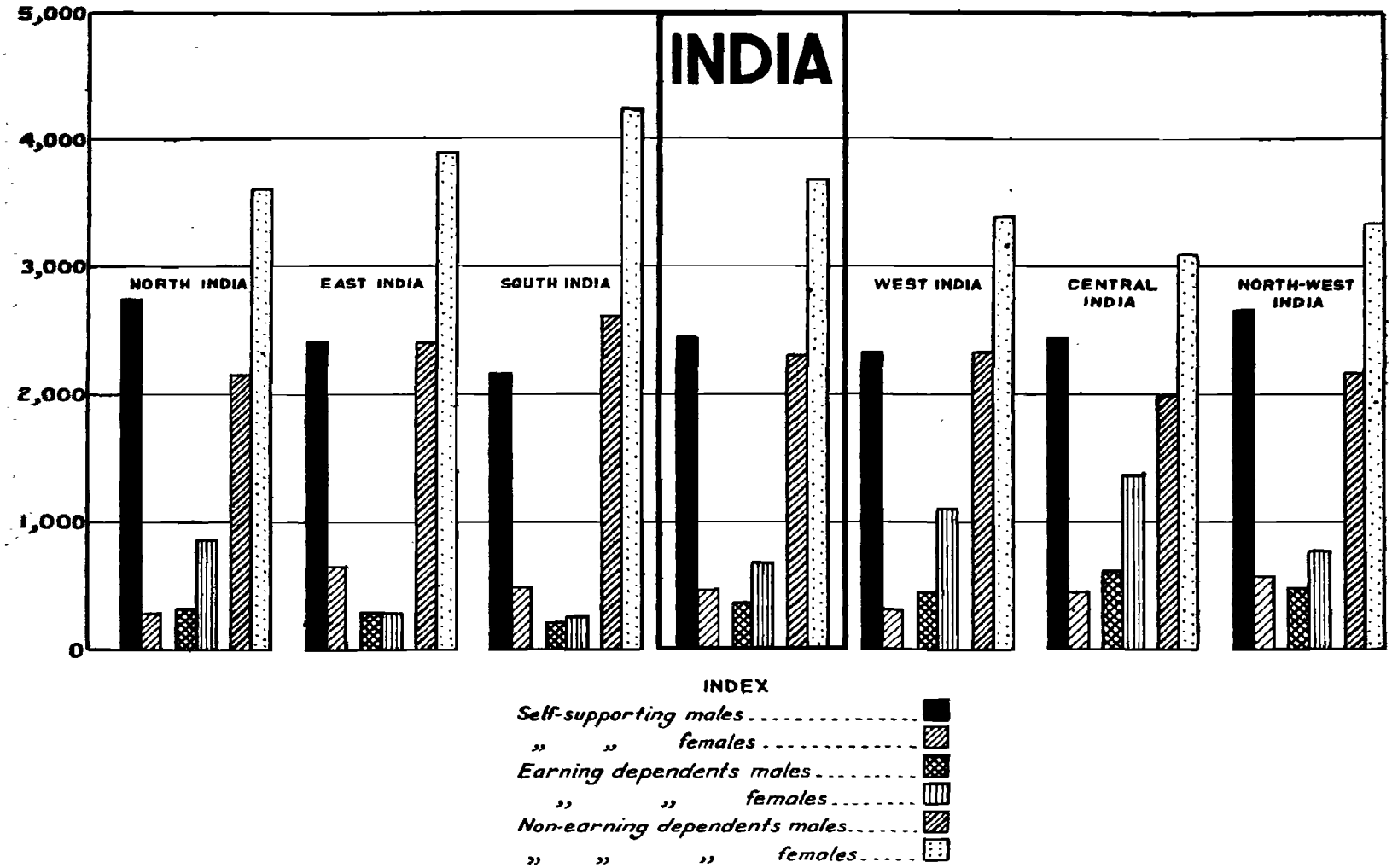


FIG. 10

# DISTRIBUTION OF 10,000 PERSONS OF AGRICULTURAL CLASSES BY SEX AND HOUSEHOLD ECONOMIC STATUS

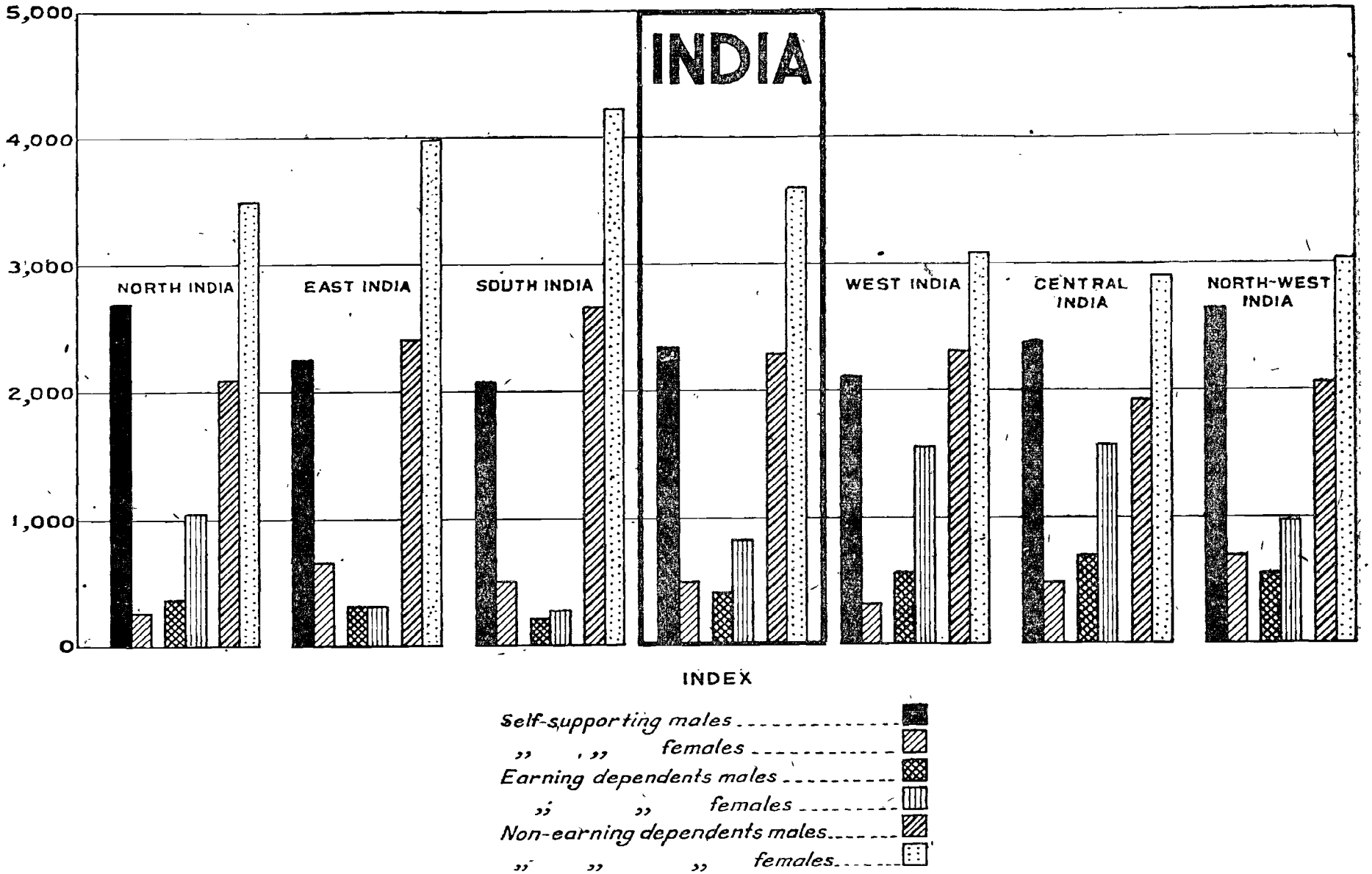


FIG. 11

# DISTRIBUTION OF 10,000 PERSONS OF NON-AGRICULTURAL CLASSES BY SEX AND HOUSEHOLD ECONOMIC STATUS

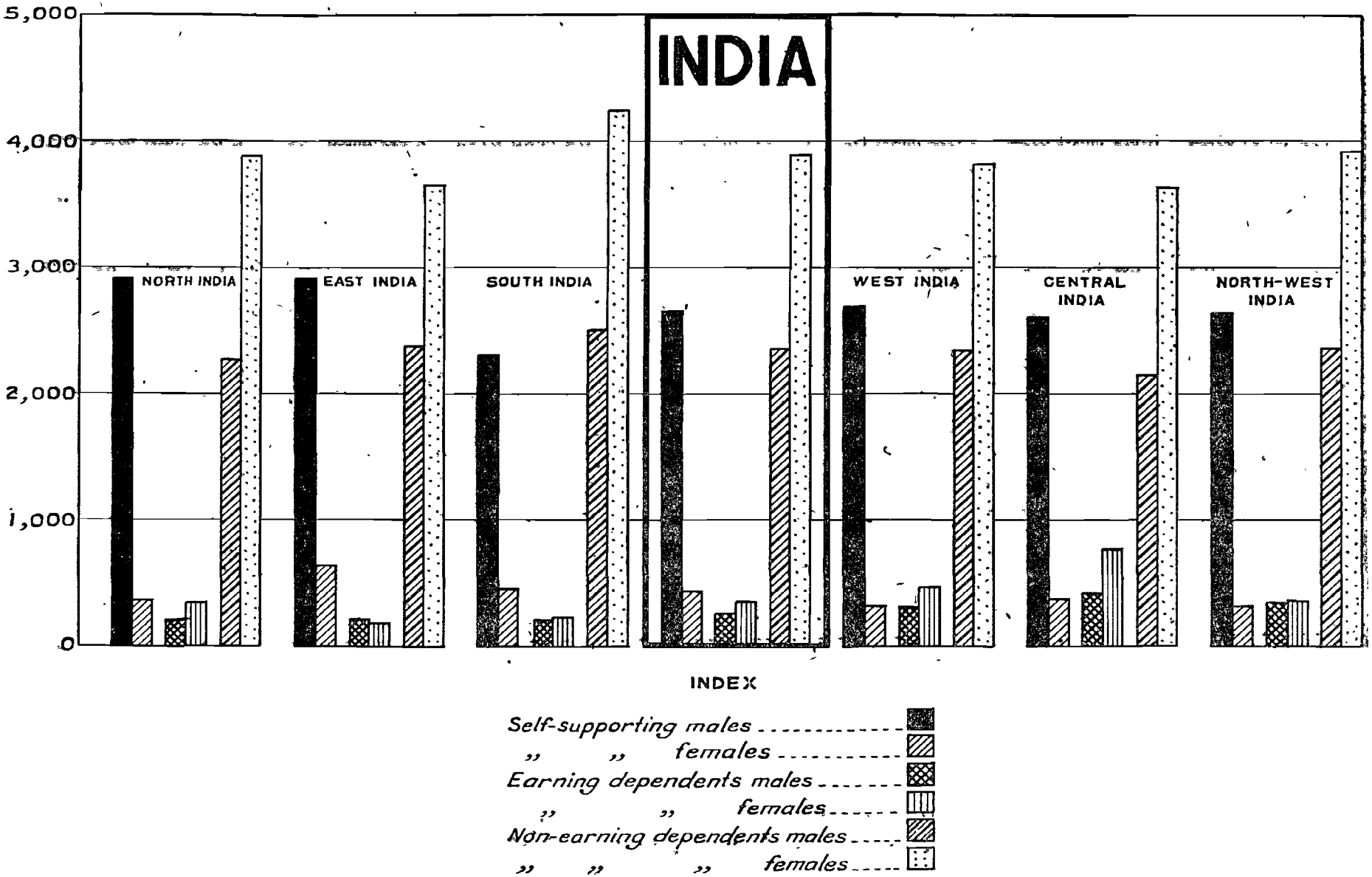


FIG. 12

# DISTRIBUTION OF 10,000 PERSONS BY LIVELIHOOD CLASSES (INDIA & ZONES)

## GENERAL POPULATION

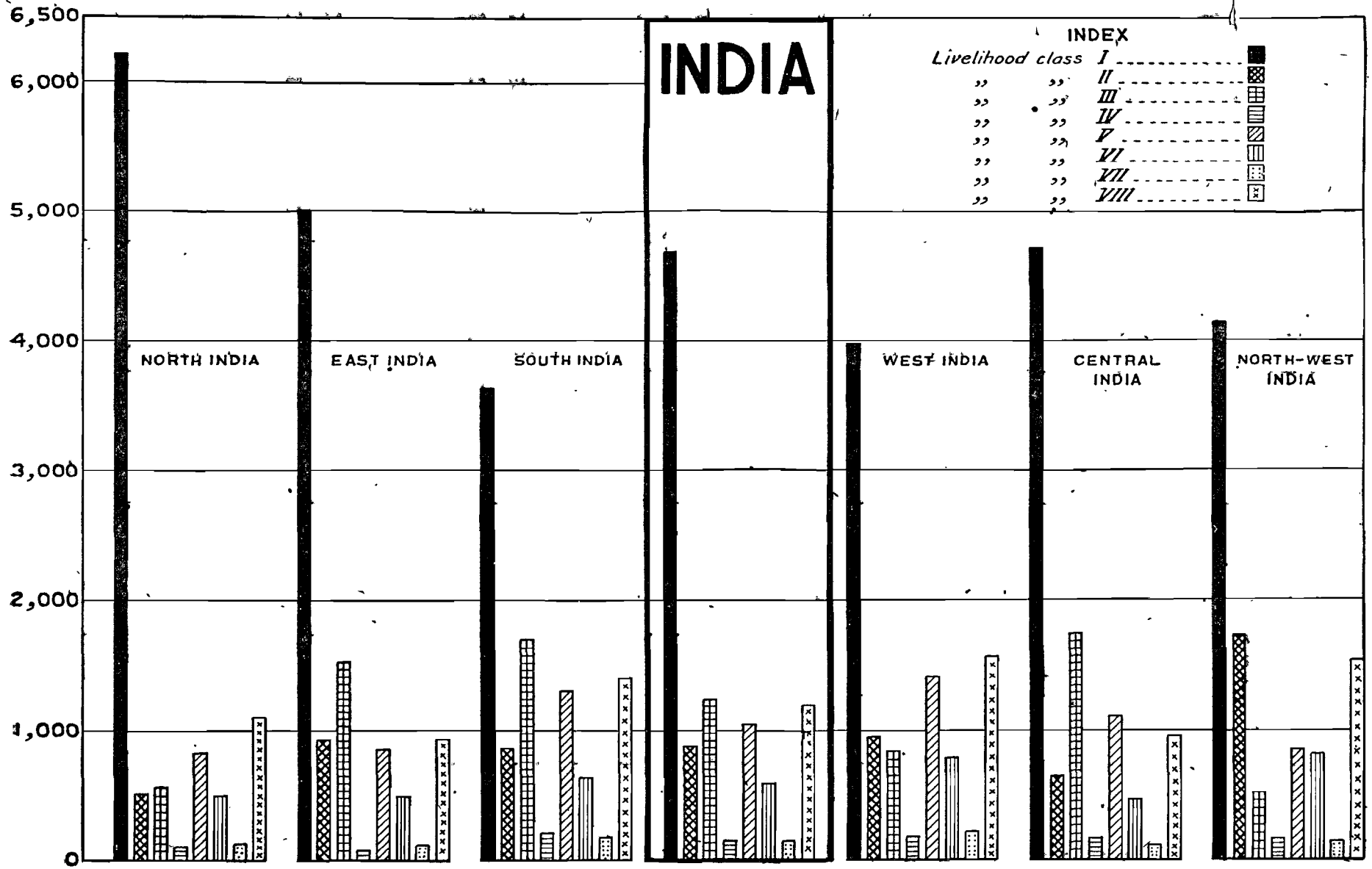


FIG. 13

# DISTRIBUTION OF 10,000 PERSONS BY LIVELIHOOD CLASSES (INDIA & ZONES)
## RURAL POPULATION

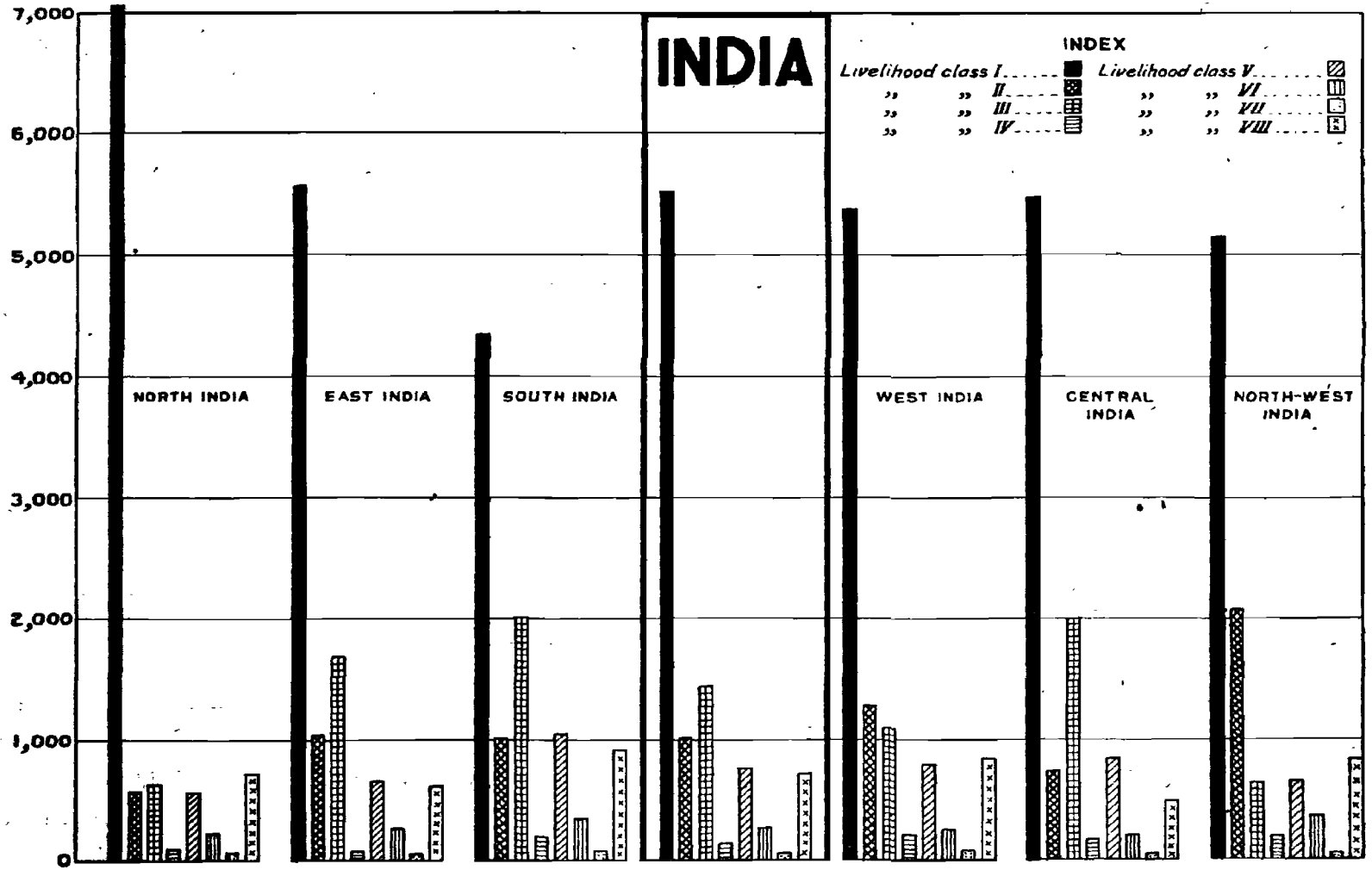


FIG. 14

## DISTRIBUTION OF 10,000 PERSONS BY LIVELIHOOD CLASSES (INDIA & ZONES)
## URBAN POPULATION

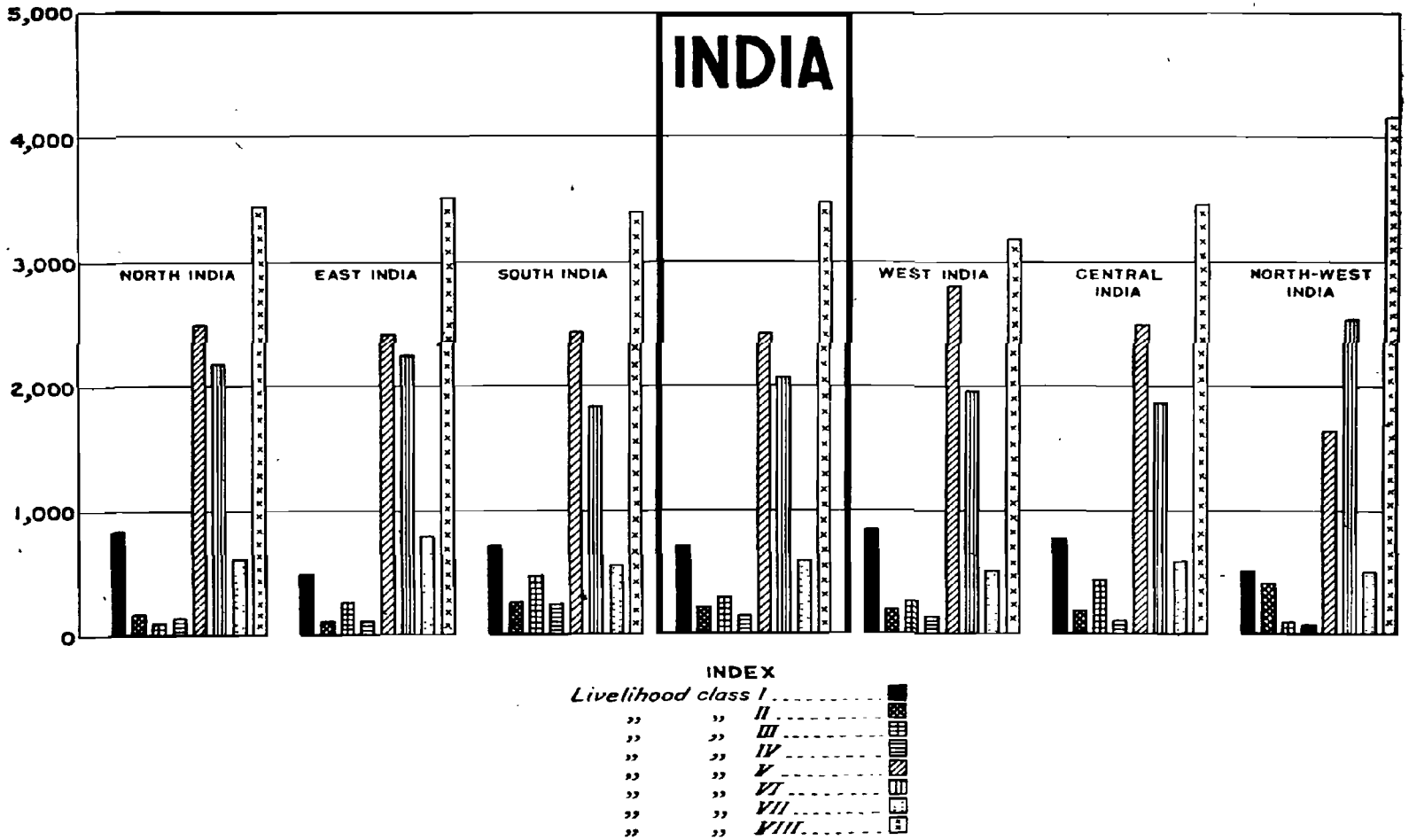


FIG. 15

DISTRIBUTION OF 10,000 SELF-SUPPORTING PERSONS IN NON-AGRICULTURAL POPULATION BY EMPLOYERS, EMPLOYEES, INDEPENDENT WORKERS AND PERSONS NOT ECONOMICALLY ACTIVE

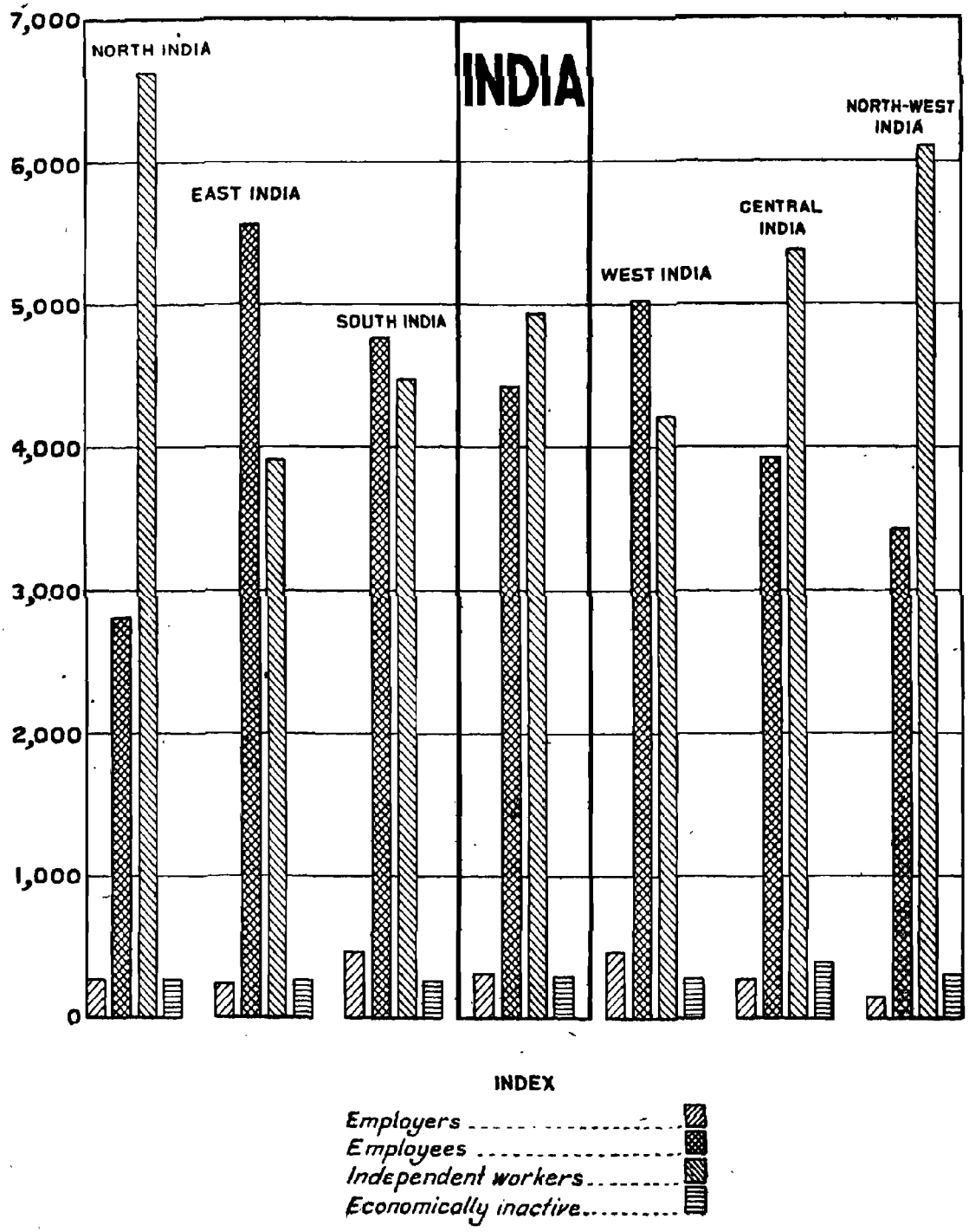
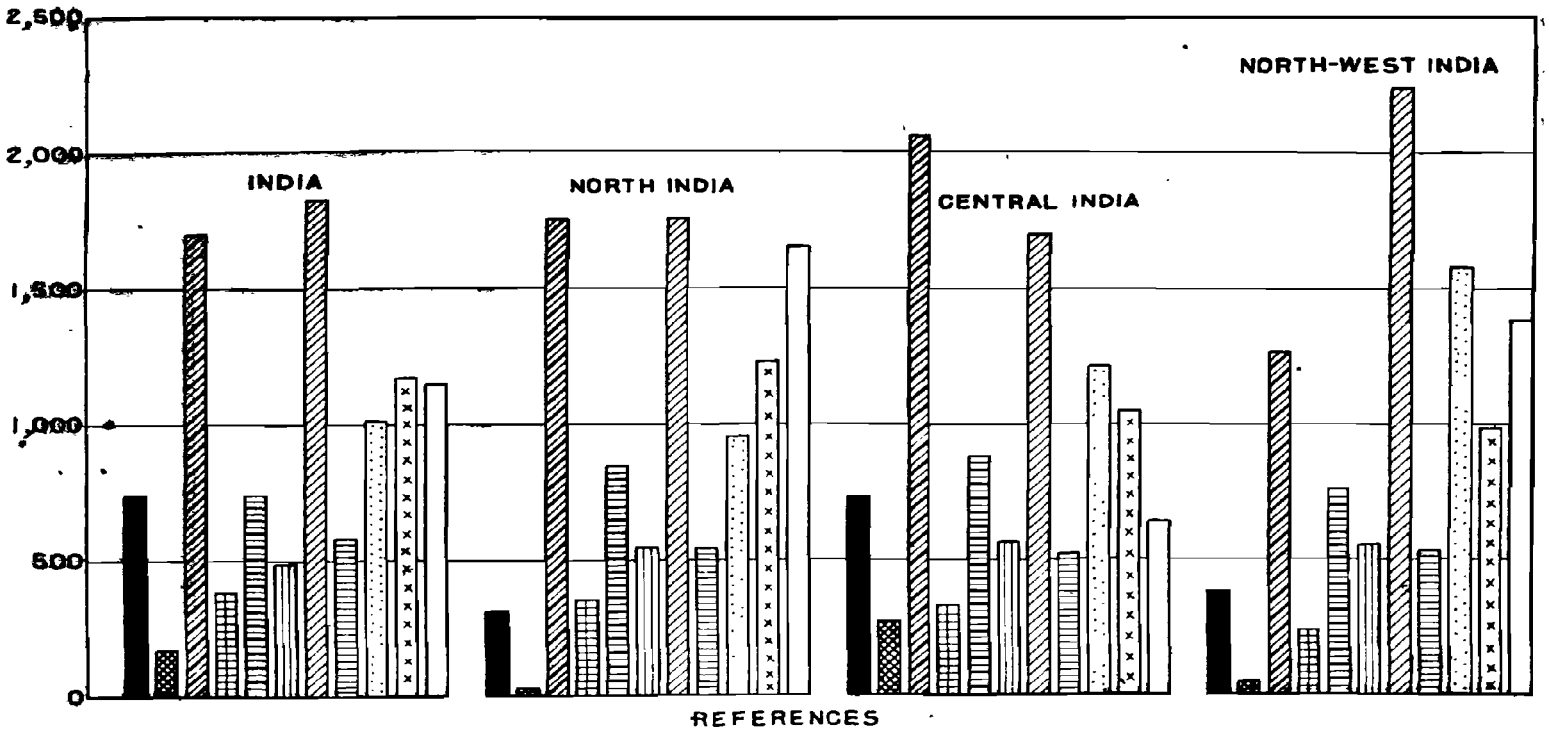



FIG. 13

FIG. 16

**DISTRIBUTION OF 10,000 SELF-SUPPORTING PERSONS OF NON-AGRICULTURAL CLASSES IN INDUSTRIES AND SERVICES BY 10 DIVISIONS OF INDUSTRIES AND SERVICES (INDIA, NORTH INDIA, CENTRAL INDIA AND NORTH-WEST INDIA)**




REFERENCES

DIVISION 0.
*Primary Industries not elsewhere specified.*

DIVISION 1.
*Mining and Quarrying*

DIVISION 2.
*Processing and Manufacture Foodstuffs, Textiles, Leather and Products thereof.*

DIVISION 3.
*Processing and Manufacture Metals, Chemicals and Products thereof.*

DIVISION 4.
*Processing and Manufacture not elsewhere specified.*

DIVISION 5.
*Construction and Utilities*

DIVISION 6.
*Commerce*

DIVISION 7.
*Transport, Storage and Communications.*

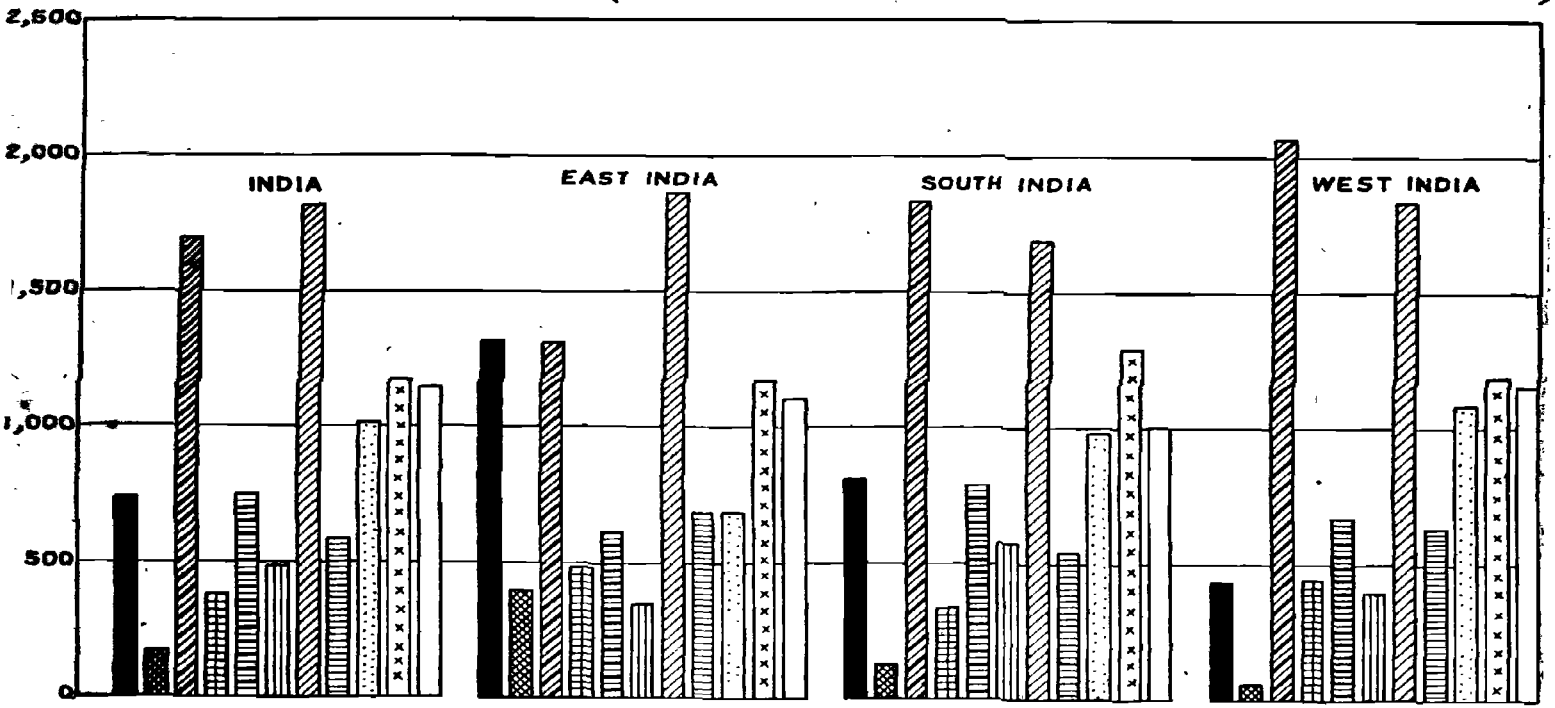
DIVISION 8.
*Health, Education and Public Administration.*

DIVISION 9.
*Services not elsewhere specified other than Services otherwise unclassified.*

DIVISION 10.
*Services otherwise unclassified*

FIG. 17

## DISTRIBUTION OF 10,000 SELF-SUPPORTING PERSONS OF NON-AGRICULTURAL CLASSES IN INDUSTRIES AND SERVICES BY 10 DIVISIONS OF INDUSTRIES AND SERVICES (INDIA, EAST INDIA, SOUTH INDIA AND WEST INDIA)




REFERENCES

DIVISION 0.
*Primary Industries not elsewhere specified.*

DIVISION 1.
*Mining and Quarrying*

DIVISION 2.
*Processing and Manufacture Foodstuffs, Textiles, Leather and Products thereof.*

DIVISION 3.
*Processing and Manufacture Metals, Chemicals and Products thereof*

DIVISION 4.
*Processing and Manufacture not elsewhere specified.*

DIVISION 5.
*Construction and Utilities*

DIVISION 6.
*Commerce*

DIVISION 7.
*Transport, Storage and Communications.*

DIVISION 8.
*Health, Education and Public Administration.*

DIVISION 9.
*Services not elsewhere specified other than Services otherwise unclassified.*

DIVISION 10.
*Services otherwise unclassified*

CHAPTER III

# Livelihood Pattern—1951

## A—*India Picture*

EVERY HOUSEHOLD needs a steady supply of staple foodgrains and a few other foodstuffs. This is needed every day, day after day, all the year round ; otherwise the people cannot live.

A few other goods are almost equally indispensable—fuel to cook the foodstuffs, cloth, and so on. After this, there is a considerable variety. Some families get and use a great many goods and services; others manage with very little.

All these goods and services may be described as 'means of living'. Some families get the greater part of their 'means of living' directly—when they cultivate the land and grow their own food. Even they have to get an income in the form of money in order to buy the other 'means of living'. Families which do not grow their own food, get income wholly in money which they use to buy all their 'means of living'. We use the term 'livelihood' to mean both types of income—in kind as well as in money.

A few families (much fewer than is supposed) get their 'livelihood' without any one having to work for it. Subject to this exception, one or two or more people in every family have got to do some work or other in order to earn the livelihood needed by the family. We use the expression '*Means of Livelihood*' to mean the work, by which livelihood is earned; and, in the exceptional circumstances where an unearned income is obtained, the nature of such unearned income.

We put questions and ascertained in respect of every man, woman, and child whom we counted, what his or her 'means of livelihood' was. The records containing this information for about 3 lakhs of people in the Punjab were destroyed by fire. About the rest—numbering 3,566 lakhs—we have got a complete account. The information has been sorted and compiled into Economic Tables. The Economic Tables of the 1951 Census show—for the country as a whole, for each state, natural division, district and the different parts of the district—

how many people there are who obtain their livelihood in one or other of several different ways all of which are classified on an identical basis throughout the country. By grouping the people in this way according to their means of livelihood we get categories, classes, sub-classes, sections, divisions and sub-divisions. This is a complete economic classification of the people. A full explanation of the definitions and classifications will be found in APPENDIX III. This paper also contains a detailed review of the data, together with a discussion of possible errors and defects in them. In this chapter, a brief account is given in simple terms without entering into unduly technical discussions.

2. *Non-earning dependants*—Out of the total of 3,566 lakhs, 2,143 lakhs of people (or 60·1 per cent) have been classified as 'non-earning dependants'. They do not take any part in procuring their own livelihood. In the main, they consist of women and children who are supported by the husband and father or other bread-winner of the household. They do not, however, include those women and children who take part in the cultivation of land as unpaid family helpers. TABLE 1 shows the rural/urban and sex-wise break-up of non-earning dependants. The percentages are such as might be expected. Non-earning dependency among females must naturally be substantially higher than among males. It is higher among urban females than among rural females mainly because the latter lend a hand in cultivation while the former do not have that opportunity. Non-earning dependency is a shade higher among urban males than among rural males. It may or may not be significant.

TABLE 1

| — | *Non-earning dependants* | |
|---|---|---|
| | *Number* (IN LAKHS) | *Percentage* |
| Rural males . . | 674 | 45·0 |
| Urban males . . | 152 | 45·6 |
| Rural females . . | 1,065 | 73·5 |
| Urban females . . | 252 | 88·1 |
| TOTAL | 2,143 | 60·1 |

3. *Earning dependants*—There are 379 lakhs of people (or 10·6 per cent of the total number) who are classified as 'earning dependants'. They are dependants in the sense that—left to themselves—they cannot support themselves. They are also, in the main, women or grown-up children; but they are not 'non-earning dependants', either because they earn some income which is sufficient to meet part of the cost of their maintenance or else they are unpaid family helpers in cultivation (or other business, like handloom weaving for

instance, by which the livelihood of the family is earned). In the latter case, their participation is so limited that they are not regarded as earning the full cost of their maintenance thereby. If, however, they take a more effective part they would not be classified as 'earning dependants', but as 'self-supporting persons'.

TABLE 2 shows the rural/urban and sex-wise break-up of 'earning dependants'. These figures show that 'earning dependants' are relatively unimportant in towns—both in absolute number and percentage. This is true of both males and females. It is in villages, and more especially among village women, that considerable numbers are found, and the work of earning dependants makes a significant contribution to the procurement of the livelihood of the family.

TABLE 2

| — | *Earning dependants* | |
|---|---|---|
| | *Number* (IN LAKHS) | *Percentage* |
| Rur almales . . | 119 | 7·9 |
| Urban males . . | 15 | 4·6 |
| Rural females . . | 232 | 16 0 |
| Urban females . . | 13 | 4·5 |
| TOTAL . | 379 | 10 6 |

4. *Self-supporting persons*—Every one who is not a dependant is classified as a 'self-supporting person' which means: he (or she) procures an income which is at least sufficient for his (or her) own maintenance. As the entire cost of maintenance of non-earning dependants and part of the cost of maintaining earning dependants has to be met by self-supporting persons, it is evident that most of them procure an income which is substantially in excess of the actual cost of their own maintenance.

There are, in all, 1,044 lakhs of self-supporting persons, or 29·3 per cent of the total number. TABLE 3 shows the rural/urban and sex-wise break-up of these 1,044 lakhs. On the whole, women number rather less than one in six among all self-supporting persons. In villages they are more than one in six, but less than one in five. In the towns, they are nearer one in eight.

TABLE 3

| — | *Self-supporting persons* | |
|---|---|---|
| | *Number* (IN LAKHS) | *Percentage* |
| Rural males . . | 706 | 47·1 |
| Urban males . . | 166 | 49·8 |
| Rural females . . | 151 | 10·4 |
| Urban females . . | 21 | 7·4 |
| TOTAL . | 1,044 | 29·3 |

We may, for the present, leave the dependants out of consideration. We shall return to them at the end of this section. Our

immediate purpose is to follow up these 1,044 lakhs of self-supporting persons and ascertain what exactly they do in order to get a living.

5. There is, first, a broad division. Out of 1,044 lakhs, 710 lakhs (or 68·1 per cent) are 'agriculturists'; and 334 lakhs or (31·9 per cent) are 'non-agriculturists'. The distinction between the two is simple. Anyone whose income is derived from the cultivation of land (whether this be in the form of net profits of cultivation, or of wages for employment as cultivating labourer, or of rent received by virtue of vested rights by a non-cultivating land-holder) is classified as an 'agriculturist'. All other self-supporting persons are classified as 'non-agriculturists'. It may happen, of course, that some self-supporting persons may be in receipt of income of two different varieties. In such cases, that income which is the larger of the two is taken into consideration for purposes of classification as agriculturist or non-agriculturist.

The rural-urban and sex-wise break-up of agriculturists and non-agriculturists is shown below :

TABLE 4

| | *Self-supporting persons* | | | |
|---|---|---|---|---|
| | *Agriculturists* | | *Non-agriculturists* | |
| | *Number* (IN LAKHS) | *Percentage* | *Number* (IN LAKHS) | *Percentage* |
| Rural males . . . | 566 | 80·2 | 140 | 19·8 |
| Urban males . . . | 19 | 11·4 | 147 | 88·6 |
| Rural females . . . | 121 | 80·2 | 30 | 19·8 |
| Urban females . . . | 4 | 19·7 | 17 | 80·3 |
| TOTAL . . | 710 | 68·1 | 334 | 31·9 |

The figures of this table should help to correct some misconceptions. It is not seldom supposed that 'rural' and 'agricultural' mean more or less the same thing; or that 'urban' and 'non-agricultural' are very nearly identical. This is not correct. Roughly, one among every five self-supporting persons in villages (male as well as female) is a non-agriculturist. Among self-supporting males in towns, one in nine is an agriculturist. The ratio is even higher among self-supporting females; but this is unimportant, because

their absolute number is quite small. One might suppose that the agriculturists in towns must be non-cultivating landholders who live on rent. This is not correct. As we shall see presently, the number of agricultural rentiers living in villages as well as towns is a very much smaller fraction of the total number of all agriculturists in the country. Cultivation is carried on in the periphery of all towns. Some cultivators and even cultivating labourers live there. The proportion of such poeple is very small in the cities and major towns, but is quite considerable in the minor towns and townships.

6. Let us leave the non-agriculturists for a time, and follow up our 710 lakhs of agriculturists. They are divided into four classes as below:

TABLE 5

| *Livelihood Class* | *Number* (IN LAKHS) | *Percentage of all agricul-turists* | *Percentage of all self-supporting persons* |
|---|---|---|---|
| I—Cultivators of land wholly or mainly *owned* . . . . . | 457 | 64·4 | 43·8 |
| II—Cultivators of land wholly or mainly *un-owned* . . . . . | 88 | 12·3 | 8·4 |
| III—Cultivating labourers . . . | 149 | 21·0 | 14·3 |
| IV—Non-cultivating owners of land; and other agricultural rent receivers | 16 | 2·3 | 1·6 |
| TOTAL . . | 710 | 100·0 | 68·1 |

The figures of this table bring out clearly the relative numerical importance of the four classes into which agriculturists have been divided.

7. Among the four classes, Livelihood Class IV (whom we shall refer to as 'agricultural rentiers' for short) is numerically insignificant. This class includes two quite different types of people referred to as 'non-cultivating owners of land' and 'other agricultural rent receivers'. In popular imagination, the proprietors of zamindaris and other estates come first. They are the people referred to as 'other agricultural rent receivers'. This is a better description of such people than 'non-cultivating owners of land'—because their legal rights over the whole or greater part of the cultivated land in the estate are strictly limited to the receipt of a rent (which may not be changed except by

prescribed statutory processes). They are disentitled to enter on such lands for purposes of cultivation even if they wanted to. These people are 'agricultural rentiers' by legal prescription; not necessarily by choice. There is another and clearly distinguishable type of agriculturists who are referred to as 'non-cultivating owners of land'. These are the people referred to as '*raiyats*' in raiyatwari villages, permanently settled zamindari villages and also other villages under certain varieties of miscellaneous special tenures. There are also the people who are called 'tenants' in temporarily settled zamindari villages and villages under similar tenures—who possess a permanent and heritable right of occupancy in the land held by them for purposes of cultivation. Most of these people may cultivate their own land, in which case they are put in Livelihood Class I. Some of them who, for one reason or another, find it necessary or convenient to entrust the cultivation of their land to others on an undertaking to pay rent, would be agricultural rentiers temporarily, by voluntary decision and not by legal necessity. How many of each of these two types are included in the India total of 16 lakhs is not known definitely. But judging from their territorial distribution, there can be little doubt that the raiyat-tenant type of rentier is much more numerous than the zamindar type.*

All of them, taken together, add up only to 2·3 per cent of all agriculturists and 1·6 per cent of all self-supporting persons.

8. Livelihood Classes I and II comprise all the cultivators. Livelihood Class III includes all the cultivating labourers. It is necessary clearly to grasp the fact that there is a distinction between the two; and appreciate precisely what the distinction is. This point is stressed because there is a great deal of discussion about land reform; and one often finds that the words 'kisan', 'peasant', 'tiller of the soil' and so forth are used, sometimes in a restrictive sense to denote particular groups among agriculturists (often not the same groups) and sometimes the words are used as if they were synonyms for 'agriculturists'. It is so difficult to be sure about what is being proposed or opposed.

The census figures distinguish the 'cultivating labourer' as an employee of a cultivator, whose business merely is to perform physical labour in the manner required by the cultivator. The cultivator is the *manager* of cultivation—he is the person who decides how and when or where the various operations of cultivation should be undertaken, and who sees to it that they are properly undertaken. He is the person who accepts the risks of cultivation.

*One of the pitfalls for the unwary enquirers about land tenures is the fact the same name means different things in different places and different names mean the same thing. One of these pitfalls is the use of the word 'zamindar'. It stands for someone in the Punjab and an altogether different type of person in Bihar and West Bengal.

The nature of the income obtained by these cultivators is quite different from that of the cultivating labourer. The cultivator gets the 'net profits of cultivation,' *i.e.*, what remains of the produce of the land after expenses are met. The cultivating labourer gets 'agricultural wages'. The livelihood of the cultivating labourer is part of the expenses of cultivation.

There are, it will be observed, only 149 lakhs of cultivating labourers against 545 lakhs of cultivators—very little more than one in five. This shows that the number of cultivators who employ cultivating labourers in addition to or in lieu of the labour performed by themselves and members of their families must be relatively small.

9. Having thus distinguished cultivators from cultivating labourers, we make a further distinction among cultivators, one being put in Livelihood Class I and the other in Livelihood Class II. It would be simple and convenient to refer to these two classes as 'owner-cultivators' and 'tenant-cultivators'; but great care was taken to avoid using these expressions at the census enumeration because they were liable to cause misunderstanding of the true nature of the distinction we sought to make. Our idea of 'owner-cultivator' is one which includes the 'occupancy tenants' of Uttar Pradesh along with the 'raiyats' of the raiyatwari villages of Bombay and Madras and the 'raiyats' of the permanently settled zamindaris of Bihar. They are all 'owner-cultivators'– because the term 'owner' (if it is legitimately applicable to any type of holder of cultivated land) must be applied to that person who has the right to remain in possession of it, use it for cultivation and bequeath it to his heirs for a like purpose. The use of the term 'tenant-cultivator' must be limited to cultivators who hold the land they cultivate, for a strictly limited period, and are not owners there of in the sense explained above.

There is one more reason why the terms 'owner-cultivator' and 'tenant-cultivator'—though apparently simple and convenient—were not used at the stage of enumeration. It is obviously possible that a person may cultivate at one and the same place some plots of land which are owned by him and other plots which he may have rented from someone else who owns them. In such a case, the test is—which of the two gives him the larger income. If the former, he is included in Livelihood Class I. If the latter, he is included in Livelihood Class II.

Now that we have explained the distinction clearly and there is no danger of the census going wrong because of confusion of local names, we shall refer to Livelihood Class I or 'cultivators of land wholly or mainly *owned*' as owner-

cultivators; and Livelihood Class II or 'cultivators of land wholly or mainly *un-owned*' as tenant-cultivators.

There are 545 lakhs of cultivators. Among them, owner-cultivators number 457 lakhs and tenant-cultivators number only 88 lakhs.

The preponderance of 'owner-cultivators' is the most important and characteristic feature of our agricultural-class-structure. As we shall see presently this statement is true not merely of raiyatwari areas but it is true to an even greater extent of the permanently settled and temporarily settled zamindari areas as well.

10. We may now turn to the 334 lakhs of self-supporting non-agriculturists and ascertain the manner in which they obtain their livelihood. They too may be divided into four sections as below :

TABLE 6

| — | *Number* (IN LAKHS) | *Percentage of all self-supporting non-agriculturists* | *Percentage of all self-supporting persons* |
|---|---|---|---|
| Employers . . . . . | 11 | 3·3 | 1·1 |
| Self-employed persons other than employers | 165 | 49·4 | 15·7 |
| Employees . . . . . | 148 | 44·3 | 14·2 |
| Non-agricultural rentiers, pensioners and miscellaneous income receivers . | 10 | 3·0 | 0·9 |
| TOTAL . | 334 | 100·0 | 31·9 |

11. The last of the four sections includes a variety of people as shown below :

(*i*) Persons living principally on income derived from ownership of non-agricultural property;

(*ii*) Persons living principally on pensions, remittances, scholarships and funds;

(*iii*) Inmates of jails, asylums, alms-houses and recipients of doles;

(*iv*) Beggars and vagrants ; and

(*v*) All other persons living principally on income derived from non-productive activity.

The figures returned under some of these items are surprisingly small. But it should be borne in mind : *first*, that the figures relate only to self-supporting persons and do not include their dependants; and *secondly*, that persons whose principal income is derived in some other way but who may also derive secondary income in one or other of the ways mentioned above are not included.

12. The low ratio of 'employers' stands out. They are only about one in hundred among all self-supporting persons and rather less than one in thirty among all self-supporting non-agriculturists. This is all the more remarkable because the definition of employers was comprehensive and included every one who employed even one person—provided only that the latter was employed for purposes of carrying on the business or profession by which the employer earned his livelihood. [No one was to be classified as an employer merely because he had domestic servants.] As this is the first time when statistics of employees, other self-employed persons and employers were collected, it is impossible to compare them with previous figures. There is no good reason to suppose that any appreciable number of employers were wrongly included in any of the other sections.

13. Non-agricultural employees, it will be observed, form a distinctly larger proportion of non-agriculturists than cultivating labourers among agriculturists. They are nevertheless a clear minority. Self-employed persons (other than employers) are, on the other hand, more numerous than employers and employees combined.

If we deduct rentiers from both sides (16 lakhs from agriculturists and 10 lakhs from non-agriculturists), we get the following classification of income-earners with reference to the nature of the income earned by them :

TABLE 7

| *Nature of Income* | *Number* (IN LAKHS) *of Income earners* | | |
|---|---|---|---|
| | *Cultivation* | *Industries and services* | *Total* |
| Net profits . . . . | 545 | 176 | 721 |
| Wages and salaries . . . | 149 | 148 | 297 |
| TOTAL | 694 | 324 | 1,018 |

Earners of profits—it may be noted—are much more than twice as numerous as earners of wages and salaries.*

*Hence, no doubt, the tears over any sustained effort to keep commodity prices under control !

14. We may now follow up our 324 lakhs of self-supporting persons engaged in industries and services other than cultivation and ascertain what exacty they do in order to earn their income. All industries and services other than cultivation have been grouped together into 10 divisions, and 88 sub-divisions. Any grouping system is bound to appear somewhat arbitrary—but the system we are following has been carefully drawn up so as to satisfy two requirements as far as practicable. One is, that our statistics should be comparable with those collected in other countries under a scheme approved by the United Nations Economic and Social Council. The other requirement is, that the 1951 Census statistics should be comparable with the published statistics of the 1931 and earlier censuses in India. The results of classification of the 324 lakhs of persons referred to above are shown in the table below :

TABLE 8

| *Division of Industries and Services* | *Number* (IN LAKHS) | *Percentage* |
|---|---|---|
| **Division 0** | | |
| Primary industries other than cultivation, mining and quarrying | 24·0 | 7·4 |
| **Division 1** | | |
| Mining and quarrying | 5·7 | 1·8 |
| **Division 2** | | |
| Processing and manufacture—foodstuffs, textiles, leather and products thereof | 55·1 | 17·0 |
| **Division 3** | | |
| Processing and manufacture—metals, chemicals and products thereof | 12·4 | 3·8 |
| **Division 4** | | |
| Processing and manufacture not elsewhere specified | 24·3 | 7·5 |
| **Division 5** | | |
| Construction and utilities | 15·9 | 4·9 |
| **Division 6** | | |
| Commerce | 59·0 | 18·2 |
| **Division 7** | | |
| Transport, storage and communications | 19·0 | 5·9 |
| **Division 8** | | |
| Health, education and public administration | 32·9 | 10·2 |
| **Division 9** | | |
| Services not elsewhere specified | 75·4 | 23 3 |
| TOTAL | 323·7 | 100·0 |

We may now look into each of these divisions briefly, to see what sort of activities are included in each and their relative numerical importance.

15. PRIMARY PRODUCTION—*Divisions 0 and 1*—The people who work on the land and produce food and all the raw materials of industries are 'primary producers.' By far the most important among them are those who work on cultivated land and produce field crops. We have seen already that their total number is 694 lakhs. The other primary producers number only 30 lakhs—though two separate divisions have been allotted for their classification.

*Plantation industries*—This is the most important sub-division in Division 0. It accounts for 10·6 lakhs of people (or 44·2 per cent of this division) and includes all the workers in tea, coffee and rubber plantations (and in fact, all other kinds of plantations except the cultivation of such crops as sugarcane or betel, undertaken in conjunction with ordinary cultivation of field crops).

*Stock-raising*—This sub-division accounts for 6·3 lakhs of people (or 26·3 per cent of this division). It includes all herdsmen and shepherds and those who breed or maintain herds of cattle, buffaloes and other large animals as their principal means of livelihood. [The ordinary cultivator who makes a little extra income by cattle-breeding is not, however, included here but shown under Livelihood Class I or II.]

*Fishing*—This sub-division accounts for 4·2 lakhs of people (or 17·5 per cent of Division 0).

*Forestry, woodcutting and collection of forest produce not elsewhere specified*—This accounts for 2·5 lakhs of people (or 10·5 per cent of this division).

A separate sub-division was provided for 'rearing of small animals and insects'. This was intended to include poultry farmers, bee-keepers, silkworm rearers, cultivators of lac and so on. But the number returned was extremely small (only 27 thousand for the whole country). The reason, no doubt, was that such activities provide only a 'secondary' means of livelihood. Another sub-division—provided for 'hunting'—also yielded an even smaller number (under 9 thousand).

MINING AND QUARRYING—It is extraordinary how small a number of people are engaged on 'mining and quarrying' over an entire sub-continent. There is little doubt that the figures are substantially correct. They reflect the relative scarcity of known deposits of profitably workable minerals over a very large part of the country, as well as the insufficiency of organised enterprises in the few localities where there is no such scarcity.

*Coal mining* is by far the most important sub-division within this division. It accounts for 3·1 lakhs of people or 54·9 per cent of all persons engaged in

mining and quarrying. An estimate of the relative money value of raw mineral output (which will be found among the papers in APPENDIX I) represents the money value of coal as being 58·9 per cent of the money value of all mineral production in India.

Extraction from the earth of stone, clay, sand and other materials used in building or manufacture of cement, engaged 1·2 lakhs of people (or 21·5 per cent of this division).

Other kinds of mining and quarrying provide gainful employment as shown in the table below :

TABLE 9

| *Group* | *Number* (IN THOUSANDS) |
|---|---|
| Iron ore | 9 |
| Metals other than iron ore | 57 |
| Petroleum | 3 |
| Mica | 33 |
| Salt, saltpetre and saline substances | 22 |
| Non-metallic minerals not otherwise specified | 11 |
| TOTAL | 135 |

This concludes our account of 30 lakhs of workers, engaged in primary production, other than cultivation of land.

16. PROCESSING AND MANUFACTURE—The workers in *Divisions 2, 3, and 4*— all engaged in 'processing and manufacture'—number 92 lakhs. Three out of every five persons among them are engaged in processing the primary products of cultivation and animal husbandry. All of them are included in Division 2 which accounts for 55 lakhs and is divided into various sub-divisions as explained below :

*Grains and pulses*—Milling of cereals and pulses, hand-pounding of rice, manual dehusking and flour grinding, grain parching and similar processing of grains and pulses employ 4·0 lakhs of persons—of whom about half are women and a little under three quarters are living in villages.

*Vegetable oil and dairy products*—There were 2·7 lakhs of people mostly males and mainly self-employed. About one lakh live in towns and the rest in villages.

*Sugar industries*—They provide a living for 1·4 lakhs of people, mostly males. About one-third among them are self-employed and two-thirds are employees. About two-thirds live in villages and one-third in towns.

*Beverages*—The sub-division includes brewers and distillers, toddy drawers and people who make aerated and mineral waters and ice. They number 1·6

lakhs—mostly males and mainly self-employed, and a very large proportion live in villages. The number counted in towns was only 33 thousands.

*Tobacco*—The sub-division includes—not the growers of tobacco (who are counted among cultivators), but —those who prepare raw leaf tobacco for manufacturing, as also makers of *bidis*, cigarettes, cigars, cheroots and snuff. They number 3·6 lakhs—about five-sixths males, and nearly two lakhs live in towns. 1·5 lakhs only are employees—the others are self-employed.

*Other food industries* account for 1·8 lakhs—mostly males and mainly self-employed. Roughly a lakh live in towns.

*All food industries*—Altogether, therefore, we have apart from the cultivators who work in the fields and the housewives who mostly cook and serve the food, (and not counting the people working in hotels and eating-houses as well as cooks employed as domestic servants)—a total of 15 lakhs of people who earn their living by processing the food, drink and tobacco consumed by other people.

*Cotton textiles*—This important sub-division includes cotton ginning, cleaning and pressing; spinning, sizing and weaving; dyeing, bleaching and printing. 20·6 lakhs* of people earn a living from this industry, which means one out of every 16 persons engaged in all industries and services other than cultivation. Women workers are relatively small in number (2·3 lakhs). Nearly 12 lakhs live in towns and 9 lakhs in villages. The self-employed workers number nearly 13 lakhs and are more numerous than employees. Most of the former must be handloom weavers and most of the latter must be factory workers.

*Wearing apparel (except footwear) and made-up textile goods*—All tailors and dressmakers, makers of hosiery and embroiderers are included in this sub-division which accounts for 6·5 lakhs—mostly males, mostly self-employed and rather more numerous in towns than in villages.

*Other textiles*—There is another sub-division which includes all textile industries other than the two mentioned above. This includes pressing, bailing, spinning and weaving of jute as well as spinning and weaving of wool, silk, hemp and flax. It includes rayon manufacture; it also includes manufacture of rope, twine, string and similar goods made from cocoanut aloes, straw, linseed and hair.

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* These numbers might excite surprise and be regarded as too small. It should be remembered that we are analysing the numbers of self-supporting persons only; unpaid family helpers and part-time workers whose principal income is derived from some other source are not included in this number. For a fuller statement on this point, reference may be made to the note printed as *Part D* of APPENDIX III.

The total number under all these heads is only 7·1 lakhs of which 1·6 lakhs are females. The total number is almost equally divided between villages and towns—women workers in villages being twice as numerous as in towns. Employees predominate (numbering 4·6 lakhs).

*Leather, leather products, and footwear* account for 5·8 lakhs, mostly males and mostly self-employed. They live mainly in villages (the number living in towns being only 1·9 lakhs).

*Metals and chemicals*—We have now finished the industries which use the products of cultivation and animal husbandry as their raw material. The second of the three divisions of industries which process and manufacture goods, consists of all those which are based on metals and chemicals. Division 3 had been provided for numbering them; but the total number in these industries is only 12·4 lakhs. Female workers are about half-a-lakh only. There are 7·8 lakhs in towns and 4·6 lakhs in villages. Employees predominate, numbering 6·9 lakhs. A series of sub-divisions which are very important in other countries had been provided but very few numbers turned up; the sub-divisions with over a lakh were—manufacture of transport equipment (2·2 lakhs), machinery (other than electrical machinery) including engineering workshops (1·2 lakhs), basic manufacture of iron and steel (1·1 lakh) and the residuary sub-division, manufacture of metal products otherwise unclassified (6·2 lakhs*).

*Other manufacturing industries*—This is Division 4, which accounts for 24·3 lakhs. The most important sub-division is the manufacture of wood and wood products (10·4 lakhs). Carpenters, turners, joiners and basket-makers account for practically the whole of this number. Another important sub-division proved to be the manufacture of non-metallic mineral products (4·5 lakhs). This means mainly potters and includes makers of all earthen-ware porcelain, crockery, glass, glass bangles and glass beads etc. Out of the total of 24·3 lakhs of workers in this division as many as 17·3 lakhs were self-employed persons and 15·1 lakhs lived in villages. Female workers numbered less than one in ten.

This concludes our account of the 92 lakhs of self-supporting persons who make their living out of processing and manufacture.

17. COMMERCE—We may next consider 'Commerce'—*Division 6*—which provides a living for 59 lakhs of workers, including 5·6 lakhs of female workers. Less than a fifth among them are employees (11·3 lakhs). Others are self-

* This includes 3·6 lakhs of blacksmiths and other workers in iron, and makers of implements.

employed. They are more numerous in towns (34·8 lakhs) than in villages (24·2 lakhs). They fall into three distinct groups as shown in TABLE 10.

TABLE 10

| — | *Number* (IN LAKHS) |
|---|---|
| Retail trade | 51·1 |
| Wholesale trade | 4·6 |
| Money-lending, banking, insurance and real estate | 3·3 |
| TOTAL | 59·0 |

Among the 51 lakhs engaged in retail trade, a little less than one-half (22·5 lakhs) are engaged in selling foodstuffs including drink and tobacco; 1·9 lakhs sell fuel and 5·6 lakhs sell textiles and leather goods. The goods sold by 21 lakhs are unclassified. A great many among them are likely to be selling such a jumble of varied commodities that they are not probably classifiable.

We have already observed that much the greater number of those engaged in processing and manufacturing industries were processing the products of cultivation and animal husbandry. It is now seen that the same is true of retail trade.

18. CONSTRUCTION AND UTILITIES—*Division 5*—This accounts for 15·9 lakhs including 2·7 lakhs of female workers in villages and towns. [Whereas the numbers are about equal in villages and towns, it should be borne in mind that the proportion of rural workers to the rural population will be very much smaller than the proportion of urban workers to the urban population, as the rural population is about five times as numerous as the urban population.] The self-employed persons number 8·4 lakhs while employees are 7·1 lakhs. This division includes all workers engaged in the maintenance as well as new construction of buildings, roads, bridges, rail-roads, telegraph and telephone lines, irrigation and other agricultural works. It also includes people employed on works and services which provide electric power and gas supply, domestic and industrial water supply and sanitary works and services. A difficult (and rather doubtful) decision on classification has brought scavengers under the last mentioned sub-division of this division.

19. TRANSPORT, STORAGE AND COMMUNICATIONS—*Division 7*—The total number in this division is 19·0 lakhs. Female workers are negligible in number—only 63 thousand. The number living in villages (5·9 lakhs) is less than a third of the total. Employees predominate.

Among the sub-divisions, 'transport by road' comes first with 8·9 lakhs, then 'railway transport' with 5·7 lakhs and 'transport by water' with 2·2 lakhs. A very small number (13 thousand only) appears under transport by air. [It should be mentioned here that the number under 'railway transport' would not be exactly the same as the number employed by all the Railways of India, for workshop personnel and those who make and maintain the permanent ways and bridges will appear under separate divisions provided for manufacture, construction etc. The same applies to persons engaged in the Post and Telegraph Services.] Though a whole sub-division has been provided in order to secure international comparability of data relating to 'storage and warehousing' the number recorded under it is insignificant—less than ten thousand.

20. HEALTH, EDUCATION AND PUBLIC ADMINISTRATION—*Division 8*—This division accounts for 32·9 lakhs of people—or one in ten among all non-agriculturists. Female workers number 2·7 lakhs; self-employed workers number 2·4 lakhs. As may be expected, most persons in this division are employees. 20·7 lakhs live in towns, while 12·2 lakhs live in villages.

Medical and other health services claim 3·8 lakhs made up of 2·3 lakhs living in towns and 1·5 lakhs living in villages. Not all of them, of course, are doctors—for all engaged in these services are counted. A special count by groups within this sub-division (which is somewhat incomplete*) shows the following results :

TABLE 11

| *Group* | *Number* |
|---|---|
| Registered medical practitioners | 91,930 |
| *Vaids, hakims* and other persons practising medicine without being registered | 96,147 |
| Compounders | 38,407 |
| Nurses | 31,517 |
| Midwives | 23,938 |
| Vaccinators | 5,928 |
| Dentists | 3,283 |
| All other persons employed in hospitals or other private establishments rendering medical or other health services, but not including scavengers or other sanitary staff | 72,970 |

*The figures exclude the numbers in the following districts of Bihar : Monghyr, Bhagalpur, Saharsa, Purnea and Santhal Parganas.

'Educational services and research' employ 7·4 lakhs of people, almost equally divided between towns and villages. Roughly one in six (1·2 lakhs) are female workers. A special count (which is somewhat incomeplete*) showed 99,256 professors, lecturers, teachers and research workers employed in universities, colleges and research institutions; while all other professors, lecturers and teachers numbered 549,544.

Those classified as being engaged in 'public administration' number 21·6 lakhs. If we exclude about 9 thousand persons recorded as being employed by Non-Indian Governments, we have the following account for 21·5 lakhs of people :

TABLE 12

| *Group* | | *Number* (IN THOUSANDS) |
|---|---|---|
| Employees of the Central Government | | 503 |
| Employees of State Governments : | | 1,426 |
| General administration | 809 | |
| Police (other than village watchmen) | 380 | |
| Village establishments including village watchmen | 237 | |
| Employees of District Boards, Municipalities and other local bodies | | 224 |
| TOTAL | | **2,153** |

It should be explained that 'public administration' is a residuary classification in the sense that it excludes employees of Governments, municipalities and local bodies who are classifiable under any other specific service sub-division. Thus doctors, compounders, nurses and midwives are classified under one sub-division 'medical and other health services', whether or not they are government employees. Likewise, in 'educational services and research'. Station masters and engine-drivers come under the sub-division 'railway transport', and not 'public administration'. Similarly for the postal and telegraph services. The public works staff go under 'construction'; and the workers in Sindri or in other Government-owned industrial enterprises come under the appropriate sub-division for processing and manufacture. Who remain?

**See* footnote on page 104.

These are the people employed by Governments, municipalities and local bodies who are engaged in : (*i*) the administration of law and justice; (*ii*) the defence of the country; (*iii*) the maintenance of watch and ward and the security of person and property of the people; (*iv*) the assessment and collection of public revenue, management of public funds and public property ; (*v*) the general management, control, and co-ordination of the activities of varied groups of establishments maintained by the Governments for rendering specific services to the people (health, education, transport, communication, etc.); and (*vi*) the rendering of personal staff assistance to those who actually govern the country and make its laws.

21. SERVICES NOT ELSEWHERE SPECIFIED—*Division 9*—The number of persons recorded under this residuary division, is 75·4 lakhs including 14·5 lakhs of female workers. 34·5 lakhs are employees. Forty-one lakhs live in villages. As many as 37·3 lakhs among them are people about whom nothing more is known than that they are self-supporting and earn their living by rendering some service or other. Fifteen lakhs among them are also known to have described themselves as 'employees' and the others as 'self-employed persons'. In some of these cases, it may be that the nature of their activity is clearly specifiable but has been left unspecified either inadvertently or unavoidably. [Special efforts were made to reduce the number of such cases. ] In a large proportion of such cases, however, it might well be that they are people who are not conveniently classifiable and are multi-purpose workers in a very genuine sense. There are 8·0 lakhs of these people who have described themselves as employees and who live in villages. It is not impossible that some of them are employed as cultivating labourers and failed to be recorded under Livelihood Class III (which includes 149 lakhs of people). More probably, their participation in agricultural labour is not sufficiently regular or important and so they were rightly excluded from Livelihood Class III. It is, in any case, worth bearing in mind that there are 8·0 lakhs of employees and 14·5 lakhs of self-employed persons living in villages about whom we know only that they earn living by work, but we do not know what work they do.

Turning to the 38·1 lakhs of people for whom details are available, they are shown in TABLE 13 on opposite page, by sub-divisions in the order of numerical importance.

TABLE 13

| *Group* | *Number* (IN THOUSANDS) |
|---|---|
| Domestic services | 1,424 |
| Laundries and laundry services | 565 |
| Barbers and beauty shops | 511 |
| Religious, charitable and welfare services | 369 |
| Legal and business services | 230 |
| Recreation services | 214 |
| Hotels, restaurants and eating-houses | 458 |
| Arts, letters and journalism | 39 |
| TOTAL | **3,810** |

22. *Affiliation of dependants to self-supporting persons by means of livelihood*—We noted at the beginning of this chapter that within the total of 3,566 lakhs of people who were to be classified according to their means of livelihood, there were 2,143 lakhs of people classed as 'non-earning dependants' and another 379 lakhs of people classed as 'earning dependants'. We have seen in detail, the nature of the activities by which the remaining number—*viz.*, 1,044 lakhs of self-supporting persons—earned their living and maintained themselves as well as others who depended on them for maintenance. It is important that we should know not only how many self-supporting persons there are who earn a living from agriculture or from different branches of industries and services, but how many people in all are supported—including in this reckoning not only the self-supporting persons but also their dependants. Such affiliation of dependants to self-supporting persons by means of livelihood could not be carried out in great detail, owing to the time and cost involved, but has been done under eight different heads—called '*Livelihood Classes*' as shown in TABLE 14 on next page.

TABLE 14

| *Livelihood Class* | *Self-supporting persons* | *Dependants* | | | *Percentage to general population (including dependants)* |
|---|---|---|---|---|---|
| | | *Non-earning* + *Earning* | *Total* | | |
| | (NUMBER IN LAKHS) | | | | |
| I . . . | 457 | 1,001 + 215 | 1,673 | | 46·9 |
| II . . . | 88 | 189 + 39 | 316 | | 8·8 |
| III . . . | 149 | 247 + 52 | 448 | | 12·6 |
| IV . . . | 16 | 33 + 4 | 53 | | 1·5 |
| **TOTAL—AGRICULTURAL CLASSES .** | **710** | **1,470 + 310** | **2,490** | | **69·8** |
| V . . . | 122 | 223 + 32 | 377 | | 10·5 |
| VI . . . | 59 | 145 + 9 | 213 | | 6·0 |
| VII . . . | 17 | 37 + 2 | 56 | | 1·6 |
| VIII . . . | 136 | 268 + 26 | 430 | | 12·1 |
| **TOTAL—NON-AGRICULTURAL CLASSES .** | **334** | **673 + 69** | **1,076** | | **30·2** |
| **GENERAL POPULATION** | **1,044** | **2,143 + 379** | **3,566** | | **100·0** |

Earlier in this chapter, we have already seen who Livelihood Classes I to IV are. Briefly, they are : the 'owner-cultivators', 'tenant-cultivators', 'cultivating labourers' and 'agricultural rentiers' respectively. The figures in the table show the self-supporting persons of these classes, along with the dependent members of their households.

Livelihood Class V stands for all persons engaged in non-agricultural 'production' (that is, Divisions 0, 1, 2, 3 and 4) together with their dependants. Livelihood Class VI stands for people engaged in 'commerce' (Division 6) and their dependants. Livelihood Class VII stands for 'transport' ( a part of Division 7) and their dependants. Livelihood Class VIII stands for all others

including non-agricultural rentiers, pensioners and other miscellaneous income recipients.

23. It will be observed that the percentages of agriculturists and non-agriculturists were found to be 68·1 and 31·9 when we were considering self-supporting persons only (*see* paras 5 to 7); but they turned out to be 69·8 and 30·2, when we considered dependants and self-supporting persons together. The figures show that agriculture supports a slightly larger proportion of people than it provides self-supporting employment for. Why this difference ? It is to be expected, because the number of dependants supported by a given number of self-supporting persons is not exactly the same in all livelihood classes. The relevant numbers are computed and shown below :

TABLE 15

| *Livelihood Class* | *Number of dependants supported by 100 self-supporting persons* | | |
|---|---|---|---|
| | *Non-earning dependats* | *Earning dependants* | *Total* |
| I | 219 | 47 | 266 |
| II | 215 | 44 | 259 |
| III | 166 | 35 | 201 |
| IV | 206 | 25 | 231 |
| TOTAL—AGRICULTURAL CLASSES | **207** | **44** | **251** |
| V | 185 | 26 | 211 |
| VI | 246 | 15 | 261 |
| VII | 218 | 12 | 230 |
| VIII | 197 | 19 | 216 |
| TOTAL—NON-AGRICULTURAL CLASSES | **201** | **21** | **222** |
| GENERAL POPULATION | **205** | **37** | **242** |

24. There are interesting variations both in the total number of dependants, as well as in the break up of this number between non-earning dependants and earning dependants. The low figures for cultivating labourers (Livelihood Class III) and the high figures for 'commerce' (Livelihood Class VI) stand out. They suggest the presence of significant variations among different social

groups. It is probable that cultivating labourers have, in fact, the higher percentage of family members engaged in earning and living. It is possible that there are groups with even higher ratios of dependants to self-supporting persons than in 'commerce'. We might find them, if we could isolate specific professional service groups merged within Livelihood Class VIII.* The broad position is clear. *The average self-supporting person uses his income to support himself and at least two others. Roughly one among three self-supporting persons also provides, in addition, partial support for one earning dependant.*

## B—*Zonal Variations*

FIGURES similar to those set out in the last section for India have been compiled for every zone, every state, every natural division and every district in each state, and for different rural tracts and urban tracts separately within each district. The totals for each of the eight livelihood classes are, indeed, furnished for every single village, and every town, and every ward (or *mohallah*) of every town separately. A review of these figures and comments on their significance will be found for each state in each state census report.

A review for India has also been prepared and printed separately (APPENDIX III). The principal object of this review is to furnish a full account of the definitions and classifications adopted at this census, to compare them with those adopted at previous censuses and to bring out the differences and similarities clearly so that users of census data may be able to study them in relation to the data provided by prior censuses or by other sources. The review also sets out the results of a preliminary study of similarities and differences between different zones of India and also between India in 1951 and India in 1931. The main results of comparison between different zones are briefly set out in this section. The results of comparison between 1951 and 1931 will be referred to in the next chapter.

26. We have seen that there is a three-fold division among the people—self-supporting persons (29·3 per cent), earning dependants (10·6) per cent

*Considerations of time and cost have stood in the way of the detailed sorting and cross-tabulation necessary for such studies—but they can be undertaken at leisure, if considered necessary, from the National Register of Citizens.

and non-earning dependants (60·1 per cent). The percentages relate to the country as a whole. How they differ among the zones is shown below :

TABLE 16

| *Zone* | *Percentage to general population* | | |
|---|---|---|---|
| | *Self-supporting persons* | *Earning dependants* | *Non-earning dependants* |
| North India . . . | 30·5 | 12·0 | 57·5 |
| East India . . . | 30·8 | 6·0 | 63·2 |
| South India . . . | 26·5 | 4·9 | 68·6 |
| West India . . . | 26·9 | 15·8 | 57·3 |
| Central India . . . | 29·1 | 20·0 | 50·9 |
| North-West India . . . | 32·3 | 12·6 | 55·1 |
| INDIA . . . . | **29·3** | **10·6** | **60·1** |

If we run our eyes down the column showing the percentages of self-supporting persons we might be inclined to say that North-West India stands first from the point of view of provision of gainful employment and South India comes last; and the order among the other zones is : East India, North India, Central India and West India . The differences are not very large—three per cent on either side of the all-India average covers all the zones.

If, for the same purpose, we follow the ascending order of percentages of the 'non-earning dependants' we get South India last again; but the first place is taken by Central India instead of North-West India. The order among intermediate zones also alters and we have North-West India, West India, North India and, after a long interval, East India. The quantitative differences between the zones are larger—we need about 9 per cent on either side of the all-India average to cover all the zones.

The difference in results between the two approaches is caused by wide variations in the percentage of earning dependants. Here again, we find South India to be the last in order. Central India comes first. One is nearly one-half and the other is nearly double the all-India average.

These differences between one zone and another cannot be attributed to corresponding differences in age structure. For the latter differences are far too small. Judged by age structure alone, South India should head the list instead of being at the bottom.

27. When we analyse the figures separately for men and women and for villages and towns, we find that the largest amount of variations occur in the classification of village women. This is seen from the table below :

TABLE 17

| Zone | Percentage of rural females who are either self-supporting persons or earning dependants | Ratio between self-supporting persons and earning dependants among 100 rural females who are either self-supporting persons or earning dependants | |
|---|---|---|---|
| | | Self-supporting persons | Earning dependants |
| North India | 26·7 | 24 | 76 |
| East India | 20·5 | 68 | 32 |
| South India | 16·2 | 64 | 36 |
| West India | 36·5 | 18 | 82 |
| Central India | 40·9 | 23 | 77 |
| North-West India | 33·6 | 41 | 59 |
| INDIA | **26·5** | **39** | **61** |

The six zones, it may be observed, fall into three pairs—each presenting a pattern of its own.

East India and South India have the smallest ratios of village women who go out for field work or otherwise take some part in earning a livelihood for the family—the number is one in six in one case, and one in five in the other. It so happens that it is precisely in these two zones that the work of the women is rated high. Among the few who do work, the number classified as self-supporting is twice as numerous as the number classified as earning dependants.

Central India and West India are the two zones where the exact opposite is observed. We have the highest ratios (roughly four out of ten in one case and four out of eleven in another) of women who go out for field work or otherwise take some part in earning a livelihood for the family. But at the same time they are also the two zones where the contribution of women labour is rated lowest. Among these women, earning dependants are twice as numerous as self-supporting women in one zone and four times as numerous in the other.

The other two zones—North India and North-West India—fall in an intermediate category between these two extremes.

What are we to think of these variations brought to light by the census ? It is probable that it is in fact a correct picture of how livelihood is earned and people are supported in different parts of the country. There are, apparently, substantial differences in the volume and nature of participation of village women in livelihood earning. The differences do probably reflect corresponding differences in conditions under which cultivation is carried on as well as differences in social habits and customs. At the same time, it would not be safe to go further than that and maintain that the differences in the figures between different zones have been accurately measured by the figures obtained. It would be unsafe to dogmatise on this point because—simple as it may sound—there are real difficulties in securing that the line between self-supporting persons and earning dependants is drawn at an identical level in all parts of a large sub-continent.

28. To what extent do the different zones differ from one another in the extent to which gainful employment is actually available ? If we are to answer this question satisfactorily we should do two things :

*First,*—We must leave the women out of the reckoning. Village women present a special problem of evaluation of their work, while women in towns play such a small part that they can be conveniently omitted along with village women.

*Secondly,*—We should have a rough and ready method by which earning dependants may be reckoned as a definite fraction of self-supporting persons and then combined in a single category of 'bread-winners'.

Based on these ideas, we arrive at 'male bread-winner percentages' for the villages and towns of each zone separately (as the percentage of self-supporting

persons *plus one-third* of the percentage of earning dependants). The results are shown in the table below :

TABLE 18

| Zone | Male bread-winner percentages | |
|---|---|---|
| | *Villages* | *Towns* |
| North India . . | 55 | 53 |
| East India . . | 48 | 56 |
| South India . . | 44 | 46 |
| West India . . | 47 | 52 |
| Central India . . | 53 | 51 |
| North-West India . | 54 | 51 |
| INDIA . . | 50 | 52 |

The figures lead to the following conclusions as regards actual availability of gainful employment for males :

*First*,—MALE EMPLOYMENT IN VILLAGES : North India stands first, followed closely by North-West India and Central India. East India and West India come next with a definitely lower bread-winner percentage. South India stands last.

*Secondly*,—MALE EMPLOYMENT IN TOWNS : East India stands first and South India stands last. The other zones have intermediate values for bread-winner percentages. They are, however, fairly close to one another. The order is : North India, West India, North-West India and Central India.

*Thirdly*,—DIFFERENCE BETWEEN VILLAGES AND TOWNS : Towns provide more male employment than villages in the country as a whole and in East India, West India and South India.

Villages provide more male employment than towns in North-West India, North India and Central India.

29. We have seen that the agricultural classes—that is to say, all the people who are supported by agriculture, including dependants—number 69·8 per cent of the population. This percentage also varies from one zone to another. East India stands first (75·6 per cent) and West India last (59·7 per cent). The percentages in other zones, in order, are: North India (74·2), Central India (73·2), North-West India (66·0) and South India (64·3).

30. The numerical insignificance of agricultural rentiers and their dependants (Livelihood Class IV) is clearly brought out in all zones. In the country as a whole, they are 1·5 per cent of the general population and 2·1 per cent of the agricultural classes. According to the latter mode of measurement, *agricultural rentiers are fewest (1·1 per cent) in East India—the original home of the*

*permanently settled zamindari system. They are 3·3 per cent in South India and West India—the original home of the raiyatwari system.* The other zones, in order, are : North India (1·4), Central India (2·3) and North-West India (2·7).

31. Cultivating labourers and their dependants (Livelihood Class III) are 12·6 per cent of the general population and 18·0 per cent of the agricultural classes. On the latter basis, they are fewest in North India (7·7) and most numerous in South India (26·6). The other zones, in order, are : North-West India (8·1), West India (14·1), East India (20·3) and Central India (24·0).

32. Tenant-cultivators and their dependants (Livelihood Class II) are 8·9 per cent of the general population and 12·7 per cent of the agricultural classes. On the latter basis, they are fewest in North India (6·9) and most numerous in West India (16·0). The other zones, in order, are : Central India (9·0), East India (12·4) and South India (13·5). It is not possible to fix the position of North-West India satisfactorily because when the census was taken the proportion was temporarily swollen to the abnormal figure of 26·3 per cent —because of the mass migration which had taken place shortly before. A very large number of displaced persons who have since become (or will shortly become) owner-cultivators are shown as tenant-cultivators because they had not yet been given permanent and heritable rights of occupancy in land.

33. Owner-cultivators and their dependants (Livelihood Class I) are 46·9 per cent of the general population and 67·2 per cent of the agricultural classes. Their preponderance among the agricultural classes is clear in all the zones. The highest percentage occurs in North India (83·9) and the lowest in South India (56·6). The other zones, in order, are quite close to one another—West India (66·6), East India (66·2) and Central India (64·7). North-West India with 63·0 per cent will probably go above all these three, if the temporary and abnormal feature mentioned above is allowed for.

34. In the country as a whole, the relative proportion of cultivators (Livelihood Classes I and II) and cultivating labourers (Livelihood Class III) is of the order of 82 cultivators to 18 cultivating labourers.

This proportion is an important indicator of the structure of agricultural organisation and economic relations.

### HIGH RATIO OF CULTIVATORS TO CULTIVATING LABOURERS

It is found that cultivators are 90 or more and cultivating labourers 10 or less in the following divisions of the country :

| | |
|---|---|
| *North India* . . . | All the divisions of the zone *except* the Uttar Pradesh Hills and Plateau |
| *East India* . . . | All the six Himalayan divisions and Chhota Nagpur |
| *South India* . . . | Mysore only |
| *West India* . . . | Bombay-Konkan and Saurashtra |
| *Central India* . . . | Madhya Bharat Plateau only |
| *North-West India* . . | The two Himalayan divisions, all divisions of Rajasthan *except* the Rajasthan Plateau, and Ajmer. |

### LOW RATIO OF CULTIVATORS TO CULTIVATING LABOURERS

Cultivators are 75 or less and cultivating labourers 25 or more in the following divisions of the country :

| | |
|---|---|
| *North India* . . . | None |
| *East India* . . . | North Bihar and South Bihar |
| *South India* . . . | North Madras, South Madras, West Madras and Travancore-Cochin |
| *West India* . . . | None (Greater Bombay being ignored) |
| *Central India* . . . | North Hyderabad, South-West Madhya Pradesh, North-West Madhya Pradesh and Bhopal. [South Hyderabad is also close to the margin.] |
| *North-West India* . . | None. |

Cultivators are unusually small in number, and cultivating labourers are unusually numerous in the following divisions : Travancore-Cochin (62 : 38); West Madras (60 : 40); and South-West Madhya Pradesh (53 : 47).

35. In the country as a whole, there are 84 owner-cultivators (with dependants) for every 16 tenant-cultivators (with dependants). Adopting the

same standards as in the last case, those divisions of the country where the proportion is high and those where the proportion is low are identified below.

HIGH PROPORTION—Owner-cultivators number 90 or more and tenant-cultivators 10 or less in the following divisions :

| | |
|---|---|
| *North India* . . . | All the divisions *except* Uttar Pradesh Hills and Plateau |
| *East India* . . . | Chhota Nagpur, Orissa Inland and Assam Hills |
| *South India* . . . | Mysore and Madras Deccan |
| *West India* . . . | Bombay Deccan Northern |
| *Central India* . . . | East Madhya Pradesh, North Hyderabad, Madhya Bharat Hills and Vindhya Pradesh |
| *North-West India* . . | The two Himalayan divisions, Rajasthan Hills, Rajasthan Plateau and Ajmer. |

LOW PROPORTION—Owner-cultivators number 75 or less and tenant-cultivators 25 or more in the following divisions :

| | |
|---|---|
| *North India* . . . | None |
| *East India* . . . | Both divisions of West Bengal |
| *South India* . . . | West Madras |
| *West India* . . . | Bombay-Konkan, Greater Bombay and Kutch |
| *Central India* . . . | Madhya Bharat Plateau |
| *North-West India* . . | East Rajasthan Plains and Rajasthan Dry Area. [Punjab Plain being an abnormal and temporary addition to this group.] |

36. In order to avoid misunderstanding it should be mentioned here that 'cultivating labourers' of Livelihood Class III are not necessarily all 'landless agriculturists'. Some of them do have land but so little that the wages they obtain from working for others is more important to them than the income from their own land. The same applies to Livelihood Class II also—some of them have plots of land of their own, but they are classified as tenant-cultivators if the income from rented land exceeds the income from owned land.

Contrariwise, the term 'agricultural landholders' would include every one in Livelihood Classes I and IV, but would not be limited to them. It would

include every one, not only in Livelihood Classes II and III, but also among the non-agricultural classes who had some permanent and heritable right in agricultural land—even though the income thus derived was less important than some other type of income.

With the help of information collected at the census about secondary means of livelihood it has been possible to compute separate figures for agricultural landholders and landless agriculturists. These are shown in a statement annexed to the detailed review of census economic data (APPENDIX III).

According to this statement, *there are 402 landless agriculturists for every 1,000 agricultural landholders. There are enormous differences in this respect from state to state. This number (of landless agriculturists per 1,000 agricultural landholders) is smallest in Uttar Pradesh (161) and largest in Travancore-Cochin (782).*

The numbers for other major states, arranged in order, are as follows : Mysore (190), Assam (235), Orissa (271), Bombay (383), Madhya Bharat (397), Madhya Pradesh (413), Hyderabad (507), Bihar (510), Rajasthan (544), West Bengal (609) and Madras (714).

## C—*Comparison with U.S.A., and Great Britain*

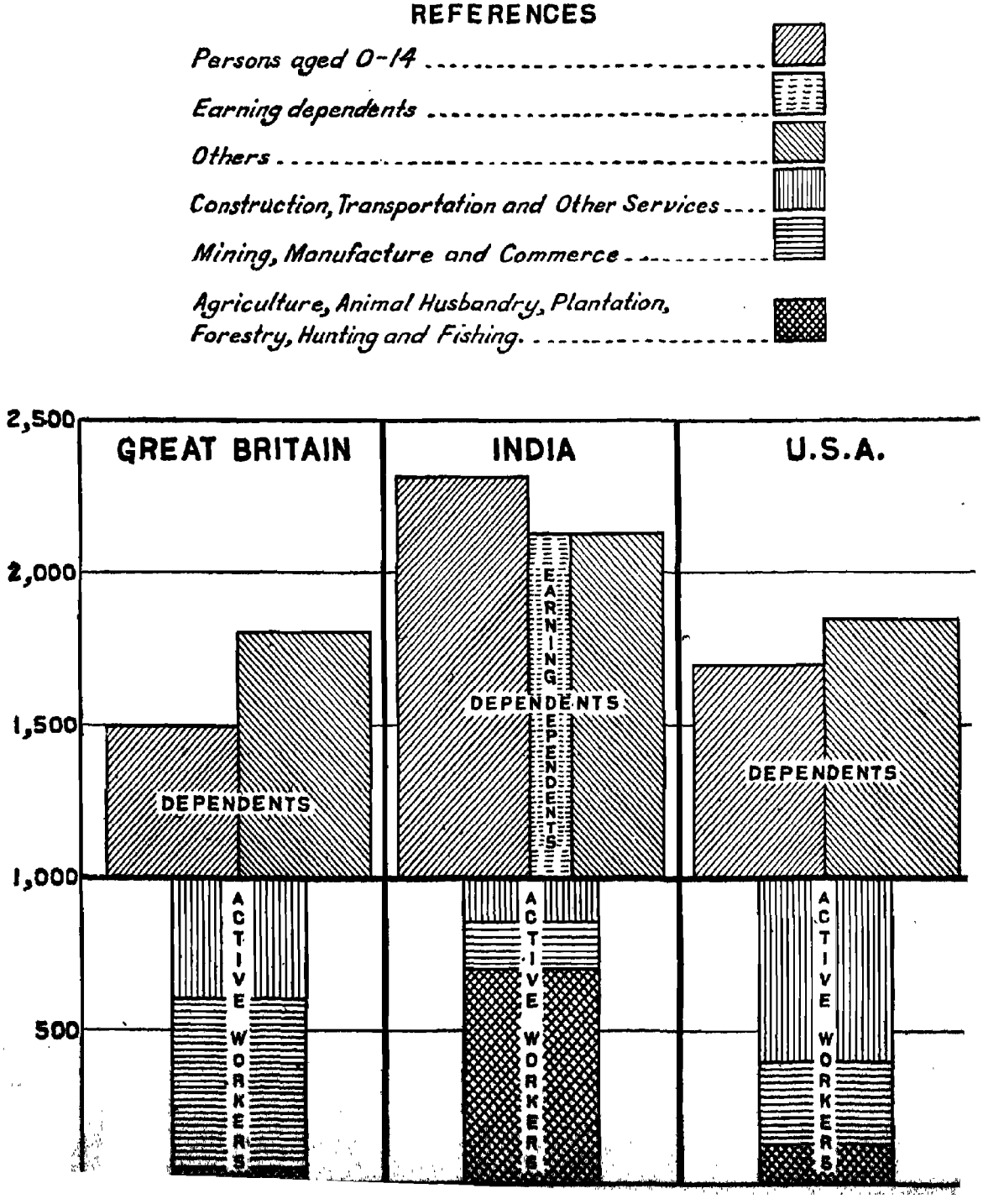
IT IS NOT easy to establish detailed comparison with other countries of the world in respect of the data reviewed in this chapter. This is so for a number of reasons. To begin with, there are little or no published data for a great many countries. Secondly, not all the available figures are in a comparable form. Thirdly, the economy of every large country is a complex affair and the problems involved in expressing it in quantitative terms which can be used for comparison of different countries with one another cannot be said to have been solved satisfactorily.

However, a few comparisons have been attempted in two aspects—where published figures seemed to permit such comparisons—with the United States of America and Great Britain. The results are set out in the diagram facing this page.

38. The first aspect of the comparison refers to what may be called the 'burden of dependency'. If we consider 1,000 self-supporting persons in

FIG. 18

# ACTIVE WORKERS AND DEPENDENTS
## (INDIA, GREAT BRITAIN AND U. S. A.)



include every one, not only in Livelihood Classes II and III, but also among the non-agricultural classes who had some permanent and heritable right in agricultural land—even though the income thus derived was less important than some other type of income.

With the help of information collected at the census about secondary means of livelihood it has been possible to compute separate figures for agricultural landholders and landless agriculturists. These are shown in a statement annexed to the detailed review of census economic data (APPENDIX III).

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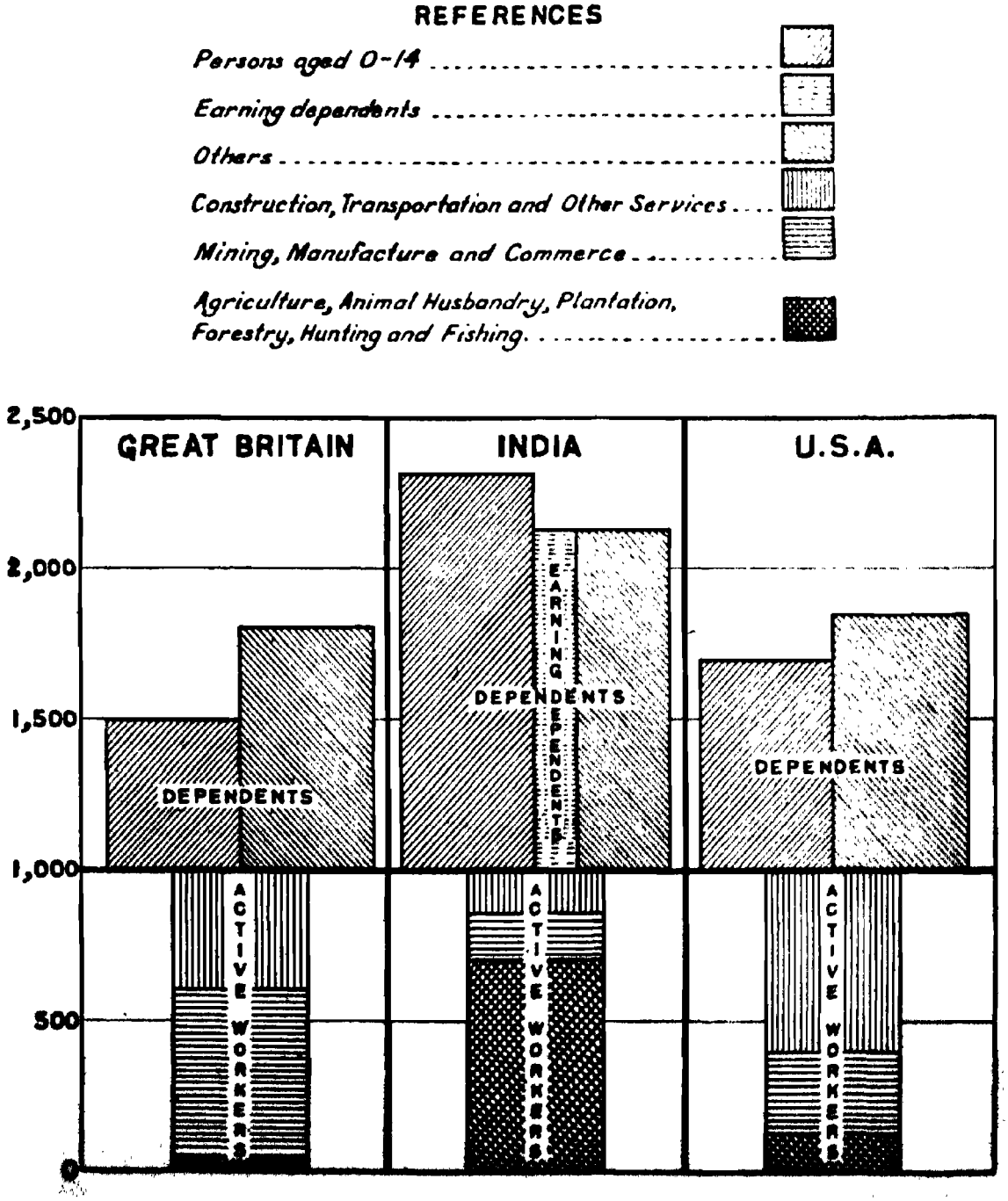
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FIG 18

# ACTIVE WORKERS AND DEPENDENTS
## (INDIA, GREAT BRITAIN AND U. S. A.)



India—who are also gainfully employed—,they support by their exertion, themselves as well as 2,504 other persons. These include 373 persons who are earning dependants—in other words, only partially dependent on the 1,000 we are considering—; and 26 rentiers and pensioners who, though not a burden on their own household, are nevertheless supported ultimately by the exertion of the 1,000 persons we are considering.

In the United States of America the number corresponding to our 2,504 is only 1,547. In Great Britain it is even less—it is only 1,207. We do not know whether these numbers include any persons corresponding to our 373 earning dependants; and if so, in what number. We may, if we choose, ignore them altogether (as in the diagram). The difference in the burden of dependency is still very large.

To a large extent, the difference arises out of the fact that we have a much larger proportion of infants, young children and grown up children under 15 than in United States or Great Britain. On the scale we are following (*viz.*, 1,000 self-supporting and gainfully occupied persons) the number aged 14 or less is 1,317 in India, 702 in United States and 496 in Great Britain. While this is an important part of the explanation, it is only apart. The diagram shows that even after this number is separated, the remaining burden of dependency is still heavier in India than in United States or Great Britain. The conclusion follows—even people of working age are less fully employed in India than in these countries.

39. The second aspect of the comparison is the distribution of these 1,000 self-supporting persons who are gainfully empolyed among the different sectors of productive activity. The comparison is shown below :

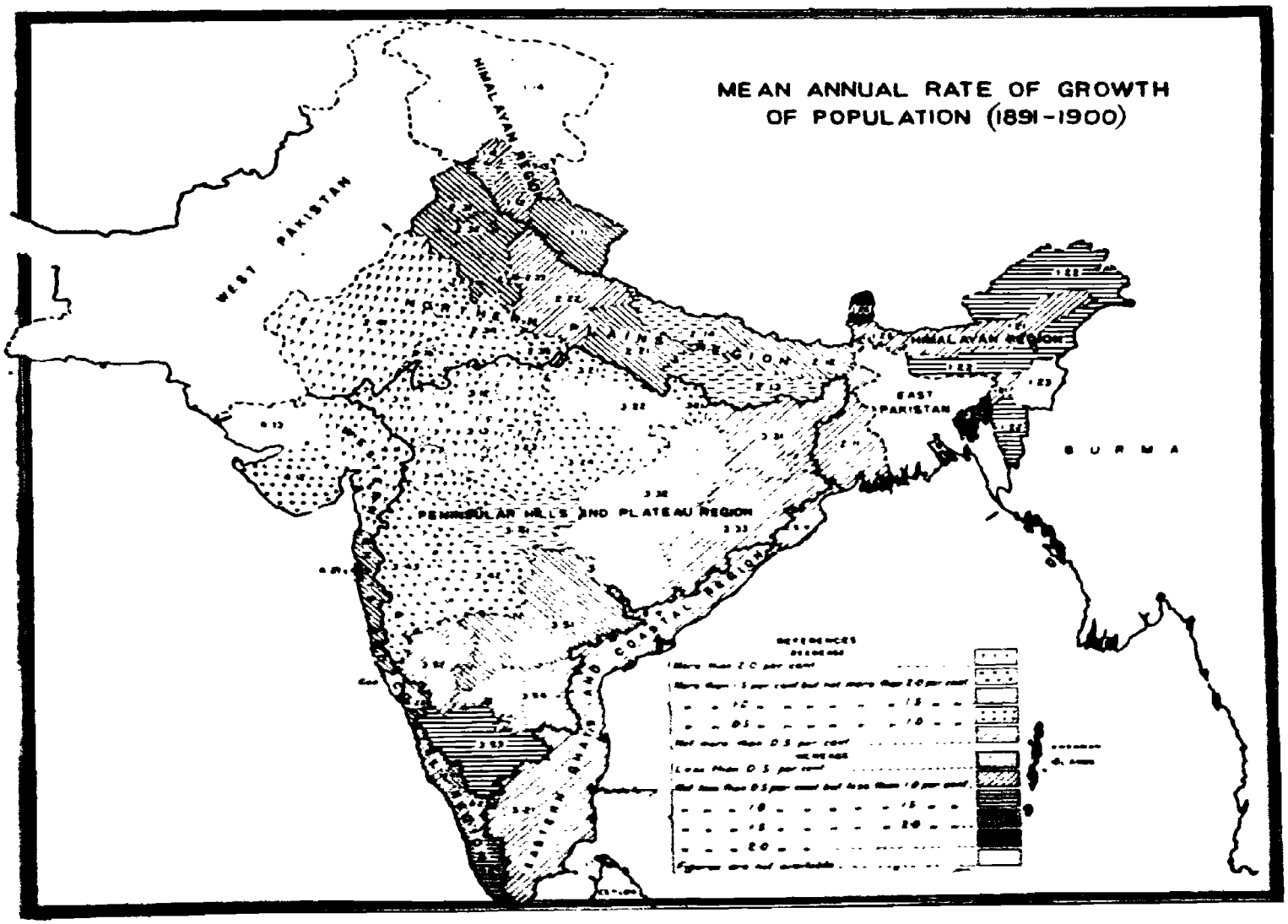
TABLE 19

| —— | *India* | *U.S.A.* | *Great Britain* |
|---|---|---|---|
| *A*—Agriculture, animal husbandry, forestry and fishing . . . . . | 706 | 128 | 50 |
| *B*—Mining, manufacture and commerce . | 153 | 456 | 555 |
| *C*—Other industries and services . | 141 | 416 | 395 |
| | 1,000 | 1,000 | 1,000 |

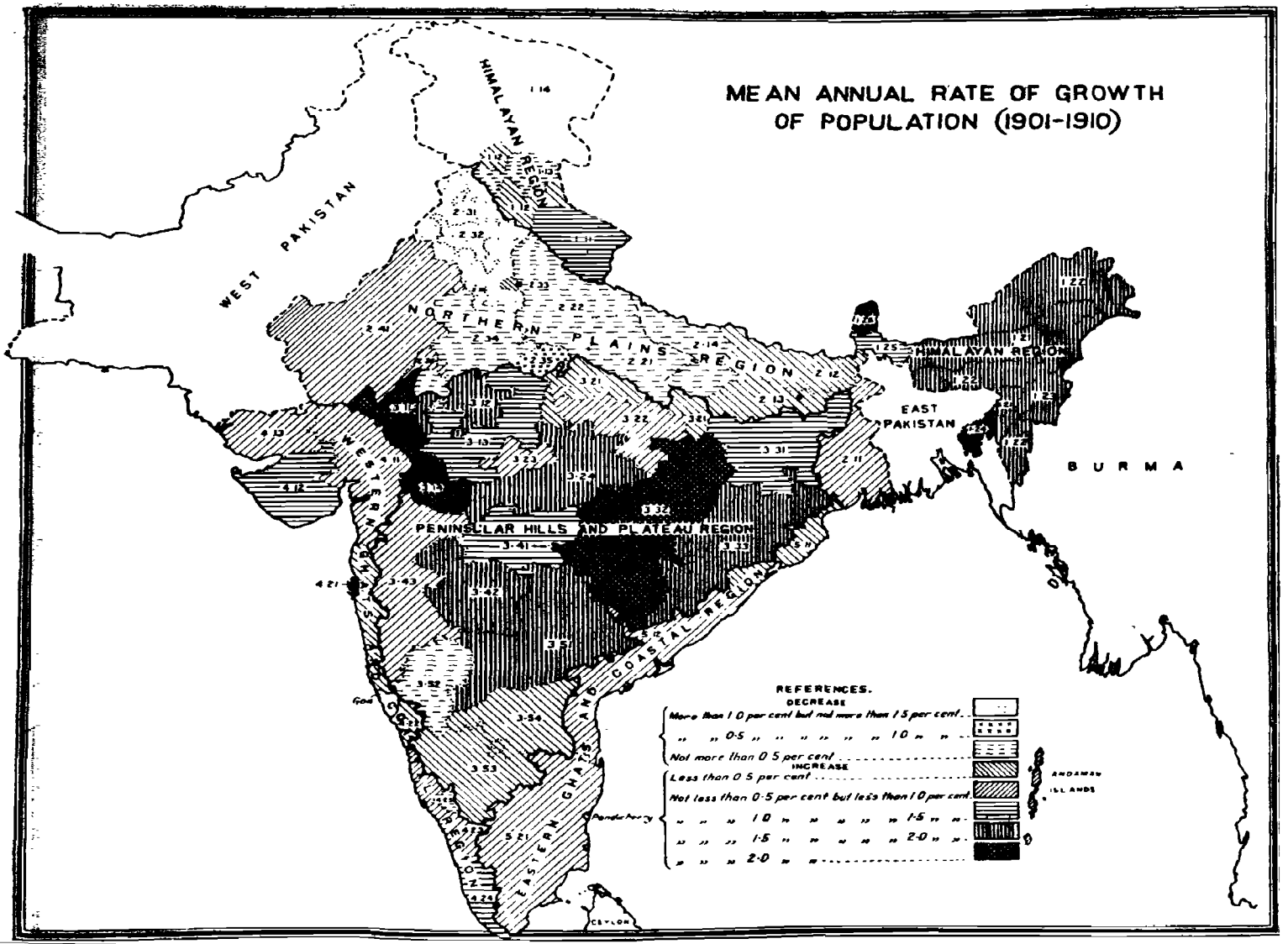
The numbers in Category *A* represent broadly the man-power devoted to food production. The differences verge on the fantastic. In India 706 persons out of 1,000 are engaged in producing their own food and a small surplus which just falls short of being sufficient for the other 294. In United States 128 persons produce a surplus in excess of their own food requirements which not only suffices for the needs of the other 872 but yields a margin for export to other countries. In Great Britain a large majority of the people are fed by foreign producers of food. Even so, the allocation of only 50 to food production is astonishing.

The differences in the numbers in Category *B* reflect broadly the differences in the extent of industrialisation of these countries. Together with the figures of Category *C*, they show the great differences that exist regarding the amount of goods and services other than food which the people of different countries have at their disposal. They mark the distinction between affluence and poverty.

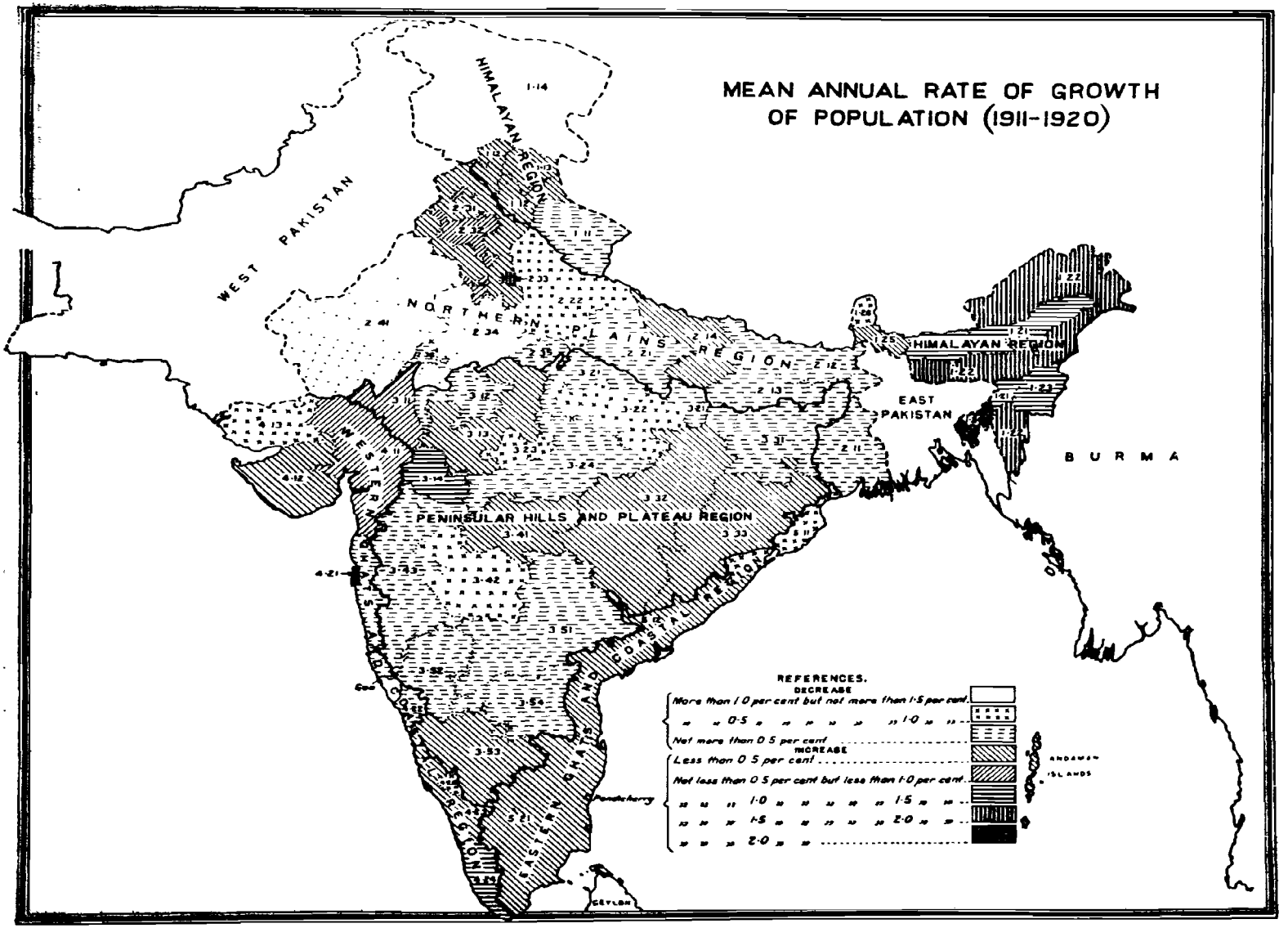
**MAP No. 6**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1891-1900)
WEST PAKISTAN
HIMALAYAN REGION
EAST PAKISTAN
BURMA
PENINSULAR HILLS AND PLATEAU REGION

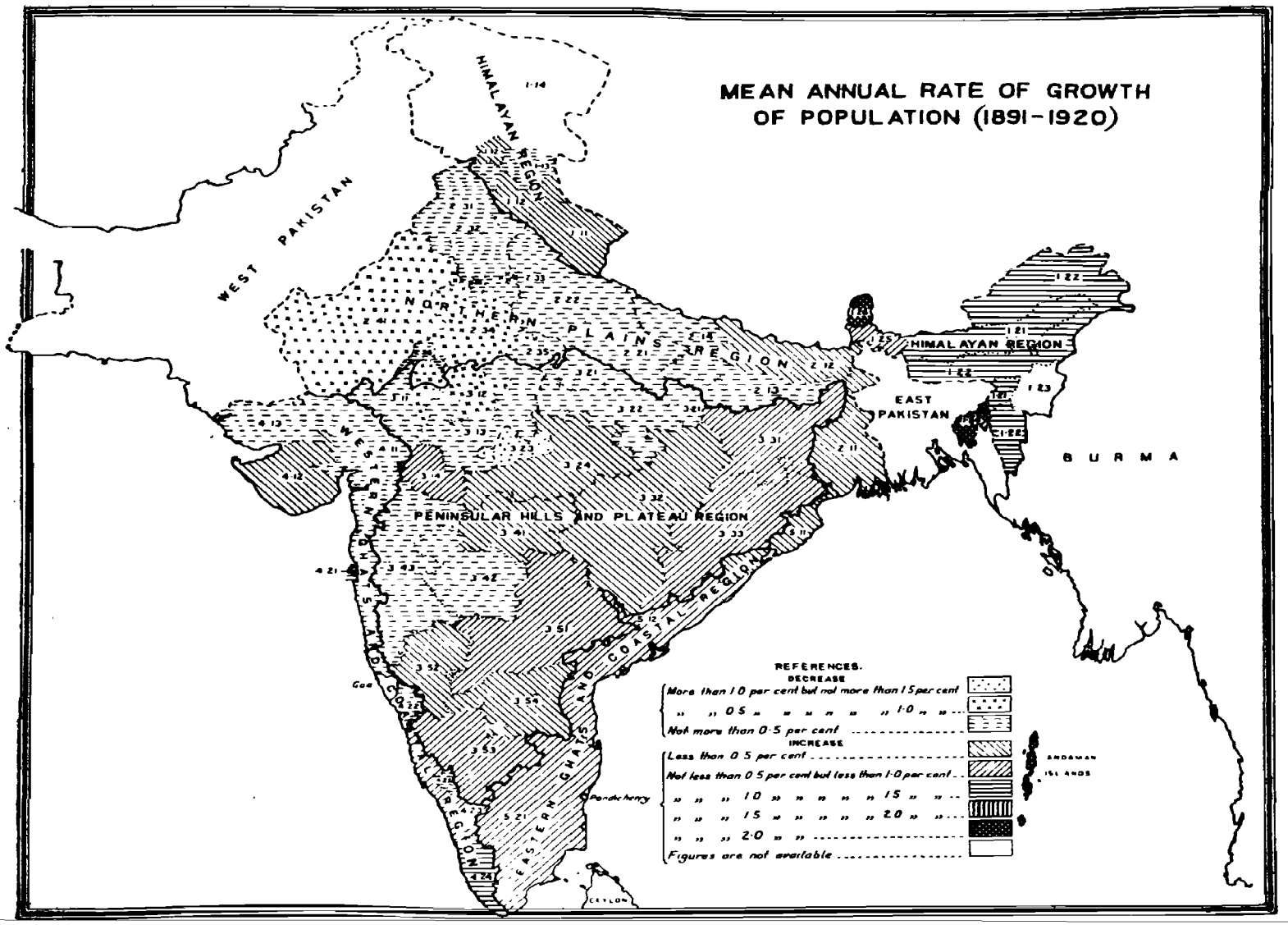
**MAP No. 7**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1901-1910)
HIMALAYAN REGION
WEST PAKISTAN
NORTHERN PLAINS REGION
EAST PAKISTAN
HIMALAYAN REGION
BURMA
PENINSULAR HILLS AND PLATEAU REGION
WESTERN GHATS AND COASTAL REGION
EASTERN GHATS AND COASTAL REGION
Goa
Pondicherry
CEYLON
ANDAMAN ISLANDS
REFERENCES.
DECREASE
More than 1·0 per cent but not more than 1·5 per cent.
" " 0·5 " " " " " " 1·0 " " "
Not more than 0·5 per cent
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent.
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 " "

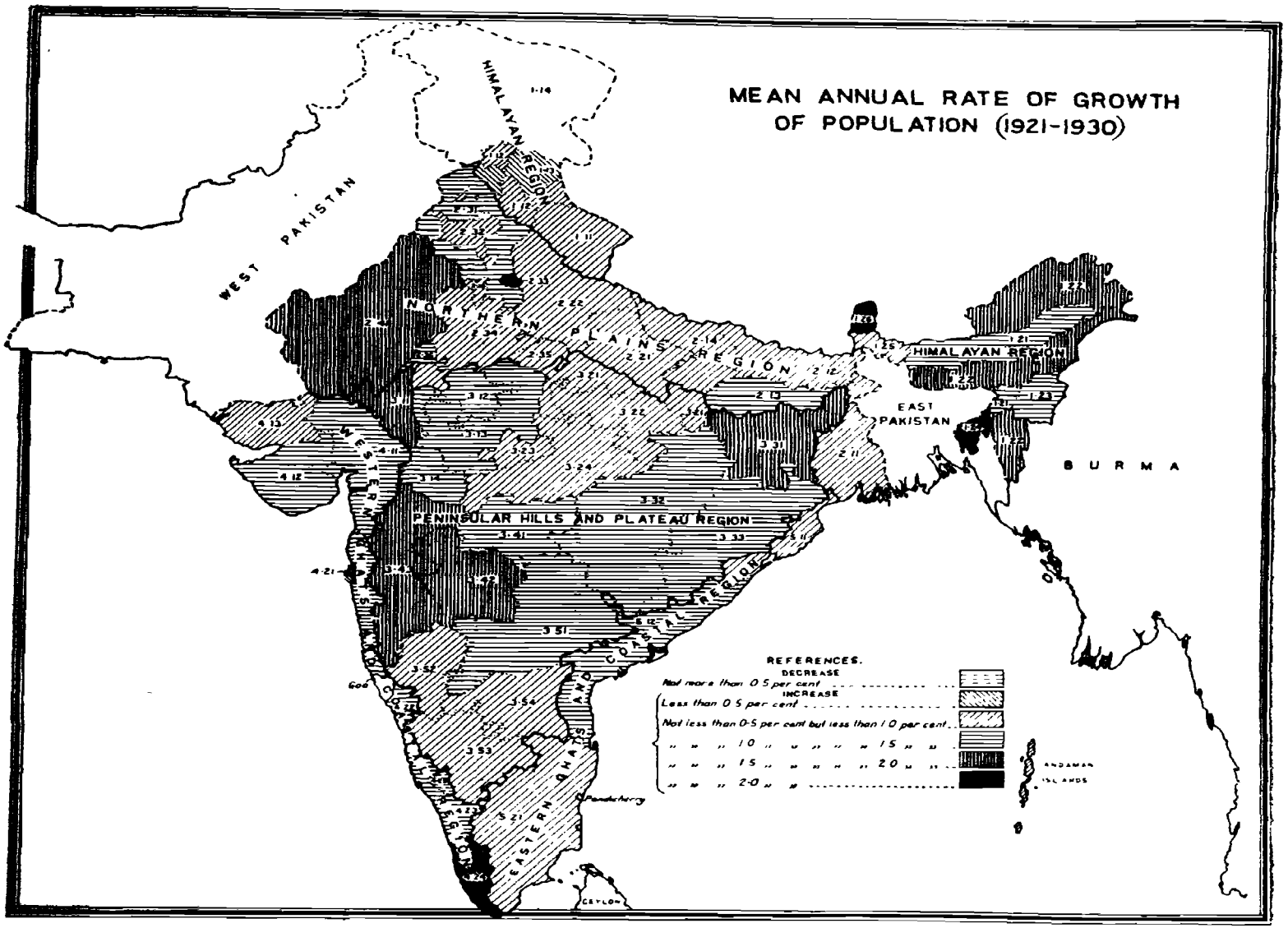
**MAP No. 8**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1911-1920)
WEST PAKISTAN
HIMALAYAN REGION
NORTHERN PLAINS REGION
EAST PAKISTAN
HIMALAYAN REGION
BURMA
PENINSULAR HILLS AND PLATEAU REGION
WESTERN GHATS REGION
EASTERN GHATS REGION
COASTAL REGION
Pondicherry
CEYLON
ANDAMAN ISLANDS
REFERENCES.
DECREASE
More than 1·0 per cent but not more than 1·5 per cent.
" " 0·5 " " " " " " 1·0 " "
Not more than 0·5 per cent
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent.
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 " "

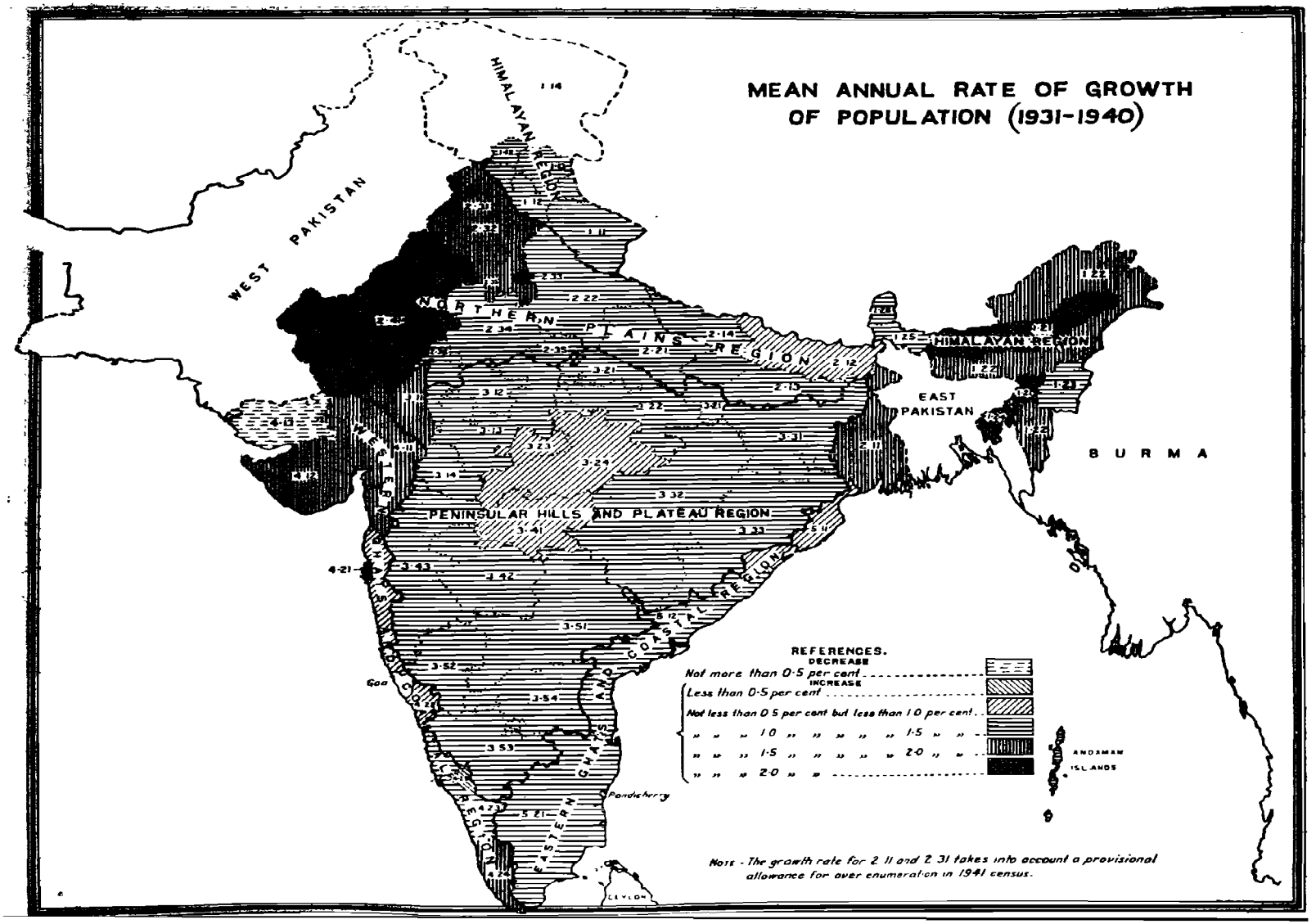
**MAP No. 9**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1891-1920)
WEST PAKISTAN
HIMALAYAN REGION
NORTHERN PLAINS REGION
HIMALAYAN REGION
EAST PAKISTAN
BURMA
PENINSULAR HILLS AND PLATEAU REGION
WESTERN GHATS AND COASTAL REGION
EASTERN GHATS AND COASTAL REGION
Goa
Pondicherry
CEYLON
ANDAMAN ISLANDS
REFERENCES.
DECREASE
More than 1·0 per cent but not more than 1·5 per cent
" " 0·5 " " " " " " 1·0 " "
Not more than 0·5 per cent
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 " "
Figures are not available

**MAP No. 10**


MEAN ANNUAL RATE OF GROWTH OF POPULATION (1921-1930)
WEST PAKISTAN
HIMALAYAN REGION
NORTHERN PLAINS REGION
HIMALAYAN REGION
EAST PAKISTAN
BURMA
WESTERN GHATS AND COASTAL REGION
PENINSULAR HILLS AND PLATEAU REGION
EASTERN GHATS AND COASTAL REGION
Goa
Pondicherry
CEYLON
ANDAMAN ISLANDS
REFERENCES.
DECREASE
Not more than 0·5 per cent
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 " "

**MAP No. 11**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1931-1940)
HIMALAYAN REGION
WEST PAKISTAN
NORTHERN PLAINS REGION
HIMALAYAN REGION
EAST PAKISTAN
BURMA
PENINSULAR HILLS AND PLATEAU REGION
WESTERN GHATS AND COASTAL REGION
SOUTH EASTERN REGION
Goa
Pondicherry
CEYLON
ANDAMAN ISLANDS
REFERENCES.
DECREASE
Not more than 0·5 per cent
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent.
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 " "
Note - The growth rate for 2·11 and 2·31 takes into account a provisional allowance for over enumeration in 1941 census.

CHAPTER IV

# Before and Since–1921

## A—*Growth of population : checked and unchecked*

THE PICTURE given in the last three chapters of the number and distribution of people on the land and the pattern of life and livelihood relates to 1951. But the picture does not remain the same, even for a day; it changes imperceptibly but nonetheless surely; and the rate of change has been quickening in recent decades. It is necessary that we should have a clear appreciation of how the picture changed in the past; and also in so far as it is possible to know this, why it changed as it did and not otherwise. If we succeed in gaining a correct and complete appreciation of the way in which the wheels of life have been turning in the past, we shall be able to peer into the future and form a correct opinion about the changes which are likely to come about in the future. The future, of course, is not totally determined by the past. Neither is it (as some are apt to suppose) simply clay in our hands to be moulded as we may fancy. It lies within our power so to influence the course of events as to avert danger and promote welfare and happiness; but there are very definite limits to this power. Those who have the responsibility of governance have to distinguish between right and wrong action with reference mainly to these limits. The purpose of this chapter is to bring the past under review in such a way that the course of right action for the future may become at least a little clearer than it is.

2. As the census is taken at ten-yearly intervals, our unit of time for the measurement of changes must be the decade. The minimum requirements for a review of changes must, therefore, be at least two decades before 1951, in order that the trend of change disclosed by two successive decades might give us an insight into the decade immediately following the 1951 Census.

This is, however, not long enough. Though we live in a fast-moving world, we need to look back longer in order to gain a clear perspective.

It is proposed in this chapter to review the changes which took place over six decades—three before and three after the 1921 Census. On the basis of this review, it is suggested that an attempt should be made to visualise the prospect for 1981.

As it happens, the choice of 1921 as the central year of the review period is not merely convenient—it is a necessity. There is a profound difference between the trend of growth after that year and the trend of growth in preceding decades. Dry figures of the census which record the growth of the people acquire meaning and significance only when the sharp contrast between the decades before and since 1921 is clearly understood and constantly borne in mind.

3. The Indian Census of 1891 was taken over a territory which comprised India of today as well as Pakistan and Burma. The internal territorial divisions were very different. But the figures of old censuses have been readjusted to the present limits and territorial divisions and the readjusted figures have been published. TABLE 1 shows the growth in numbers of the people inhabiting the territory where the 1951 Census was taken.

TABLE 1

| *Census year* | *Number* (IN LAKHS) | *Increase(+) decrease(−) during preceding decade* (IN LAKHS) |
|---|---|---|
| 1891 . . | 2,359 | .. |
| 1901 . . | 2,355 | − 4 |
| 1911 . . | 2,490 | +135 |
| **1921** . | **2,481** | − **9** |
| 1931 . . | 2,755 | +274 |
| 1941 . . | 3,128* | +373 |
| 1951 . . | 3,569 | +441 |

4. During the thirty years between 1891 and 1920 the number of the people increased by 122 lakhs—which is just a little more than the number of people living in the Punjab Plain division or the South Bihar Plain division and just a little less than the number of people living in the Northern division of Bombay Deccan.

During the ten years between 1921 and 1930 the number increased by 274 lakhs—that is to say, by much more than twice the increase which had occurred during the preceding 30 years. The addition to the population which took place during one decade was distinctly larger than the present population of West Bengal and not far short of the total number of people living in two major states, Rajasthan and the Punjab combined.

During the ten years between 1931 and 1940 the number increased by 373 lakhs—that is to say, by more than three times the increase which had occurred

*According to the 1941 census count, this figure should be 3,148. It is necessary, however, to deduct 20 lakhs, as the estimated allowance for inflation of returns in West Bengal and Punjab. For a fuller account of this deduction and the reasons for the view that the recorded figures of successive censuses are sufficiently accurate and comparable, reference may be made to paras 10-15 of APPENDIX II.

during the thirty years 1891-1920. This time, the size of the additional population exceeded the present population of Bombay state. It also exceeded the combined present population of all the North-West India states.

During the ten years between 1941 and 1950 the increase has been much larger than during the previous decades. The addition to the population—441 lakhs—is larger than the combined present population of the West India states. It is larger than the present population of Bihar and not far short of the combined present population of West Bengal, Orissa and Assam.

*During the thirty years following 1921, our numbers have increased from roughly 25 crores to 36 crores. The addition—of about 11 crores—is almost exactly the number of people at present living in North India and Central India combined; or in South India and West India combined.*

5. When we pause and think of these figures and their implications, the first reaction is one of wonder whether they could really be true, or whether something has gone wrong with the figures somewhere. It seems so difficult to believe that 1921-50 could have been so very different, after all, from 1891-1920. Though the number of people who are old enough to remember all about 1891 from personal experience must be quite small now, yet almost every person who is over forty can recall enough facts from personal experience which might induce him to distrust these figures.

Reasoning based on common sense and personal experience would run on some such lines as follows : "We know roughly how many children are born these days to womenfolk in our own families and friends'. We also know the numbers born to the womenfolk of an older generation—our mothers and grandmothers. It is true enough that our womenfolk do not practise contraception as they do in western countries and so may have more children. We need not quarrel with the figures given in an earlier chapter; they are probably correct. But then, this is nothing new. Our mothers and grandmothers did not practise contraception either. They bore as far as we can judge, just as many children—if not, indeed, more. So, it cannot be true that our numbers began to increase all of a sudden because of any sudden change in the child-bearing habits of our womenfolk. Well then, if we rule out a large increase of births, then we should assume a sensational decrease in the deaths to account for the contrast between the two thirty-year periods. But has there been any such decrease ? We have very grave doubts. There has, perhaps, been some decrease. It is true that hospitals and dispensaries have been springing up and doctors have increased in numbers. There are also the public health staffs. Something is being done about vaccination and

inoculation and the rest of it. New medicines are advertised and sold in shops. Granted all this, how much do they all amount to ? And what difference has it made to the villages of which we have personal knowledge ? Is it true that many more people are living longer ? Where is the evidence ? We can recall so many people of an older generation who lived long. In some ways, perhaps, they were a much hardier type than the present generation. *No, there must be something wrong about these figures.*"

The reasoning based on common sense and general experience is plausible; to some extent it is also correct. Yet the conclusion is wrong. There is no reasonable doubt that *the startling differences in the numbers added to the population during the two thirty-year periods are real.* The explanation would be simple if we draw a distinction between what may be called 'normal deaths' and 'abnormal deaths'. It is correct that child-bearing habits have not materially changed. It is also correct that the incidence of normal deaths has slightly diminished, but not sensationally. The diminution in the incidence of normal deaths is wholly insufficient to account for the contrast between the two periods. *The main explanation is that 'abnormal deaths' used to claim a great many victims in the earlier period. They did not occur or were prevented from occurring during the later period.*

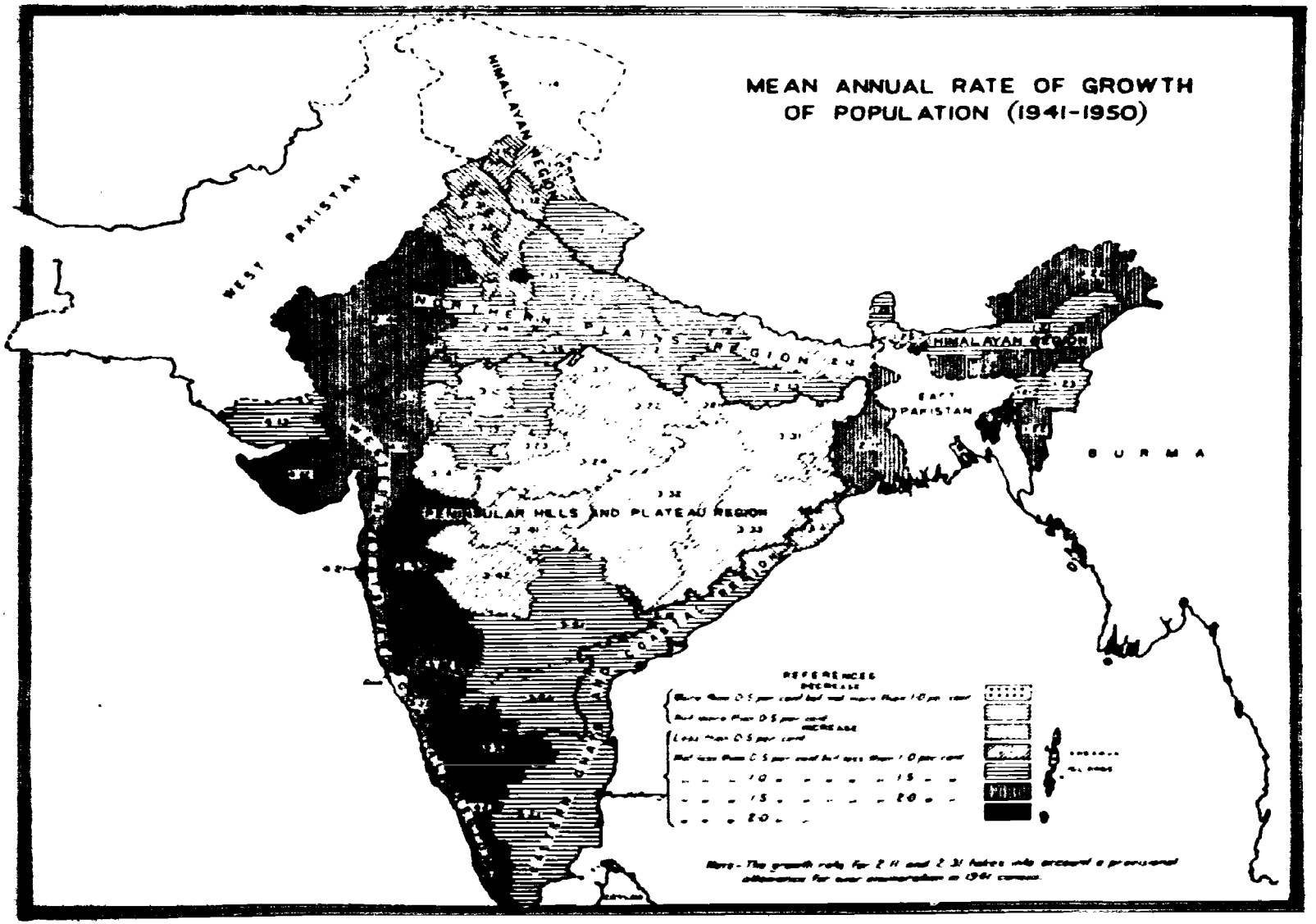
6. Before we set out the evidence bearing on this explanation, let us follow the figures further and examine whether the contrast we are discussing is observable in all parts of India or is localised.

TABLE 2

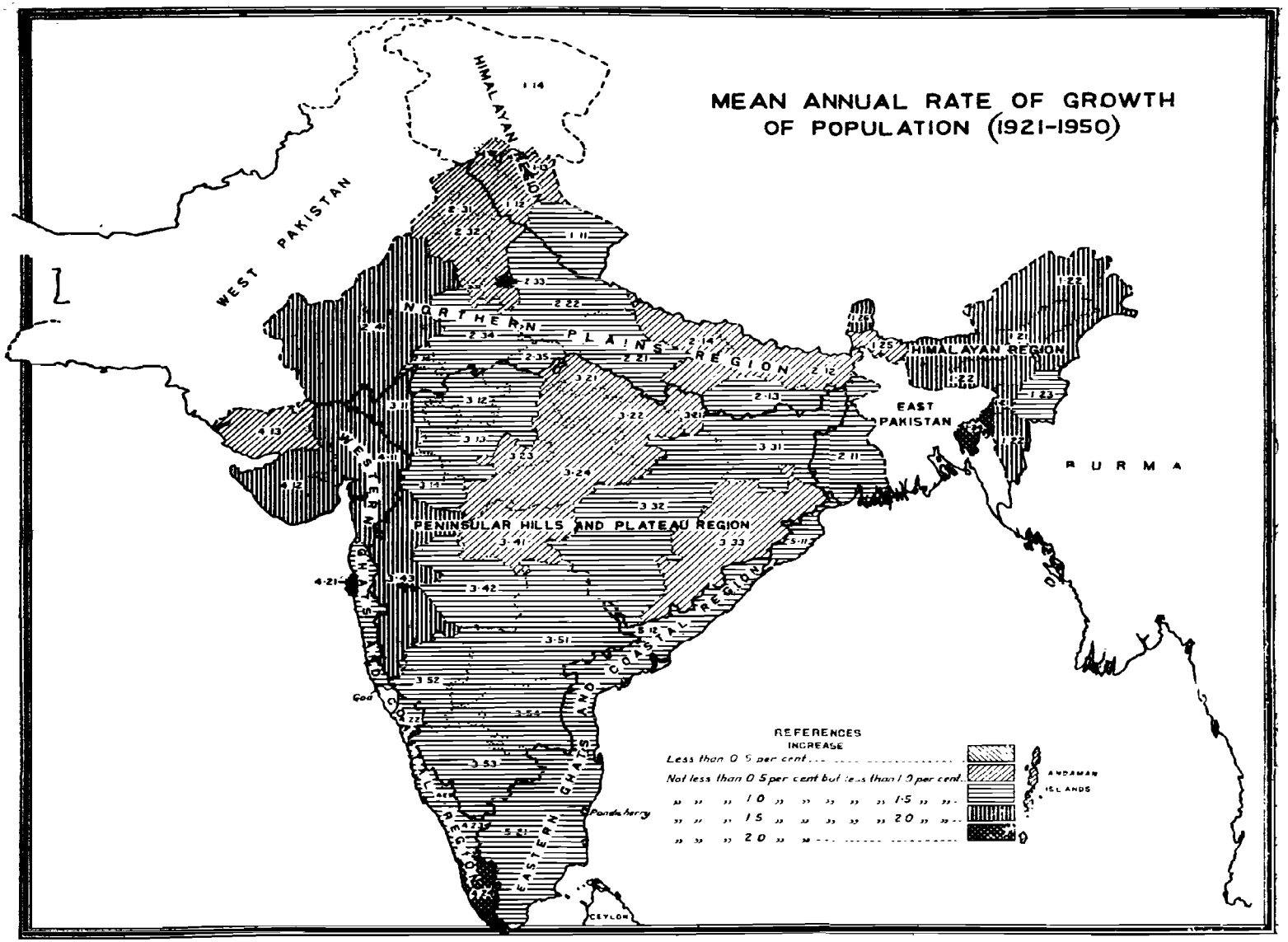
(IN LAKHS)

| Zone | Number | | | Increase (+) Decrease (−) | |
|---|---|---|---|---|---|
| | *1891* | *1921* | *1951* | *1891-1920* | *1921-50* |
| North India | 479 | 467 | 632 | −12 | +165 |
| East India | 563 | 628 | 901 | +65 | +273 |
| South India | 426 | 517 | 756 | +91 | +239 |
| West India | 263 | 254 | 407 | − 9 | +153 |
| Central India | 359 | 373 | 523 | +14 | +150 |
| North-West India | 269 | 242 | 350 | −27 | +108 |
| INDIA | 2,359 | 2,481 | 3,569 | +122 | +1,088 |

**MAP No. 12**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1941-1950)
WEST PAKISTAN
HIMALAYAN REGION
EAST PAKISTAN
BURMA
REFERENCES

**MAP No. 13**


MEAN ANNUAL RATE OF GROWTH
OF POPULATION (1921-1950)
WEST PAKISTAN
HIMALAYAN REGION
NORTHERN PLAINS REGION
HIMALAYAN REGION
EAST PAKISTAN
BURMA
WESTERN GHATS
PENINSULAR HILLS AND PLATEAU REGION
COASTAL REGION
EASTERN GHATS AND COASTAL REGION
CEYLON
ANDAMAN ISLANDS
REFERENCES
INCREASE
Less than 0·5 per cent
Not less than 0·5 per cent but less than 1·0 per cent.
" " " 1·0 " " " " " 1·5 " "
" " " 1·5 " " " " " 2·0 " "
" " " 2·0 "

**MAP No. 14**

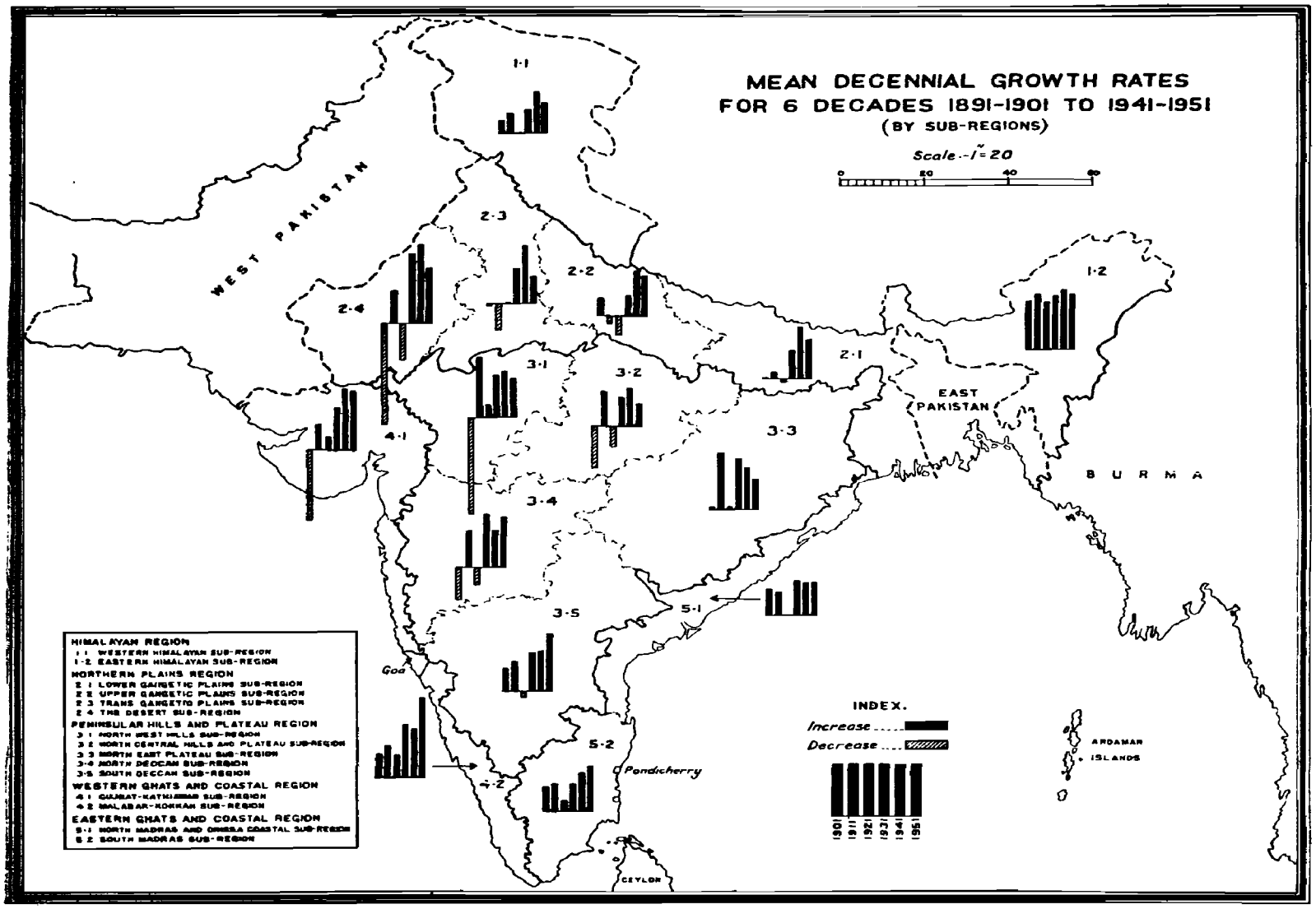
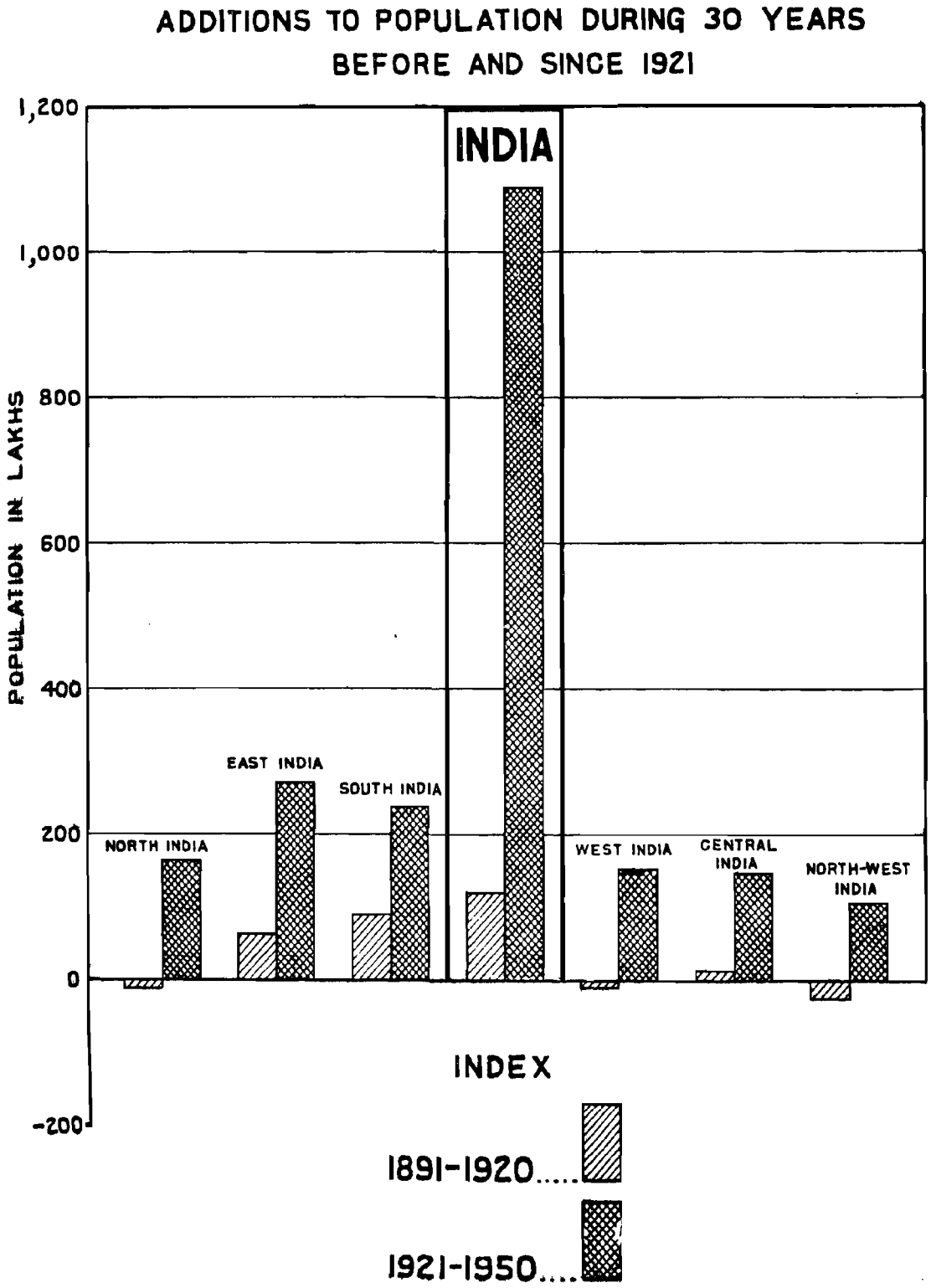

MEAN DECENNIAL GROWTH RATES
FOR 6 DECADES 1891-1901 TO 1941-1951
(BY SUB-REGIONS)
Scale :- 1" = 20
0
20
40
60
WEST PAKISTAN
EAST PAKISTAN
BURMA
1·1
1·2
2·1
2·2
2·3
2·4
3·1
3·2
3·3
3·4
3·5
4·1
4·2
5·1
5·2
Goa
Pondicherry
CEYLON
ANDAMAR & NICOBAR ISLANDS
INDEX.
Increase
Decrease
1901
1911
1921
1931
1941
1951
HIMALAYAN REGION
1·1 WESTERN HIMALAYAN SUB-REGION
1·2 EASTERN HIMALAYAN SUB-REGION
NORTHERN PLAINS REGION
2·1 LOWER GANGETIC PLAINS SUB-REGION
2·2 UPPER GANGETIC PLAINS SUB-REGION
2·3 TRANS GANGETIC PLAINS SUB-REGION
2·4 THE DESERT SUB-REGION
PENINSULAR HILLS AND PLATEAU REGION
3·1 NORTH WEST HILLS SUB-REGION
3·2 NORTH CENTRAL HILLS AND PLATEAU SUB-REGION
3·3 NORTH EAST PLATEAU SUB-REGION
3·4 NORTH DECCAN SUB-REGION
3·5 SOUTH DECCAN SUB-REGION
WESTERN GHATS AND COASTAL REGION
4·1 GUJRAT-KATHIAWAR SUB-REGION
4·2 MALABAR-KONKAN SUB-REGION
EASTERN GHATS AND COASTAL REGION
5·1 NORTH MADRAS AND ORISSA COASTAL SUB-REGION
5·2 SOUTH MADRAS SUB-REGION

FIG. 19




MAP No. 12

The contrast, it is clear, is present in all the six zones. In three zones, there was no increase at all, but a reduction of population in the earlier period. In one zone, there was a very small increase—which was less than one-tenth of the increase in the later period. There was a sizeable increase of population during 1891-1920 only in two zones—South India and East India; even here the combined increase was less than one-third of the increase which occurred during 1921-50.

7. Figures of a similar nature are furnished below for the different sub-regions of India :

TABLE 3

(IN LAKHS)

| *Sub-region* | *Number* | | | *Increase (+) Decrease (—)* | |
|---|---|---|---|---|---|
| | 1891 | 1921 | 1951 | 1891-1920 | 1921-50 |
| 1.1 Western Himalayan . | 32 | 35 | 46 | + 3 | + 11 |
| 1.2 Eastern Himalayan . | 49 | 77 | 124 | +28 | + 47 |
| 2.1 Lower Gangetic Plains | 488 | 498 | 701 | +10 | +203 |
| 2.2 Upper Gangetic Plains | 295 | 286 | 389 | — 9 | +103 |
| 2.3 Trans-Gangetic Plains . | 201 | 183 | 259 | —18 | + 76 |
| 2.4 The Desert . . . | 35 | 26 | 46 | — 9 | + 20 |
| 3.1 North-West Hills . | 74 | 72 | 104 | — 2 | + 32 |
| 3.2 North Central Hills and Plateau . . | 115 | 107 | 138 | — 8 | + 31 |
| 3.3 North-East Plateau . | 171 | 204 | 290 | +33 | + 86 |
| 3.4 North Deccan . . | 165 | 159 | 239 | — 6 | + 80 |
| 3.5 South Deccan . . | 186 | 213 | 315 | +27 | +102 |
| 4.1 Gujrat-Kathiawar . | 111 | 101 | 161 | —10 | + 60 |
| 4.2 Malabar-Konkan . | 114 | 142 | 238 | +28 | + 96 |
| 5.1 North Madras and Orissa Coastal . . . | 136 | 157 | 211 | +21 | + 54 |
| 5.2 South Madras . . | 187 | 223 | 307 | +36 | + 84 |

Seven of these fifteen sub-regions recorded no increase during 1891-1920 but suffered a reduction. To this group we should add the Lower Gangetic Plains where the increase was so small in relation to the population that the number

may be regarded as having been practically stationary. There are thus eight sub-regions where we counted in 1951 nearly 20 crores of people out of 36 crores. In 1921, there were only 14 crores of people while in 1819 there had been 14½ crores of people. The contrast between a decline of half-a-crore in the first thirty years and an increase of 6 crores in the next thirty years is unmistakable.

Turning to the other seven sub-regions where population had grown during the first thirty years, the acceleration of this growth during the second thirty-years is unmistakable in every case without any exception.

8. The population of India decreased by 0·2 per cent in 1891-1900, increased by 5·6 per cent* in 1901-10 and again decreased by 0·4 per cent in 1911-20. On the other hand during the three decades after the 1921 Census, population increased by 10·4 per cent in 1921-30, 12·7 per cent in 1931-40 and 13·2 per cent in 1941-50. If the average rates for the two thirty-year periods are considered, population grew between 1891 and 1920 at the rate of 1·7 per cent per decade, while between 1921 and 1950 it grew at the rate of 12·0 per cent per decade. Every zone exhibits this contrast as shown in TABLE 4.

TABLE 4

| *Zone* | *Mean Decennial Growth Rate* | |
|---|---|---|
| | 1891-1920 | 1921-50 |
| North India . | —0·8 | +10·0 |
| East India . | +3·7 | +11·9 |
| South India . | +6·5 | +12·5 |
| West India . | —1·4 | +15·4 |
| Central India . | +1·2 | +11·2 |
| North-West India | —3·6 | +12·2 |
| INDIA . | +1·7 | +12·0 |

9. If we analyse the figures of increase and decrease during 1891-1900 division by division and group the divisions according to the rates of increase or decrease recorded, the results are as follows.

Increases were recorded in divisions representing two-thirds of the country (on a population basis). The increase ranged between 5 per cent and 10 per cent over two-fifths of the country. Higher rates of increase were recorded in very small areas, while lower rates of increase were far more common.

The decreases occurred in the parts of the country inhabited by a third of the people. The rates of decrease were very heavy, exceeding 25 per cent in Rajasthan Dry Area, Rajasthan Hills, Rajasthan Plateau, Madhya Bharat

*The rate of increase and decrease are expressed as percentages of the *mean* population of the period during which the increase or decrease occurred.

Plateau, Madhya Bharat Hills, Bhopal and Bombay-Gujrat. Decreases ranging between 15 and 20 per cent occurred in Saurashtra and North Hyderabad; between 10 and 15 per cent in Ajmer, Kutch, Vindhya Pradesh, North-West Madhya Pradesh and East Madhya Pradesh; between 5 and 10 per cent in East Rajasthan Plain, Uttar Pradesh Hills & Plateau and the Northern division of Bombay Deccan; and less than 5 per cent in South-West Madhya Pradesh, East Uttar Pradesh Plain, South Bihar and Himalayan Punjab.

10. The principal reason for these decreases during the decade 1891-1900 must be found in the very severe famines which are known to have raged in the greater parts of these divisions during the decade. The following reference to these calamities is extracted from the 1901 All-India Census Report :

> "In 1891-92 there was scarcity over a considerable area in Madras and Bombay and in parts of Bihar. In 1895 a weak monsoon led to extensive crop-failure in the southern districts of the United Provinces, and a sudden cessation of the rains of 1896 resulted in famine in the United Provinces, the Central Provinces and Berar and parts of Madras, Bombay, Bengal, the Punjab, Upper Burma, Rajputana, Central India and Hyderabad. Altogether an area of about 300,000 square miles with a population of nearly 70 millions was affected and on the average, two million persons were relieved daily during the twelve months from October 1896 to September 1897; the number rose to more than 4 million at the time of greatest distress."
>
> "In 1899 the monsoon again failed, and the results were even more disastrous, for though the population affected was slightly less than in 1896-97, famine conditions prevailed over an area half as great again and with less easy means of communications, the drought was much more severe, the people had not yet recovered from the previous visitation, the mortality amongst cattle for want of fodder and water was far heavier, and the tracts which suffered mostly for the greater part in Native States, where the relief organisation was necessarily less perfect than in British territory. In the height of this famine there were for weeks together over six million persons in receipt of relief, and the value of the agricultural production of the year was estimated to have been 60 millions sterling below the average: there was also a loss of some millions of cattle. It is impossible to say with any pretence to accuracy what was the actual mortality caused by these calamities. The Commission of 1901 thought that about a million deaths were attributable to the famine of 1899-1900 in British territory, and it would probably be safe to assume that another three millions must have occurred in the Native States, which contained more than three-fifths of the population afflicted and where the relief operations were generally far less successful. No estimate has been made of the excess mortality in 1896-97 but it cannot have been much less than a million. The total mortality due to the two famines may therefore be taken roughly at five millions. The diminished vitality of the people resulted also in a heavy fall in the birth rate, but this was to some extent counter-balanced by an unusually high rate of reproduction when the people had recovered their normal conditions."

Vivid accounts of the impact of these famine conditions in many parts o

India (notably Bombay, Berar and the Central Provinces) are found in other extracts from census reports which are printed among the papers in APPENDIX IV.

11. Another cause of heavy mortality during the decade was plague. "Excluding a small tract in the Himalayas where it has long been endemic, bubonic plague made its first appearance in India in modern times in Bombay City in September 1896 and after spreading over the Western Presidency, notwithstanding the measures taken to prevent its dissemination, gradually extended its ravages to other parts of India. By the date of the census the recorded mortality was nearly half a million, to which Bombay contributed seven-tenths and Bengal two-thirds of the remainder; Mysore with 33,731 reported deaths had suffered heavily in proportion to its population and so too had Baroda and Hyderabad. The extent to which the actual number of deaths exceeded that reported is uncertain, but it is known that the difference was very considerable and it may be assumed that the true mortality from plague was not less than three-quarters of a million and may possibly have been a million."

This brief account is supported by several references in local census reports describing the ravages of plague in different parts of the country and assessing their effect in arresting the growth of numbers.

Some parts of the country, *e.g.*, Bihar, were visited by both famine and plague at the same time. The figures disclosed—even after full allowance for errors and uncertainties—an unmistakable stagnation of the rate of growth. The reports contain a detailed discussion and some difference of opinion as to which was the more effective check. One report cites a series of comparative figures tending to show that plague was the real killer and not famine; it seemed that the decline of population was closely correlated to the known severity of the incidence of the plague, while there was not only no decline, but some modest increase in areas where famine was known to have been severe. According to a different view it is "extremely probable that the reduction in the rate of increase of the population is very largely due to a decline in the birth rate induced by the general rise in the price of staple foodgrains....In South Bihar, common rice is dearer by 26 per cent, maize by 32 per cent and wheat by 29 per cent, while during the same period the wages of agricultural labourers have fallen by 3 per cent. Conditions such as these can hardly fail to affect the reproductive energy of the large class of unskilled labourers who own no land and have not participated in the profits arising from the enhanced prices of agricultural produce. Nor are they confined to South Bihar. They extend in varying degrees to all parts of Bengal and although their influence on the birth rate may not always be traceable, we may be sure that it is there."

12. While famine and plague raged over very extensive areas there are also references to the localised deadliness of epidemics of malaria, *kala-azar* and other fevers. Thus, in the United Provinces, excessive and badly distributed rainfall in the early years of the decade "led to a severe outbreak of malarial fever which in 1894, raised the death rate to an exceptional height and sapped the vitality of the people to such an extent that the birth rate in 1895 was unusually low". In Western Bengal, the natural growth was normal in areas which were "recovering from a cycle of malaria" but it was only 1·4 per cent in Hooghly "where fever is rife and the population would have been stationary but for the influence of the mills and factories of Serampur". In Assam, "*kala-azar* entered Kamrup and reduced the population of the southern part of the district by nearly 12 per cent. Having spent its force there, it passed on in 1892 to Nowgong where its tract is marked by deserted villages, un-tilled fields, a land revenue reduced by 23 per cent, and a disheartened population which after 19 years of steady increase has now receded to the figure at which it stood nearly 30 years ago".

13. During the next decade (1901-10) the seasonal conditions were much more favourable. The local census reports refer frequently to 'agricultural conditions' being 'normal' or 'prosperous'. Droughts appear to have visited their usual haunts in the brown and yellow belts—followed by scarcity, sometimes even by famine. There is also an isolated reference to crop failure in the Coastal division of Orissa. But the days when people died in large numbers because of local crop failures, seemed to have been ended. To foresee the approach of scarcities and famines, to take measures to prevent or mitigate their actual incidence, and to organise and administer relief so as to save life with certainty and yet do it economically—all these tasks had been accepted, learnt and reduced to routine administrative operations. The reports of this decade contain no suggestion of mortality or other ill-effects arising out of famine. But there were other checks on the growth of population. The reports show clearly that plague was continuing to take even heavier toll than in the previous decade. "The mortality from it rose from about a quarter of a million in 1901 to 1·3 millions in 1907. It fell below a quarter of a million in each of the next two years, but in 1910 it exceeded half-a-million. The total number of deaths from plague during the decade was nearly "6·5 millions, of which over one third occurred in the Punjab and two fifths in the United Provinces and Bombay taken together. The disease fortunately has failed to establish itself in Bengal, Assam and on the East Coast and in the extreme south of the peninsula. This, moreover, is only the recorded mortality. As is well known, when epidemics are raging the reporting agency breaks down and a large

number of deaths escape registration. The omissions are most numerous in the Native States, where registration is usually far less accurate than in British territory". Plague was not the only killer during the decade. "Epidemics of malarial fever decimated the irrigated tracts of the Eastern and Central Punjab and the Ganges-Jumna Doab in the United Provinces, where, in 1908 alone, the reported mortality from fevers was nearly two millions". The reference in these cases is not to the areas where the disease is endemic; but to outbreaks of the disease in epidemic form. A report from the United Provinces explains that the "malaria epidemic appears to have made most headway in those districts where the disease is not as a rule specially prevalent and least in those in which it is in a high degree endemic."

14. The differences in conditions, thus described, between the two decades is reflected in the pattern of growth. Whereas in the earlier decade increases were recorded in two-thirds of the country, they occurred during this decade in about three-fourths of the country. Areas in which the increase exceeded 10 per cent contained only 4·3 per cent of the population in the earlier decade,they contained 26·4 per cent of the population in the later decade. The area in which decreases occurred, was limited to three divisions of Uttar Pradesh, the Punjab, the Patiala and East Punjab States Union and the Southern division of Bombay Deccan. In the country as a whole, population grew from 2,355 lakhs to 2,490 lakhs.

15. The next decade (1911-20) was extraordinary in many ways. The opening year was unhealthy—a sharp increase in attacks and deaths from plague, cholera and malaria occurred in widely different parts of the country. Then for five years, there were good seasons and good crops and public health was much better. The first world war began and ended. The last three years of the decade turned out to be deadly. Economic disorganisation—the aftermath of war—coincided with two successive bad seasons and extensive crop failures. Plague and cholera resumed their sway. Assam reported a recrudescence of '*kala-azar*'. In Bengal "malaria was specially severe throughout the period, which was characterised by a low birth rate and a mortality which in several districts steadily exceeded the births". But all these misfortunes paled into insignificance when a world-wide epidemic of influenza swept the country from one end to the other in two waves, one closely following the other. A full account of this terrible visitation will be found among the papers printed in APPENDIX IV. The account includes a 'conservative estimate' of the mortality at "between 12 and 13 millions for India, a large part of which occurred in the space of three or four months".

In general, the coastal areas escaped with a low mortality. So also East India. Uttar Pradesh, Punjab, Bombay and Madhya Pradesh suffered heavily. The rural areas were most severely infected, "the reason probably being that while villages have no advantage over towns in the matter of overcrowding, sanitation and ventilation, the urban areas have the benefit of qualified medical aid and organised effort".

The pattern of growth during the decade 1911-1920 reflected the conditions thus described. There was an overall decrease from 2,490 lakhs in 1911 to 2,481 lakhs in 1921. In the two earlier decades the divisions in which decreases had occurred were one-third and one-fourth of India (on a population basis). In this decade, decreases occurred in divisions which contained more than one-half of the total population of India. Even where increases occurred they were small; the divisions where increases exceeded 5 per cent represented only about one-tenth of India. The natural checks which restrain the growth of population were seen at their worst during this decade.

16. We now reach the turning point. We hear no longer about abnormal deaths—until we come to the Bengal Famine of 1943.

Already, as mentioned before, famine had lost its terror. In 1921, the Census Commissioner wrote : "Famine relief organisation is now so highly perfected in India that scarcity is not necessarily accompanied by high mortality". His successor in 1931 could say : "There has, however, been no serious famine in the decade under review.....Improvements in communications, nowadays prevent anything like the famine mortality of a century ago..... Famines were local and not very serious, though one unfortunate district of Madras had famine declared in it officially for three seasons."

It was not merely the fruits of victory over famine that the country was enjoying. A new note of confidence in the fight against epidemic diseases was beginning to be heard. According to the 1931 Census Report, "Every year sees improved methods of fighting such epidemics as cholera, plague, or *kala-azar*. Indeed, a completely effective treatment for the latter pest has been perfected since the last census, and has made it possible to stamp out the disease."

Detailed accounts of the course of the seasons and conditions of public health during the last and earlier decades are given in state census reports published separately. They need not be recounted here.

Though the usual cycles of vicissitudes of the seasons continued and the brown and yellow belts of the country continued to suffer from droughts which caused severe scarcities and sometimes famines, there was no extraordinary

calamity (except the Bengal Famine of 1943). By about 1921, the freedom movement acquired a genuinely national character; and the British Government were carrying out reforms which culminated in the transfer of power in 1947. There was a conscious effort to develop 'nation building' services and a spurt of activity occurred in the 'transferred' departments which dealt mainly with public health and education. For a few years before the outbreak of World War II, when Provincial Autonomy arrived and popular ministries took charge of Provincial Governments, further advances were registered. In the result, the organisation of public health establishments has been steadily strengthened and their methods of combating epidemic diseases—especially through control of fairs and festivals—have become increasingly efficient. Mention has been made already of the distinction between outbreaks of malarial fever in the form of epidemics and their perennial prevalence in many parts of the country where the disease is endemic. An attack on the latter problem gathered momentum during the last decade. It seems likely, that in these areas the death rate must have been consistently higher and the birth rate consistently lower than elsewhere. Though the data are not conclusive there are indications to the effect that the lethal effects of endemic malaria were getting progressively reduced during the last thirty years and this progress has been substantially accelerated during the last decade.

17. We may now go back to our question—Are the figures really true?—and our answer that they are. There is no doubt that during the thirty years before the 1921 Census severe checks of one kind or other were in operation which tended to increase deaths abnormally. Such checks also had the effect, in some cases, of diminishing the births abnormally. The natural checks on population growth fall in three groups as below :

(*i*) Famines (including famine diseases)

(*ii*) Epidemic diseases, and

(*iii*) Endemic diseases.

These three groups of natural checks were responsible for keeping the 'mean decennial rate of growth' during the first thirty-year period as low as 1·7 per cent, and actually bringing about a reduction of population in three zones out of six. Even during 1891-1900, when the first of these checks, *viz.*, famines (including famine diseases) were at their height, human intelligence was already devising and perfecting the counter-checks by which the natural checks could be prevented from operating. These counter-checks comprised : *First*, the creation of conditions in which the development of agricultural production would be both possible and profitable and take place of its own accord; *Secondly*,

FIG. 20.

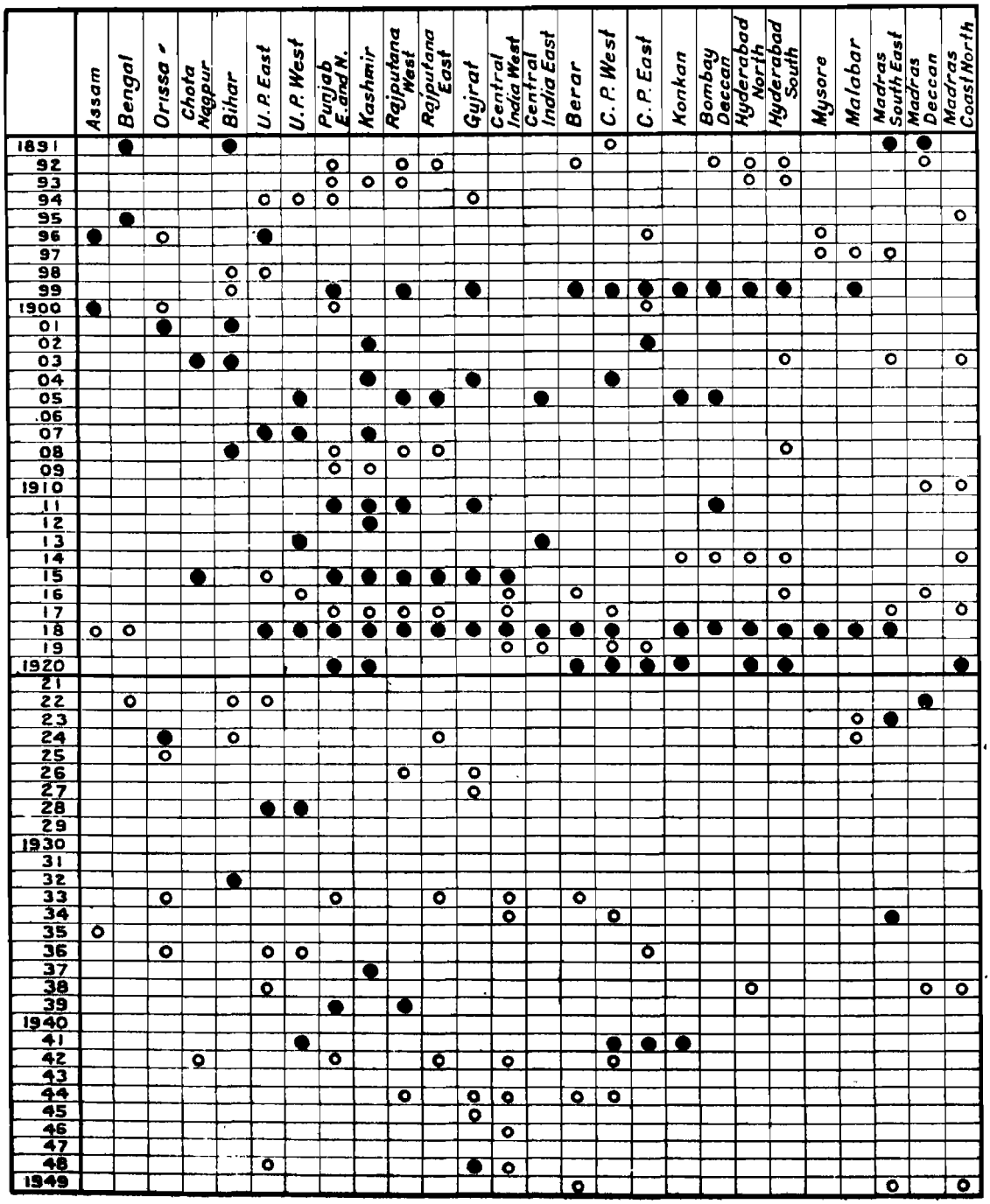
# DROUGHTS AND FLOODS BEFORE AND SINCE 1921

(SOURCE: RAINFALL AND AGRICULTURE BY SHRI L. A. RAMDAS)

INDEX.

DROUGHTS ..... ●

FLOODS ..... ○



the development of transport and communications (so as to open up all areas liable to scarcity and famine and thereby ensure the availability of commercial supplies of food grains); and *Thirdly,* the organisation of efficient administrative arrangements for provision of employment and wages to the landless rural people in those places and at those times when prolonged and severe droughts occurred and they were unemployed and without purchasing power. So much for the counter-checks on one group of natural checks.

The counter-checks devised for dealing with the other natural checks are more obvious. They consisted of hygiene and medicine brought to bear on the problem through departments of public health, and the gradual growth in numbers of the medical profession. There can be no doubt that the counter-checks proved effective and succeeded in eliminating the operation of one of these natural checks and materially diminished the incidence of others.

18. It would, however, be an excessive claim to attribute the whole of this improvement to human intelligence. Nature also seems to have been kindlier. Some statistics compiled by the Meteorological Department, which are shown in the diagram facing this page appear to show that as between the two thirty-year periods under study, the earlier period was worse favoured by nature than the later one. Droughts were clearly more frequent and more widespread in the earlier period. The difference is also reflected in the occurrences of excessive rain which not only cause floods but help to start outbreaks of epidemic diseases.

19. The Bengal Famine of 1943, as is well known, marked a tragic reversal of this trend towards elimination of abnormal deaths. The circumstances in which this reversal took place are recorded in the report of a statutory Commission of Inquiry. Relevant extracts from the report of this Commission will be found in APPENDIX IV.

Notwithstanding the very full account given in this report, there is very little public realisation of the fact that the occurrence of this famine marks a new phase in the effort to combat famine in this country.

A basic assumption underlying the classic methods of prevention and relief of famine has been the presence within the country (which formerly included not only India and Pakistan but Burma also) of an overall surplus of foodgrains. The presence of this surplus was a guarantee that commercial supplies of foodgrains would become available at any place and at any time in the quantities needed. A physical shortage of supplies was not a contingency

to be guarded against. So long as the basic assumption remained valid, the old methods which were designed merely to inject purchasing power proved successful in saving life. But the growth of population (induced in part by the success of these very methods) has brought the country and the people face to face with a new situation in which this assumption is no longer valid. The implications of this change are far reaching. Let us note that fact; we shall revert to it later.

20. We may conclude this section with a comparison of the rates* of population growth experienced in India with those of other countries of the world and other times.

The 'mean decennial growth rate' in India, as already explained, was 10·4 per cent in 1921-30, 12·7 per cent in 1931-40, and 13·2 per cent in 1941-50. The last mentioned rate is the difference between a 'mean decennial birth rate' of 40 per cent and a 'mean decennial death rate' of 27 per cent.

The 'mean decennial growth rate' in the United States of America appears to have been 19·0 (1910), 13·9 (1920), 14·9 (1930), 7·0 (1940) and 13·5 (1950). In the United Kingdom, the rate was 9·6 between 40 and 50 years ago and 4·4 during the last twenty years. Recent figures for France indicate a decline; increases were registered during 1921-30 at the rate of about 6 per cent. The figures for Italy yield rates in the neighbourhood of 6, 7 or 8 per cent for several decades. The rates for Japan appear to be running consistently higher than the rates for India—in the neighbourhood of 14 per cent.

In general, Western European rates of growth are distinctly lower than in India even though their death rates are lower than in India. This is due to the fact that Western European peoples practise contraception and thus succeed in keeping the birth rate at a much lower level than ours; though, if they imposed no such checks, their womenfolk are likely to have at least as many children as our womenfolk do have. In the United States of America the people practise contraception. But their birth rate (though distinctly lower than in India) is higher than in Western European countries. Their death rate is very low. In the result, they are keeping up a rate of growth similar to ours and much higher than in Western European countries.

21. This is the position in recent years. It is necessary, if possible, to ascertain how the present total strength of mankind has grown, in order to determine whether there is such a thing as a 'natural' rate of growth. As might

*While great care has been taken to work out these rates from authoritative sources, their accuracy cannot be guaranteed in all cases. The decimal points are refinements which mean very little; the integers may not be too far out.

be expected, we have very little statistical information of the kind we have been discussing so far. Yet, we are not entirely ignorant on the subject; there are a number of books where the results of expert study of all available data about world population are set out. It is true that much of this study consists of piecing together fragments of ascertained fact with a good deal of guess-work. But the guess-work is not arbitrary; it represents the best judgment of scholars who are well qualified to form an opinion also free from conscious bias. A brief summary of relevant information of this nature is given below.

Round about 1750, the total strength of mankind consisted only of 73 crores of people. Our own number—it will be recalled—is 36 crores today. *Thus two hundred years ago, the whole world contained only twice as many human beings as there are in India alone today.*

Out of these 73 crores only 1½ crores lived in what was then a New World (America and Oceania), 71½ crores of people lived in the Old World—48 crores in Asia, 14 crores in Europe, and 9½ crores in Africa.

Fifty years later (about 1800), the world population had increased to something between 90 and 91 crores. This was a modest rate of growth—only 4·4 per cent per decade. The New World was growing faster—the rate was 12·4 per cent mainly because its growth was being fed by migration from Europe. Asia and Europe grew by 4·5 and 5·7 per cent respectively. It is worth noting that even then, Europe was sending migrants to the New World and yet growing slightly faster than Asia. Africa was not increasing; there was in fact a slight decline in numbers.

Fifty years later (about 1850) the population of the world was nearly 117 crores—the rate of growth was 5·1 per cent per decade. The New World was growing more than three times as fast—15·5 per cent per decade. The tempo of European growth was getting faster—it was now 7·0 per cent against Asia's 4·4 per cent. Africa, too, was beginning to add to its population, though at a very slow rate—1·8 per cent.

After another fifty years (about 1900), the population of the world was 161 crores. The rate of growth shows a definite sign of acceleration; the world average rate was now 6·3 per cent per decade. It is, however, still the New World and Europe moving ahead—the former was growing at the rate of 16·8 per cent per decade and the latter at 8·1 per cent. Asia stayed behind with 4·5 per cent; but Africa had now caught up to that rate.

When the present century opened, the distribution of world population had changed as shown in TABLE 5 on next page.

TABLE 5

| Country | 1750 | | 1900 | |
|---|---|---|---|---|
| | *Number* (IN CRORES) | *Percentage of world population* | *Number* (IN CRORES) | *Percentage of world population* |
| Africa | 9·5 | 13 | 12·0 | 8 |
| Asia | 47·9 | 66 | 93·7 | 58 |
| Europe | 14·0 | 19 | 40·1 | 25 |
| New World | 1·4 | 2 | 15·0 | 9 |
| WORLD TOTAL | **72·8** | **100** | **160·8** | **100** |

The population of Europe and the New World had grown from being about one-fifth of the world population in 1750 to about one-third in 1900. The population of Asia and Africa had also grown in absolute numbers; but since their rates of growth were so much slower than in Europe and the New World, their relative proportion diminished from about four-fifths to two-thirds.

This was the position in or about 1900. During the last fifty years the practice of contraception has grown, and become part of the normal mode of conjugal life among the majority of the people in Western Europe and people of their stock inhabiting the New World. As a result, their birth rates have been falling fast. Their death rates had already begun to fall much earlier during the last century. This was the result partly of the fact that the masses of the people had begun to eat more food and better food than they had ever known before, and partly of the fact that water supply and sanitation, hygiene, and medicine had begun to make progress. So long as the birth rates remained sationary while the death rates fell, the growth rate was well ahead of the rest of the world. Hence the difference in the figures of Asia and Europe already observed. But when the European peoples started contraception and the habit grew, the birth rates fell faster than the death rates—with the result that the European rate of growth has been falling. During the last half-century the mean decennial growth rate of Europe has been 6·0 per cent per decade; while that of Asia is higher, *viz.*, 6·8. Africa has forged ahead with 9·3 while the rate in the New World has dropped from 16·8 to 15·1.

The latest position (round about 1950) seems to be as follows. World population is now 239 crores—well over three times the number of 1750. Europe and the New World have about 88 crores which is well over a third of

the population of the world. Asia and Africa have 151 crores which is well below two-thirds of the population of the world. *If* the trends of the last fifty years continue to operate during the next fifty years, the numbers of the European peoples should become stationary (if not declining) and Asia and Africa should keep growing even faster than at present—the rate of growth in the New World falling to the same level. But, there are good reasons to think (as will appear later in this report) that the '*if*' is a very big one, and the assumption is unlikely to hold good.

22. In the account given above, it has been asserted that the decline during the latest half-century of the rate of growth of Western European peoples and people of the same stock in the New World—which is an observed fact which admits of no doubt—has been caused by the development of the practice of contraception. Until recently, this statement—though widely suspected to be probably true—could not be regarded as firmly established by adequate evidence. During the thirties, a theory was in vogue : that the observed fall in the birth rate was a biological phenomenon—independent of conscious human volition. There was, it was asserted, a law of nature which induces a fall in the birth rate among people who achieved rising standards of living. Even now one still comes across this idea, in some form or other. But it is no longer necessary to invoke an unproved biological law in order to explain something which needs no further explanation, if the practice of contraception can be demonstrated to be both widespread and effective. This demonstration is now available. The Royal Commission on Population in the United Kingdom has collected and analysed a mass of evidence and the findings of that Commission are conclusive. Relevant extracts from the papers of this Commission will be found in APPENDIX VII. The findings of the Commission confirm (what is also indicated by a good many other enquiries conducted in the United States of America and certain Western European countries) that the practice of contraception by sufficiently large numbers of people is the main operative cause of falling births rates. They also indicate that the alleged biological law is unlikely to be true and that an improvement of the nutritional standard or other standards of living is by no means incompatible with the maintenance of a high rate of child-bearing, if the people so desired.

23. One more comment is necessary on the figures showing the rate of growth of population in different parts of the world. It may be agreed that *an increase of population of the order of between 10 and 15 per cent per decade is biologically natural* and has been experienced by many of the advanced countries

of the world and is still experienced by some of them. Whether or not this can continue indefinitely in future is a question of high importance for mankind as a whole. The question is at present involved in acute controversy into which we need not enter at this stage. One thing, however, is certain. It could not have been a normal characteristic of human history for an indefinite period in the past.

Within the last two hundred years mankind has more than trebled its numbers—and this has happened while the rate of growth per decade was very much less than 10 per cent. We can easily see that even the rate which actually prevailed during the last two centuries—trebling in two centuries—must be regarded as abnormal and very much faster than in preceding centuries. On any other supposition, we must be led to the conclusion that, when Emperor Asoka ruled (273-232 B.C.), and was sending his missionaries to various countries of the world, the whole of mankind must have numbered only a few tens of thousands—which is absurd ! We shall not see the picture of human growth in its proper perspective unless we realise that *what we feel to be a 'biologically natural' rate of growth is by no means natural in the sense of having regularly occurred at all places from time immemorial. The exact opposite is nearer the truth.* The rates of growth which we are discussing should, therefore, be regarded as an episode in an altogether exceptional epoch in human history. This epoch is probably now drawing to its close. With this observation, we may leave the world figures alone for a while; and return to India and limit ourselves again to a review of changes which occurred during a much shorter period—*viz*; thirty years before and since 1921.

## B—*Decline of Cultivation per Capita*

THE OBJECT of this section is to analyse the growth of population during the last sixty years in relation to the growth of cultivation during the same period. It is, nowadays, generally agreed that cultivation has been failing to keep pace with population—but the extent of this default has not been assessed quantitatively. So long as the matter remains vague, there is a tendency to refrain from facing or accepting the implications of that fact; and it is not unusual to find people denying the fact altogether, when they find its acceptance leads to unpalatable conclusions.

25. It is not the least difficult among many baffling problems which Governments have to face in recent years, that they are frequently obliged to make decisions of far-reaching import, vitally affecting the economic and social life of the people ; and yet they have to do this on the basis of data which are of uncertain accuracy, incomplete and consequently inconclusive for purposes of resolving differences of opinion objectively. In the result, there is great temptation for people to believe the facts to be what they would like them to be. Contrary to general belief, this situation is not peculiar to India. It is prevalent, to a greater or lesser degree, in every country in the world. In general, the change-over from *laissez faire* to economic and social planning has been too rapid for the statistical systems adequate to the former, being satisfactorily developed and adapted to meet the needs of the latter. These difficulties should be neither underrated nor overrated. They merely mean that we have to grope our way for a time, before we improve the system of statistical intelligence adequately. It is not as if it is altogether impossible to find the right way even in our semi-darkness. For this purpose, we can and should make much better use of the statistics which we possess and which can increasingly procure as we go along facing and solving our problems. In particular, we should do well to refrain from indiscriminate self-condemnation just as much as uncritical laudation. Strange as it may seem, it is true that in some respects we are even better equipped with good statistics than a great many other countries of the world. In other respects, much improvement can be secured merely by a systematic endeavour critically to assess the degree of goodness and badness of our statistics, and effecting careful separation of the grain from the chaff.

26. These preliminary observations of a general nature are necessary in order to introduce the data relating to 'population and land use' which are printed as APPENDIX I.

An introductory note will be found among these papers where a full explanation is given of the sources from which the data were secured, the care taken to scrutinize and sift them, and the extent to which useful and reliable data are in fact available.

Statistics of land and of its cultivation are of as great importance as statistics of the people and their birth, death and growth. Cultivation statistics fall into two parts—those relating to acreages and those relating to yields. Just as our census statistics are of better quality than our statistics of births and deaths, so also our statistics of cultivated acreages are very much better than our statistics of the yield of crops. Not all parts of the country are equally

well-equipped with good acreage statistics. It can, however, be said that over the greater part of India acreage statistics are probably as good as the very best in the world. Among the areas for which acreage statistics of good quality are available, not all possess a continuous series over a sufficiently long period of years. It is, however, possible to select the areas for which comparable statistics of good quality are procurable for the sixty-year period with which we are concerned in this chapter. The figures which are now to be presented relate to areas which were selected solely from this point of view and no other.

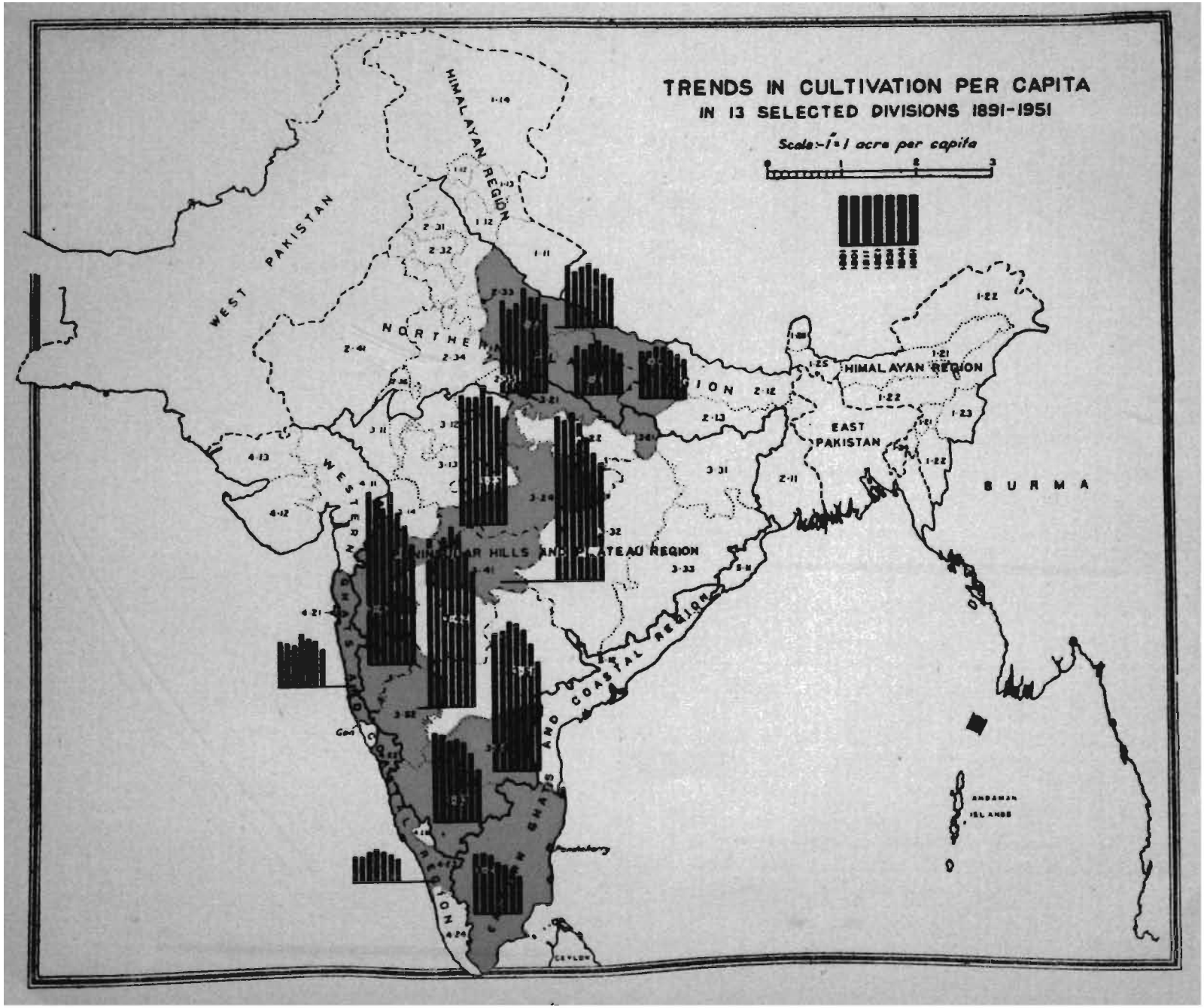
27. *Districts under study*—The figures relate to all the districts of eight natural divisions and some of the districts of five other divisions. Nearly 12 crores of the people of India live in this territory, and their distribution by zones is given below :

| | | |
|---|---|---|
| *North India* | : | East Uttar Pradesh Plain, Central Uttar Pradesh Plain, parts of West Uttar Pradesh Plain and Uttar Pradesh Hills and Plateau (1951 Population—591 lakhs). |
| *South India* | : | Madras Deccan, West Madras, Mysore, and parts of South Madras (1951 Population—300 lakhs). |
| *West India* | : | Bombay Deccan Southern, parts of Bombay Deccan Northern and Bombay-Konkan (1951 Population—177 lakhs). |
| *Central India* | : | North-West Madhya Pradesh and South-West Madhya Pradesh (1951 Population—110 lakhs). |

In 1891, the population of all these districts was 815 lakhs. It increased to 833 lakhs in 1921, the rate of growth during 1891-1920 being 0·7 per cent per decade. It has since increased to 1,179 lakhs in 1951—the rate of growth during 1921-50 being 11·5 per cent per decade. [ For the country as a whole, it will be recalled the rates of growth were 1·7 per cent per decade in the earlier period and 12·0 per cent per decade in the later period. ]

28. *Area of cultivated land per capita*—ALL AREAS—It is generally known that the net area of land on which some crop or other is raised, fluctuates from year to year—increasing when the rainfall is adequate and timely and decreasing when it is inadequate or untimely. In order to obviate or at any rate reduce the errors which would arise by comparing good years with bad ones, the average area of cultivated land during a consecutive period of five years next preceding each census year has been computed.

It is found that the area of cultivated land in the districts which we are studying was 890 lakhs of acres in 1891. It fell to 840 lakhs in 1901 (thus reflecting the effects of the famines we have noted already) and than rose to 915


TRENDS IN CULTIVATION PER CAPITA
IN 13 SELECTED DIVISIONS 1891-1951
Scale:- 1" = 1 acre per capita
HIMALAYAN REGION
WEST PAKISTAN
NORTHERN PLAIN REGION
HIMALAYAN REGION
EAST PAKISTAN
BURMA
PENINSULAR HILLS AND PLATEAU REGION
WESTERN GHATS AND COASTAL REGION
EASTERN GHATS AND COASTAL REGION
ANDAMAN ISLANDS
CEYLON

lakhs of acres in 1911. Further growth of acreage of net area sown is as follows : 927 lakhs in 1921, 943 lakhs in 1931, 958 lakhs in 1941 and 991 lakhs in 1951. If we divide the area of cultivated land by the population at each census—we obtain a figure showing the 'area of cultivated land *per capita*'. If this figure remains the same from census to census, then the increase in the area of cultivated land has kept pace with the increase of population. If it fell from census to census, then it means that the former is not keeping pace with the latter; and (other things being equal) the share of food and other produce of cultivation available to each individual is diminishing. The results for the districts under study are shown in TABLE 6.

TABLE 6

| *Census year* | *Area of cultivated land per capita* (IN CENTS) |
|---|---|
| 1891 | 109 |
| 1901 | 103 |
| 1911 | 109 |
| **1921** | **111** |
| 1931 | 104 |
| 1941 | 94 |
| 1951 | 84 |

It will be seen that during the first thirty-year period, the area of cultivated land *per capita* moved up and down slightly and was a little higher at the end than at the beginning. The second thirty-year period presents a very different picture—the area dropped steadily from census to census. It came down from 111 cents to 84 cents. The magnitude of this drop is very substantial—nearly one-quarter of the 1921 level.

29. *Area of cultivated land per capita*—UTTAR PRADESH—The districts under study have a total population in 1951 of 591 lakhs against 632 lakhs for the zone. The coverage is thus very extensive. We find that the area of cultivated land was 329 lakhs of acres in 1891. It fell to 313 lakhs in 1901 rose to 333 lakhs in 1911 and 337 lakhs in 1921. Then the acreage dropped to 332 lakhs in 1931, rose to 346 lakhs in 1941 and then by a further big spurt rose to 362 lakhs in 1951. Having regard, generally, to the progress of cultivated acreages, this was good going. But in relation to the rate of growth of population between 1921 and 1950, it was not. The area of cultivated land *per capita* changed* as follows : 74 cents in 1891, 69 cents in 1901, 75 cents in 1911, 78 cents in 1921, 72 cents in 1931, 66 cents in 1941 and 61 cents in 1951.

*As explained in Chapter I, we must not be misled by differences in the area of land *per capita* in two different parts of India, into thinking that the larger area is necessarily capable of yielding more food. But when we are considering the same part of the country at different periods of time, the change in the area from decade to decade does signify— in the absence of more intensive cultivation— a corresponding diminution of food and other produce of cultivation.

The trend in the four different divisions of this zone is shown in TABLE 7. It will be observed that the area of cultivated land *per capita* was slightly higher everywhere in 1921 than in 1891. In 1951 it has dropped everywhere. The magnitude of this drop is between one-fifth and one-fourth of the 1921 level in the three plains divisions. It is somewhat smaller—about one-sixth of the 1921 level—in the hills and plateau division.

TABLE 7

| *Natural division* | *Area of cultivated land per capita* (IN CENTS) | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| East Uttar Pradesh Plain | 64 | 67 | 53 |
| Central Uttar Pradesh Plain | 65 | 72 | 55 |
| West Uttar Pradesh Plain | 82 | 84 | 65 |
| Uttar Pradesh Hills and Plateau | 124 | 141 | 118 |

30. *Area of cultivated land per capita*—MADRAS-MYSORE—Here, it was found necessary to omit the whole of North Madras and the greater part of South Madras—even though the areas involved are very large and excellent acreage statistics are available for them; and even though the remaining areas are not quite typical of South India as a whole. But the omission was necessary because *zamindari* villages lie interspersed with *raiyatwari* villages in most of these districts and they did not acquire proper statistics until after 1911. So the districts under study comprise only a population of 300 lakhs, against the zonal total of 756 lakhs. The coverage is relatively small and, as indicated already, not altogether typical of South India. Such as they are, the figures yield the following story. The area of cultivated land was 186 lakhs of acres in 1891. It rose to 192 lakhs in 1901. [It will be recalled that the famines of the last decade (1891-1900) were not severely felt in this part of India. Some of these areas had suffered severely in a still earlier decade and one (lying in the brown belt) is accustomed to droughts and failure of crops recurring at more or less regular intervals).] The rise continued to 204 lakhs in 1911. Then there was a drop to 202 lakhs in 1921, followed by a rise to 209 lakhs in 1931. This again rose to 210 lakhs in 1941 and dropped to 204 lakhs in 1951. It appears that cultivation had become virtually stationary at the 200 lakhs acre level; such changes as occur represent only the fluctuations of the seasons. It is noteworthy that both in 1931 and in 1941, the five-year average should be somewhat higher than in 1951 and 1921. In both of these terminal periods there are well authenticated reports of an abnormal succession of seasons of inadequate rain.

A stationary level of cultivation involves the consequence that the entire increase of population will be translated into a steep decline of the area of

cultivated *per capita*. Hence the following figures for the latter : 102 cents in 1891 and 1901, 101 cents in 1911, 96 cents in 1921, 91 cents in 1931, 82 cents in 1941 and 68 cents in 1951.

The trend in the different divisions is shown in TABLE 8. South Madras and Mysore show a drop even during the first thirty-year period. All the four divisions show very substantial drops during the second thirty-year period. The drop in the later period varies in the three Madras divisions from 25 to 28 per cent of the 1921 level ; while in Mysore, it is as much as 33 per cent of the 1921 level.

TABLE 8

| *Natural division* | *Area of cultivated land per capita* (IN CENTS) | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| South Madras . | 80 | 68 | 49 |
| West Madras . | 36 | 44 | 32 |
| Madras-Deccan . | 184 | 197 | 147 |
| Mysore . . | 120 | 105 | 70 |

31. *Area of cultivated land per capita*—BOMBAY— The districts under study have a total population in 1951 of 177 lakhs against a total of 407 lakhs in West India. A sizeable proportion is covered—but the areas excluded (Bombay-Gujrat, Saurashtra and Kutch) are not similar to the areas covered.

The area of cultivated land was 212 lakhs of acres in 1891. It dropped heavily to 187 lakhs in 1901—for these areas suffered severely from famine. It recovered to 205 lakhs in 1911 and there has been a steady growth since then to 217 lakhs in 1921, 228 lakhs in 1931, 233 lakhs in 1941 and 260 lakhs in 1951. Nevertheless, this growth has fallen far short of the growth of population since 1921. The area of cultivated land *per capita* changed as follows : 201 cents in 1891, 187 cents in 1901, 188 cents in 1911 and 205 cents in 1921. Then, a steady decline to 188 cents in 1931, 171 cents in 1941 and 147 cents in 1951.

The trend in different divisions is shown in TABLE 9. The drop from 1921 to 1951 is quite substantial in all the three divisions—being 30, 26 and 31 per cent respectively of the 1921 level.

TABLE 9

| *Natural division* | *Area of cultivated land per capita* (IN CENTS) | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| Bombay Deccan Northern . | 230 | 226 | 159 |
| Bombay Deccan Southern . | 226 | 243 | 180 |
| Bombay-Konkan | 62 | 72 | 50 |

32. *Area of cultivated land per capita*—MADHYA PRADESH—Only two divisions of Madhya Pradesh are considered in this very extensive zone. The total population in 1951 is 110 lakhs against the zonal total of 523 lakhs.

In 1891, the area of cultivated land was 163 lakhs of acres. It dropped to 149 lakhs in 1901—this reflects the severity of famine. Then the acreage rose to 175 lakhs in 1911, fell slightly to 171 lakhs in 1921, rose again to 174 lakhs in 1931, declined to 169 lakhs in 1941 and has further declined to 165 lakhs in 1951 (which is not much above the 1891 level). This is somewhat exceptional experience. The general rule is for some growth to be kept up—even if it be modest and far short of the rate at which population is growing. It is not altogether clear why an absolute decline should have occurred—seasonal conditions seem unlikely, wholly, to explain it.

The result is that the area of cultivated land *per capita* was more or less stationary during the first thirty-year period—196 cents in 1891, 191 cents in 1901, 198 cents in 1911 as well as 1921; and has then steadily declined to 181 cents in 1931, 164 cents in 1941 and 149 cents in 1951.

The two divisions show slightly different features. In North-West Madhya Pradesh the area rose from 173 cents in 1891 to 185 cents in 1921 and has since fallen to 143 cents in 1951. The drop is 23 per cent of the 1921 level. In South-West Madhya Pradesh, there was a small drop even in the first period from 220 cents in 1891 to 211 cents in 1921 and has since dropped heavily to 156 cents in 1951. The latter drop is 26 per cent of the 1921 level.

33. *Intensification of cultivation* versus *extension*—The facts reviewed so far leave no room for doubt that there has been such a drop in the area of cultivated land *per capita* during the thirty-years since 1921, that (other things being equal) every man, woman and child must expect to get distinctly less food and other agricultural produce from the land at the end of the period than at the beginning. The magnitude of the drop—as we saw—is about one-sixth in only one division of Uttar Pradesh, between one-fifth and one-fourth in three divisions of Uttar Pradesh, and well in excess of one-fourth elsewhere.

We shall follow up the implications of a drop in the productivity of cultivation *per capita*. Here we should clear up, as far as possible, the connection between a drop in the area of cultivated land *per capita* and a drop in the productivity of cultivation—for the two things are not identical. It is obvious that a drop in the area of cultivated land *per capita*, from say 72 cents to 55 cents (such as has occurred in Central Uttar Pradesh Plain), need not necessarily entail a drop in production of crops of the same order (24 per cent) or even any drop in production at all in certain circumstances. In theory it is possible that more intensive cultivation could have been practised so that the yield per acre increased in 1951 by 24 per cent as compared with the yield per acre in 1921. Now, the statistics of yield per acre are much more open to controversy

than the statistics of acreage; and having taken all this trouble to arrive at valid conclusions on the basis of convincing statistics, we should not (in this chapter at any rate) get involved in controversies.

Let us consider the different ways in which an increase in the yield per acre can be brought about. One way is for two or more crops to be raised on the same land in the same year, where only one was raised before. Another is for an irrigated crop to be raised, where the crop was formerly unirrigated. A third method is for more manures and fertilisers to be used on the same area of land. A fourth way is to use better seed, use more appropriate methods, and devote greater care and attention to seed-beds, seedling and the growing plant.

Let us call these four methods more double-cropping, more irrigation, better fertilisation and better culture. It is very difficult to measure the last two items, quantitatively. Even if this may be possible in furture we have got very little of quantitative data for the past, in respect of manuring of land or the efficiency of husbandry. But we do have data about the first two in terms of double-crop acreages and irrigated acreages. In other words, a part of the process of intensification of cultivation (very probably the most important part) is reflected in acreage statistics in just the same way as extension of cultivation. It can therefore be studied in the same way. If we find that the double-crop area and irrigated area increased at a faster rate than the growth of population —so that they could have offset the effect of the area of cultivated land lagging behind the growth of population—then all would be well. If we do not find this, then we would have gone a long way near measuring *the decline in the productivity of cultivation per capita,* as distinguished from the *area of cultivated land per capita.*

34. *Double-crop area per capita*—The gross area sown *less* the area of cultivated land (or net area sown) may be referred to as the 'double-crop area.' In 1891, this was 99 lakhs of acres in all the districts under study. About 10 per cent of the area of cultivated land at that time was double-crop area. By 1921, the double-crop area rose to 109 lakhs of acres which was nearly 12 per cent of the area of cultivated land at the time. In other words, the first thirty-year period saw double-cropping increasing at a slightly faster rate than cultivated land. The growth of population had been slower than both. By 1951, the double-crop area had increased to 125 lakhs, which is nearly 13 per cent of the area of cultivated land. The double-crop area has grown during the second thirty-year period, a shade faster than the area of cultivated land—but nowhere near the rate of growth of population.

When these areas are divided by the population figures, we get the double-crop area *per capita* as follows : 12 cents in 1891, 13 cents in 1921, and 10 cents in 1951. The table below shows that the picture is much the same in all four zones :

TABLE 10

| | *Double-crop area per capita* (IN CENTS) | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| North India districts | 18 | 19 | 15 |
| South India districts | 7 | 8 | 7 |
| West India districts | 4 | 5 | 4 |
| Central India districts | 4 | 5 | 6 |
| ALL DISTRICTS UNDER STUDY | 12 | 13 | 10 |

35. *Irrigated area per capita*—The total area irrigated (reckoning the irrigation of two successive crops in the same year on the same land twice) was 128 lakhs of acres in 1891. This was 12·9 per cent of the gross area sown at the time.

In 1921, the irrigated area had risen by 24 lakhs to 152 lakhs of acres. The increase was faster than the increase in the gross area sown for the percentage was now 14·7 against 12.9 in 1891.

In 1951, the irrigated area had further risen by another 17 lakhs to 169 lakhs of acres. The increase in the irrigated area was a shade faster than the increase in the gross area sown and the percentage now stood at 15·1. When we divide the irrigated area by the population and trace the changes in irrigated area *per capita*, the result is as follows. The areas under study had 16 cents of irrigated land *per capita* in 1891. This rose to 18 cents in 1931. It stands at 14 cents in 1951.

The following table shows the position in different zones :

TABLE 11

| | *Irrigated area per capita* (IN CENTS) | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| North India districts | 19 | 25 | 19 |
| South India districts | 18 | 16 | 14 |
| West India districts | 7 | 8 | 8 |
| Central India districts | 2 | 2 | 2 |
| ALL DISTRICTS UNDER STUDY | 16 | 18 | 14 |

36. We may now sum up the results of our study of the selected districts in which some 12 crores of the people of India live. The following conclusions are established :

*I*—Just as there is a sharp contrast between the growth of population during two thirty-year periods before and after the 1921 Census, there is an equally sharp contrast in the relationship of this growth to the growth of cultivation.

*II*—This relationship may be expressed in three factors—the 'area of cultivated land *per capita*', the 'double-crop area *per capita*' and the 'irrigated area *per capita*'. *The contrast between the two thirty-year periods consists in this : Each of these three factors changed but little during the first thirty-year period. Each was a little higher in 1921 than in 1891. During the second thirty-year period, however, every one of these three factors declined steadily and was substantially lower in 1951 than in 1921.*

*III*—The drop between 1921 and 1950 has been heaviest in respect of the area of cultivated land—it is not far short of one-quarter of the 1921 level. The double-crop area and the irrigated area increased somewhat faster than the area of cultivated land, but very much less fast than the increase of population. The aggregate of all three factors has also dropped heavily between 1921 and 1950; and the drop is not very far short of three-quarters of the 1921 level.

*IV*—With unessential variations, these features are reproduced in every division. The drop is less heavy in the North—nearer one-fifth than one-fourth; and is correspondingly heavier in the south and west. In some parts of the country, the decline had started earlier than 1921—the 1921 level of the *per capita* factors being even lower than in 1891. But *the steady decline of all the factors during three decades since 1921 is an all-pervasive fact.*

37. In making this study we have had to restrict ourselves to one-third of the population mainly because it was necessary to cover two thirty-year periods on a continuous and conparable basis. If we restrict ourselves only to the second thirty-year period 1921-50, it is possible to provide reliable data for a much larger territory.

It is unnecessary to recount all the relevant figures which will be found in APPENDIX I. The net result of the comparison is set out in the table

below, which shows all the three *per capita* figures for both 1921 and 1951, in 19 divisions of 6 states where over 19 crores of people live :

TABLE 12

(IN CENTS)

| State and division | Area of cultivated land per capita | | Double-crop area per capita | | Irrigated area per capita | |
|---|---|---|---|---|---|---|
| | 1921 | 1951 | 1921 | 1951 | 1921 | 1951 |
| **Madras** | | | | | | |
| Madras Deccan . . . | 197 | 147 | 8 | 8 | 16 | 14 |
| West Madras . . . . | 44 | 32 | 11 | 8 | .. | .. |
| North Madras . . . . | 78 | 56 | 17 | 12 | 32 | 27 |
| South Madras . . . . | 65 | 44 | 9 | 7 | 19 | 17 |
| **Mysore** | 105 | 70 | 4 | 5 | 16 | 13 |
| **Madhya Pradesh** | | | | | | |
| North-West Madhya Pradesh | 185 | 143 | 9 | 11 | 2 | 3 |
| East Madhya Pradesh . . | 138 | 113 | 33 | 33 | 12 | 20 |
| South-West Madhya Pradesh . | 211 | 156 | 1 | 2 | 2 | 2 |
| **Uttar Pradesh** | | | | | | |
| Himalayan Uttar Pradesh . | 60 | 72 | 14 | 12 | 10 | 7 |
| East U.P. Plain . . . | 67 | 53 | 21 | 17 | 25 | 19 |
| Central U.P. Plain . . . | 72 | 55 | 19 | 14 | 25 | 16 |
| West U.P. Plain . . . | 84 | 65 | 18 | 15 | 27 | 21 |
| U.P. Hills and Plateau . . | 130 | 112 | 16 | 14 | 13 | 15 |
| **Punjab** | | | | | | |
| Himalayan Punjab . . . | 62 | 49 | 33 | 28 | 22 | 18 |
| Punjab Plain . . . . | 121 | 99 | 25 | 18 | 37 | 40 |
| **Bombay** | | | | | | |
| Bombay Deccan Northern . | 225 | 151 | 7 | 5 | 10 | 10 |
| Bombay Deccan Southern . | 243 | 180 | 2 | 4 | 6 | 7 |
| Bombay-Gujrat . . . | 141 | 114 | 7 | 4 | 5 | 4 |
| Bombay-Konkan . . . | 68 | 48 | 3 | 2 | 2 | 1 |

It will be observed that Himalayan Uttar Pradesh (a small area with a quarter crore of population) presents the only exception to the general rule and shows a small increase in the area of cultivated land *per capita*. In every other

division, this factor as well as the aggregate of all three factors show an unmistakable decline—generally of the order already noted.

38. We have similar data for someother states also—but they are presented separately for the reason that the acreage statistics of the major states among them are of distinctly poorer quality than the states mentioned above. The figures are given below for what they are worth :

TABLE 13

(IN CENTS)

| Zone and state | *Area of cultivated land per capita* | | *Double-crop area per capita* | | *Irrigated area per capita* | |
|---|---|---|---|---|---|---|
| | *1921* | *1951* | *1921* | *1951* | *1921* | *1951* |
| **East India** | | | | | | |
| Bihar | 71 | 57 | 19 | 16 | 14 | 14 |
| West Bengal | 51 | 45 | 6 | 6 | 11 | 8 |
| Orissa | 116 | 83 | 7 | 8 | 15 | 13 |
| Assam | 65 | 58 | 7 | 9 | 5 | 13 |
| **South India** | | | | | | |
| Travancore-Cochin | 49 | 30 | 5 | 2 | 27 | 10 |
| Coorg | 87 | 71 | 1 | .. | 2 | 3 |
| **North-West India** | | | | | | |
| Patiala and East Punjab States Union | 153 | 122 | 26 | 16 | 46 | 54 |
| Delhi | 41 | 12 | 12 | 3 | 10 | 3 |
| Ajmer | 73 | 60 | 13 | 7 | 22 | 15 |

It is obvious that these figures lend support to the inferences already drawn. It should be emphasized that the correctness of the conclusions already reached cannot be doubted, even if it should be possible to show (and this might be possible) that the figures of some of these states are significantly incorrect.

39. We may conclude our study of this profoundly important phenomenon of the 'decline of cultivation *per capita*' since 1921 with reference to some facts which tend to show that this phenomenon is probably not confined to India.

Interesting figures regarding the growth of cultivation in the United States of America have been collected and included among the papers in APPENDIX I. TABLE 14 shows the extent of 'crop land *per capita*' in that country during one hundred years ending 1950.

TABLE 14

| *Year* | *Crop land per capita in U.S.A.* (IN ACRES) |
|---|---|
| 1850 | 3·3 |
| 1860 | 3·5 |
| 1870 | 3.2 |
| 1880 | 3·8 |
| 1890 | 3·9 |
| 1900 | 4·2 |
| 1910 | 3·8 |
| 1920 | 3·8 |
| 1925 | 3·4 |
| 1930 | 3·4 |
| 1935 | 3·3 |
| 1940 | 3·0 |
| 1945 | 2·9 |
| 1950 | 2·7 |

It is worth noting that there is a marked contrast between the trend of the last thirty-years and the trend in preceding decades ; and that the area of crop land *per capita* has dropped in the United States from 3·8 acres in 1920 to 2·7 acres in 1950—or round about one-quarter of the 1920 level.

*Is the decline of cultivation per capita tending to become a feature of the economy of the world as a whole ?* Our figures do not answer this question. But they raise it quite clearly. If further study of world data yields and affirmative answer to this question, we may be sure that we are passing through the last stage of that exceptional phase in the growth of mankind in numbers which was introduced mainly by the opening up of the New World and partly by the creation of a world market.

## C—*Changes in the Livelihood Pattern*

IN THE TWO previous sections of this chapter we have been able to establish, with the help of convincing statistics, two facts of outstanding importance.

*The first is* : Population has been growing during the last three decades both rapidly and uninterruptedly—in this, presenting a sharp contrast with three earlier decades when the growth was slow and interrupted. We also identified the reason for this contrast. It was not due to any abnormal change

in the child-bearing habits of our people. Nor did it arise from sensational decrease in the numbers of what may be called normal deaths though some decrease of this nature has probably taken place. For all practical purposes, however, the contrast is due to substantial elimination during 1921-50 of what may be called abnormal deaths caused by famine and pestilence during the decades preceding 1921.

41. *The second* outstanding fact which has been definitely established relates to the progress of cultivation. There has been some progress of cultivation of a more or less steady nature—throughout this period—if this progress is measured in absolute terms by three indices, *viz.*, the area of cultivated land, the double-crop area and the irrigated area. But when we measure this progress relatively to the growth of population, we are again presented with a contrast of the same nature as that of the growth of population. The three indices of cultivation *per capita* have, severally as well as in the aggregate, declined steadily during the last three decades; while they had remained substantially constant or had slightly risen during the three earlier decades.

These facts, it should be emphasized, are not limited to any particular part of the country. *They are pervasive characteristics of the life of the people in almost all parts of the country.* The exceptions to the rule, if any, are insignificant.

42. It is obvious that vital changes of this character must have had a profound influence on the manner in which the people live and earn their livelihood. These changes might not necessarily be of an adverse nature, if industries and services other than cultivation had grown during the last three decades at such a fast rate as to provide gainful employment not only for all the increased numbers among those formerly engaged on such industries and services (the non-agricultural classes), but the very much larger number who had come into being among the agricultural classes.

Historically, it is well known that this was the trend of change which took place in Western European countries during the last century. It was also the change which is being brought about during the last three decades in Soviet Russia by deliberate policy and planning.

Is that what has been happening in India ? It is, of course, a matter of general knowledge and common experience that many new developments have taken place during the last 30 years which were undreamt of in the earlier period. Many new enterprises have been started in various branches of manufacturing industries. Many products of industry formerly unknown in the villages have now become articles of household use for increasingly large

numbers of villagers. Transport in varied forms, has developed conspicuously. New towns have sprung up and old towns have greatly increased in numbers. Schools have been increasing, literacy growing and the numbers of people engaged in many different professions seem to be everywhere increasing. The signs are also unmistakable of a quickening of the tempo of these changes within the last ten years—during and since World War II. One hears so often of the continued overcrowding of trains and buses; cinemas and other places of recreation are full to overflowing; and there is an ever-increasing demand for admission to schools and colleges, with which existing institutions are unable to cope.

43. All this, however, is far from being a complete answer to the question we have posed. This question is essentially quantitative. It is not sufficient to say that gainful employment in industries and services has increased. It is not even sufficient to say that the rate of growth of industries and services has not fallen short of the rate of growth of the population (assuming that this statement is true). What is required is such a change in the numbers as would enable us to conclude *that the development of industries and services has proceeded fast enough to offset the decline of cultivation per capita during the last three decades.*

It is unfortunately not possible to clinch the answer to this question one way or the other conclusively by statistics. Our data relating to industries and services are by no means comparable with the cultivation statistics set out in the last section. They do not also go back far enough on a comparable basis.

44. At first sight it would seem that the census data should suffice to separate the growth of population in villages from the growth of population in towns and this might go a long way to answer the question. The relevant information is given in the table below :

TABLE 15

| *Census year* | *Population* (IN LAKHS) | | *Growth* (IN LAKHS) *during the preceding decade* | | *Rate of growth during the preceding decade* | |
|---|---|---|---|---|---|---|
| | *in villages* | *in towns* | *in villages* | *in towns* | *in villages* | *in towns* |
| 1921 . | 2,199 | 282 | | | | |
| 1931 . | 2,420 | 334 | +221 | + 52 | +10·1 | +18·4 |
| 1941* . | 2,710 | 438 | +290 | +104 | +12·0 | +31·1 |
| 1951 . | 2,950 | 619 | +240 | +181 | + 8·9 | +41·3 |

*Actual figures of 1941 Census count. No allowance made for inflation of returns in West Bengal and Punjab.

These figures show clearly that the rate of growth in villages is lower than in towns—the difference being accounted for by migration from villages to towns.

Among the towns themselves it seems, in general, likely that the cities and major towns tend to grow more rapidly *and the rate of growth shows clear signs of acceleration.* Thus, the ten largest cities added over half-a-crore to their population during the decade immediately before the 1951 Census. The addition during the preceding decade (1931-40) had been less than one-third of a crore. Even this was nearly twice as large as the addition which had taken place during a period of 30 years preceding the 1931 Census. The figures for these cities (on a town-group basis) are given below :

TABLE 16

(IN LAKHS)

| *Town-group* | *Population 1951* | *Additions to population during* | | |
|---|---|---|---|---|
| | | *1941-50* | *1931-40* | *1901-30* |
| Greater Calcutta | 45·8 | * | * | 6·0 |
| Greater Bombay | 28·4 | 11·4 | 3·9 | 4·6 |
| Madras | 14·2 | 6·4 | 1·3 | 1·4 |
| Delhi | 13·8 | 7·2 | 2·2 | 2·3 |
| Hyderabad | 10·9 | 3·5 | 2·7 | 0·2 |
| Ahmedabad | 7·9 | 2·0 | 2·8 | 1·3 |
| Bangalore | 7·8 | 3·7 | 1·0 | 1·5 |
| Kanpur | 7·1 | 2·2 | 2·4 | 0·4 |
| Poona | 5·9 | 2·4 | 0·8 | 0·9 |
| Lucknow | 5·0 | 1·1 | 1·1 | 0·2 |

45. These figures are striking and they confirm the general impression one forms by observation of city life of a greatly increased volume of non-agricultural avocations. They are, however, misleading if accepted as an indication of the change in the life of the people as a whole. For it will be noticed that the growth of rural population during the last three decades though smaller than that of towns is nevertheless quite large. There is little doubt that the rate of growth of rural population has substantially out-stripped the rate of progress of cultivation. Has there been a growth of rural industries and services on a scale sufficient to offset this difference—or indeed to any extent at all ? It seems very

*According to census data the growth of population in Greater Calcutta was 14.6 lakhs during the 1931-40 and 10·4 lakhs during 1941-50. They have not been shown separately against Greater Calcutta because it is known that there was over-enumeration and consequent inflation of the 1941 Census figure.

unlikely, though we cannot support a definitive answer conclusively by statistics.

46. Even though a conclusive answer may not be furnished it is necessary that available data should be examined with full comprehension of the difficulty in drawing inferences from them and such indications as they provide should be noted.

The economic data yielded by the Censuses of 1931 and 1951 have been analysed in order to set up such comparisons as appear reasonably possible and valid. There are difficulties arising out of small but significant changes in definitions and classifications. There are also other difficulties necessarily inherent in any such enquiries carried out on a mass scale over a sub-continent. A full account of these matters will be found in the papers printed as APPENDIX III. The conclusions recorded at the end of this paper are reproduced below :

*I*—During the twenty-years following 1931, population grew faster than cultivation. The area of cultivated land *per capita* is known to have declined significantly in Uttar Pradesh, Bihar, Orissa, Assam, Madras, Mysore, Travancore-Cochin, Bombay, Madhya Pradesh and Punjab. There is little doubt, that if correct figures of cultivation had been available for other states a similar decline would have been observed in all of them.

*II*—Notwithstanding such decline in the area of cultivated land *per capita*, the relative weight of dependence on agriculture for gainful employment has not declined in the country as a whole. It is probable that it has increased slightly. Such increase is observable in Uttar Pradesh, Bihar, Orissa, Assam, Madras, Hyderabad, Rajasthan and Punjab. Dependence on agriculture has not changed in Madhya Pradesh. It has probably diminished in Bombay, West Bengal and Mysore.

*III*—The main reaction to this general decline in the area of cultivated land *per capita*, unaccompanied by a more than proportionate increase in non-agricultural employment, has been a general increase of non-earning dependency. The increase in absolute numbers of non-earning dependants has exceeded the entire increase of rural population in India, as well as in each of five zones out of six.

The percentage of non-earning dependants to the general population has increased in every major state except Bombay, West Bengal and Punjab. It has decreased slightly in Bombay and West Bengal; and is practically unchanged in Punjab.

The increases in the percentages are not accompanied by any material change in sex ratio or age structure. They must, therefore, be regarded as a rough index of the growth of unemployment in different parts of the country.

*IV*—There has been a general increase throughout the country in the number of cultivators and cultivating labourers (including unpaid family helpers) working on the same area of cultivated land—say 100 acres. The increases are relatively small in the following states : Assam (46 to 48), Bihar (50 to 52), Uttar Pradesh (49 to 51), Madras (34 to 36) and Orissa (29 to 32).

Larger increases are observed in the following states : Punjab (23 to 26), Bombay (17 to 23), Madhya Pradesh (26 to 33) and Travancore-Cochin (41 to 57).

Among the major states for which figures are available, Mysore alone shows a fall in this number (32 to 26).

The figures of increase in the number of workers provide a rough indication that under-employment is growing on the land, but the picture is somewhat blurred by uncertainty about the role of unpaid family helpers in the cultivation of land.

*V*—Material changes have occurred in the percentage of cultivating labourers to all workers in land (*i. e.*, cultivating labourers and cultivators including their unpaid family helpers). There is only one major state where this percentage has increased—Travancore-Cochin (34 to 47). The percentage has remained practically unchanged in Bihar (27-26), Mysore (13-14), Hyderabad (31) and Punjab (11-12).

In other states the percentage has fallen : Uttar Pradesh (18 to 9), Orissa (30 to 19), West Bengal (40 to 28), Madras (38 to 35), Bombay (43 to 18), Madhya Pradesh (43 to 32) and Rajasthan (11 to 4).

The fall in the percentage of cultivating labourers is the natural result of increase in the number of cultivators and members of their families occupying the same area of cultivated land. The cultivators' need for employing labourers diminishes, as also their capacity to pay for their services.

It is clear, however, that this is not the sole cause of the fall in the proportion of cultivating labourers. There are reasons to

believe that in various parts of the country, there were considerable number of people who were in fact cultivators but not acknowledged as such in order to guard against the accrual of occupancy rights in land. There were probably also other people who partook of the characteristics of both cultivators and cultivating labourers and whose classification was open to genuine doubt. As a result of the operation of tenancy legislation (old and new) as well as the general change in the social climate, it is likely that a 'conversion' has taken place between 1931 and 1951 of many such people from the status of cultivating labourers to cultivators. Such 'conversion' probably accounts for an important part of the fall in the proportion of cultivating labourers observed in Bombay, Madhya Pradesh, Uttar Pradesh Rajasthan and possibly also elsewhere. While there is little doubt about the fact that the proportion of cultivating labourers has fallen and the fall is explainable by the two reasons mentioned above, there are puzzling variations in the nature of the changes which have taken place in different states.

*VI*—There is a complex inter-relationship between the nature and magnitude of changes of the following description (all of which occurred between 1931 and 1951)—the intensity of the decline of the area of cultivated land *per capita*; the rate of urbanization and the rate of growth of non-agricultural avocations; the actual extent to which un-employment has increased and been reflected in the percentage of non-earning dependency; the actual extent to which under-employment has increased and been reflected in the number of workers on unit area of cultivated land; and finally the nature and extent of change, if any, in the participation of unpaid family helpers in cultivation operations. Much more detailed study and many local enquiries are necessary before this inter-relationship can be unravelled completely.

*VII*—Among cultivators the relative proportion of those who may be called owner-cultivators because they possess permanent and heritable occupancy rights in land must have increased to some extent between 1931 and 1951. It is not, however, possible to institute a comparison in this respect because of non-comparable classification at the two censuses.

*VIII*—Agricultural rentiers formed only a small proportion of the people in 1931 and this proportion has become still smaller in 1951.

## D—*Growth of Food Shortage*

AN EXTRAORDINARY development has taken place within the last 10 years, which very few people would have regarded as a likely occurrence before 1941. This development is generally referred to as 'food controls'. That is a poor and somewhat misleading description of the reality—which consists primarily of a gigantic state trading system, set up by the Central Government and all the State Governments functioning in co-operation with one another. What are called 'controls' are the legal restrictions on traders, produces and consumers of foodgrains which enable this state trading system to function.

The operations of this system during the three calendar years 1949, 1950 and 1951 may be summed up in a few simple figures. On an average, 43·0 lakhs of tons were purchased every year in different states within the country —mostly from farmers directly; in some places from traders. Another 34·8 lakhs of tons were purchased every year from various foreign countries of the world. These enormous quantities of food were moved over great distances, stored and distributed. The purchases and distributions were carried out in accordance with an overall basic plan framed once every year for the country as a whole by the Central Government; and, within the framework of this plan, of detailed plans for each state, framed by the State Government concerned. These plans were not designed to make commercial profits. They were designed primarily to meet the daily needs of crores of people all the year round; to safeguard several other crores of people against the serious consequences of excessive rise of prices or interruptions of supply in private trade. So long as aggregate supplies are smaller than the quantities needed, the plans were designed to spread the national shortage over as large a number as possible and insure them against the risk of death by starvation. The average annual issues thus made from stocks of Government grain to ration shops, fair price shops, relief quota shops and various other controlled distribution agencies amounted to 77·1 lakhs of tons.

According to reports (which relate to a short period immediately before 31st March, 1951), the total number of people who received supplies issued from Government stocks numbered 12 crores and 66 lakhs. Not all of them were supplied continuously all the year round. At least one third of this total must have been so supplied—possibly more. The others were supplied with grain during those months of the year when they were most in need and when private trade could be least relied upon to provide regular supplies at fair prices. TABLE 17 on next page shows the number of consumers of supplies made available by this nation-wide 'state trading system'.

TABLE 17

(IN LAKHS)

| | *Rural population* | *Urban population* |
|---|---|---|
| Statutory rationing | 84 | 384 |
| Non-statutory rationing | 134 | 37 |
| Relief quota shops and fair price shops | 487 | 5 |
| Other agencies of controlled distribution | 117 | 18 |
| TOTAL | 822 | 444 |

We should realise that this system literally forced itself on the country. The Government never wanted to carry the responsibility. They have made more than one effort to rid themselves of it, but without success. Why did this happen ? We should try to understand the development in the perspective of history.

48. The establishment and development of a free market throughout India and its linkage with the world market was perhaps the most important among the economic changes brought about under British rule sometime in the middle of the last century. The reform was visibly beneficial, in that it gave a great fillip to the development of cultivation. A brisk foreign trade grew up. Notwithstanding this general prosperity, parts of the country were ravaged by famine and some classes of the people—especially those who were losing their livelihood in the new free market—suffered grievously. Therefore, the Government of those days took effective steps energetically in order to combat the famines, to relieve suffering and to save life. What was the right thing to do in order to achieve these purposes, without creating avoidable wastes and abuses, was not easy to settle off-hand—it had to be discovered by trial and error. One of the most contentious and perplexing issues in this process of trial and error had been whether or not steps should be taken by Government to control the price of grain and arrange its distribution. The conclusion finally reached was recorded by the Famine Commission of 1880 in the following terms :

> "We have no doubt that the true principle for the Government to adopt as its general rule of conduct in this matter is to leave the business of the supply and distribution of food to private trade, taking care that every possible facility is given for its free action, and that all obstacles material or fiscal are, as far as practicable, removed. The manner in which the demand for grain in South India in 1877 was met by supplies sent from the North showed the promptitude with which Indian trade will

operate when the facilities for transport and the profit expected are adequate.....It is only reasonable to anticipate that with every year's additional experience of the use to be made of the railways and the telegraphs, the activity and sensitiveness of Indian trade will continue to grow, and that with the new stimulus thus imparted to it, and the gradual extension of railways into districts where they do not yet exist, the power of meeting the wants of the population, in time of local scarcity, will be still further developed. Every interference by the Government with the operations of trade must be adverse to this tendency, and prejudicial to those habits of self-reliance which it is so essential for Government to encourage."

This policy was consistently followed. In the short run, it was not conspicuously successful. Thus it failed during the last decade of the last century when millions died of famine, while export of grain was going on. The failure must be attributed to the fact that the basic assumption underlying the policy—the presence of an overall surplus even in the worst famine years—*was not yet a fact. But it was tending to become a fact.* With every year that passed there after, the policy turned out to be so uniformly successful that it got established as an axiom of public administration. For a brief space of a few months (shortly after the end of World War I) the axiom was called in question; prices and movements of rice had to be controlled. But the spasm passed. Every thing was normal again. A generation grew up which took it for granted that interference by Government in any shape or form, with the activities of traders was unthinkable. The vitality of this belief was such that it survived the world economic depression of the thirties. A fantastic fall of grain prices was occurring. All over the country, crores of farmers were reeling under the blow, suffering unjust losses and getting loaded with debts. Bankruptcies were multiplying. It was realised that the country and the world were passing through an extraordinary crisis. It was necessary to do something especially to relieve the farmers. So, arrangements were made to suspend or remit land revenue and rents. Governments went even so far as to scale down debts—at first by conciliation and later by statutory compulsion. *But that anything should be done directly to adjust the market supply of grain to the market demand and fix and hold a fair price—the idea was not even seriously considered.*

49. The change came about all of a sudden, shortly after Japan entered World War II and her forces occupied most of the countries of South-East Asia. Burma fell, and the imports of rice from that country were cut-off. The reaction in all the grain markets of India was immediate, violent and prolonged. Supplies disappeared and reappeared in small quantities fitfully. Prices shot up inexplicably. This could not go on for any length of time without putting the lives of masses of people in jeopardy. *Bankruptcy is one thing—death is another. The Government had, perforce, to interfere.* But they found

soon enough, that a simple order addressed to the trade to the effect that a price specified in the order should not be exceeded, meant nothing at all. It merely meant that law-abiding traders should quit business—leaving the trade entirely in the hands of hardened speculators. The consumer was worse off than before. Experience clearly showed that it was not a question of wickedness of individuals—it was the system which could no longer function. The vast mass of traders—the retailers—were ready and willing to carry out distribution according to the needs of the people within the limits of prices fixed by Governments, but only if they could be assured by Government that they could get regular supplies at corresponding prices. This meant Government going into the wholesale trade in a big way, superseding a relatively small number of the larger wholesale dealers (to whom speculation offered too great a temptation to resist), converting the smaller wholesale dealers into its own agents, and (most important of all) assuring itself of regular supplies from farmers by the exercise of statutory powers. No one had planned in advance that these were the right steps to take. It took time to find out, by a process of trial and error. But it did not take very long in those parts of the country where the Provincial or State Government had a clear perception of the objective to be secured and a firm determination to secure it.

There was some delay and indecision in Bengal, and this coincided with a crop-failure (not, in itself, of a very exceptional character). The result was a tragic repetition of the famines of the last century—15 lakhs of people died of hunger and the diseases attending famine, all within a few months. The tragedy gave a sharp jolt to the minds of the people and made them realise that unless there was enough foodgrains to spare after meeting the needs of everybody, free trade cannot function. It was necessary that controlled behaviour should be imposed by Government on all concerned. It was especially necessary that those producers to whom food was not a problem, should part with their surplus of grain in due time at a fixed price. So long as the people realised this and co-operated with the efforts of Government, the system worked well; and, though crop failures occurred in South India in 1946 (which were much more serious than that which touched off tragedy in 1943), the distribution of supplies was kept going and no lives were lost.

50. After the war ended, people waited patiently enough for a couple of years hoping that all these necessary though irksome innovations would disappear and they would once again be free to buy and sell foodgrains as they pleased and when they pleased. This nostalgia for the return of free trade was a fact. It pervaded all parts of the country and all Governments had to reckon

with it. Mingled with this genuine feeling, there was no doubt also the knowledge, among quite considerable number of people that if the restrictions were removed they could make large profits in a short time. One of the unfortunate developments, during and since World War II, has been an acquired taste for getting rich quickly.

A committee appointed by Government went into this question and recommended, by a majority, that the controls should be lifted. A minority warned against the step and argued that the time was not yet ripe. The Government acted on the advice of the majority. Within a few months, the experience of 1942 was repeated; and the minority was proved right. Government quickly retraced their steps, lest the situation might drift towards a repetition of the experience of 1943.

51. It is now very nearly five years since foodgrain controls were lifted and then re-imposed. Every one has been hoping each year that the next year would see the end of these controls, but this has not yet happened. People have also been hoping that the need for importing foodgrains would also disappear and that this would release resources for importing machinery needed for industrialising the country. But this has also failed to happen. On the other hand, Government found themselves compelled to import unprecedentedly large quantities of food-grains instead. The relatively easier conditions created by these imports, coinciding with good season for crops is once again having their effect. The mind of the people has been drifting towards de-control and stoppage of imports—in very much the same way as in the closing months of 1947. But the Planning Commission has given warning that controls will have to be kept on and imports will have to be secured; and though the Commission hopes that the implementation of the Plan will lead to an end of both in a short time, it is not prepared to bind itself to a date and it advises caution and preparedness to continue with controls and imports as long as necessary.

52. There is, today, a widespread sense of perplexity—a feeling that the present situation is unintelligible; and, in consequence, a big question mark over the future. There are many questions to which firm answers appear to be unavailable. How much food do we need ? How much more food do we need as the population is added to each year ? How much food are we producing ? No doubt this changes from one year to another because of the seasons ; but what (on an average of good, bad and indifferent seasons) are we in fact producing ? Is this really less than what we need ? If so, how much less ? Is it really impossible to do with that much less ? Must we import ? If so, how much ? At what rate has this average production of food been increasing in

the past ? At what rate can we expect it normally to increase in the future ? To what extent can the various development schemes which are included in the First Five Year plan raise the level of average production ? Can we or can we not manage without imports ? If we can, when ? Until then, how much should we import ? Can we afford to pay for these imports ? All these are relevant questions. Most people (probably all whose interest in public affairs is sufficient to induce them to read newspapers regularly) have no doubt put these questions to themselves. It is doubtful whether any one is quite sure in his mind that he has got the right answer to even half the number of questions. The fact is—and we must face it—there are no demonstrably certain answers to these questions. It is true that all the questions raise matters of apparently simple fact, which can be cleared up if statistics are available. But the statistical system of the country has not been designed to answer these questions with certainty. It has not been so designed—because these questions did not require to be answered until about the time when Japan entered World War II.

And yet there is great need for answers which (even if not certain) would carry conviction as probably correct. Experience shows that the people are not unready to accept reasonable restraints designed for the common good or to make present sacrifices in order to secure the welfare of the next generation. But they will not do this if they lack conviction of necessity. This conviction is seldom acquired by ratiocination. It is gained by the mass of the people largely guidance from the leaders of public opinion. And the leaders cannot succeed in imparting conviction unless they possess it themselves.

It is the purpose of this section and the rest of this report to make such a contribution to the clarification of these important questions as a careful study of available data may render possible.

53. We can be fairly definite about the time when *undivided* India* changed over from being a net exporter of foodgrains into a net importer of foodgrains. As it happens, this too was round about 1921. We shall proceed to review the evidence on this point—before and since 1921.

There is a remarkable passage in the report of the Famine Commission of 1880 which refers to certain figures as indicating that "the ordinary out-turn of food in British India exceeds 50 million tons, and the ordinary surplus available for storage, for export, or for the luxurious consumption of the richer classes is more than 5 million tons." The Commission proceeds then to discuss the

*The old statistics of India related to India within present limits, *plus* Pakistan *plus* Burma. Separation of the figures relating to these areas presents a difficult problem. Burma figures have been separated. The reference to '*undivided* India' means India *plus* Pakistan.

probable shortage likely to be caused in the production of the largest area which —on the basis of previous experience—might be expected to be affected by famine, and whether or not there would be sufficient stocks available within the country to meet the shortage thus caused. The probable shortage of the area affected by the worst famine, deemed to be likely, was assumed as 3 million tons. Three sources of supply were designated as available to meet the shortage. "*First*, the local stocks of the distressed area which taken at three months' supply of the people's food amounts to 2¾ millions; *second*, the year's surplus of the districts not affected which would be 3½ millions but might be expected to be larger in consequence of the diminished consumption; and *third*, the local stocks in these districts." The Commission found no difficulty in reaching the conclusion that "these three sources of supply, taken together, would appear to be quite sufficient to provide what was required."

Two members of the Commission dissented from this conclusion. They said "We are unable to place confidence on the table which shows an estimated annual surplus yield of five million tons of foodgrains. The average annual *export of rice and grain from all India is one million tons, which should thus leave four million tons to be laid by, a quantity sufficient to feed 24 millions of people.* As famines come but once in 12 years, there should in that period be an accumulated surplus sufficient to feed nearly 300 millions. And yet when famine does come, and then affecting at its worst not more than a tenth of that number, it is only by immense pressure on other parts of India, *and at a quadrupled price*, that the barest sufficiency of supplies can be obtained. This seems a clear proof that the alleged surplus must be greatly overestimated."

This echo from the past is not very unlike a good deal of statistical controversy to which the public has become accustomed during the last ten years. The point to be noted in these exchanges is not as to who was right (the minority, as usual, seems to have been right); but what emerges as undisputed common ground. Both sides agree that India was then normally surplus in foodgrains. The dispute was about whether or not, *in the worst famine year*, the stocks available would physically exceed the requirements of consumption. At any rate, we know that India was then *normally* surplus in foodgrains.

54. Elsewhere in the report we have details about the size of this surplus. The Commission explains how and why the value of India's exports was substantially in excess of imports. "For the last ten years, the excess of exports has averaged about 16 million sterling of which perhaps half may be regarded as the return on capital invested in railways and commercial enterprises and half as the charge on account of the administration of India by England which has to be met in England."

The principal exports are almost entirely the raw produce of agriculture and animal husbandry. They include foodgrains valued at 9 million sterling (or almost exactly the return on capital invested in railways and commercial enterprises). The quantity "touched its highest point in 1876-7, when it reached 26,210,000 cwt., and had fallen to 22,887,000 cwt., in 1878-9." The figures indicate an average of about *12 lakhs of tons per annum* as the level of foodgrain exports at the time. The two chief items were rice and wheat and the destinations were Europe, Mauritius, the Cape, other colonies, Arabia and Persia. *Thus, we start with the firm knowledge that in or about 1880, India was normally surplus in foodgrains, including both rice and wheat, and the surplus was of the order of 12 lakhs of tons per annum.*

55. Then we have good evidence of what was happening during the last decade of the nineteenth century and the first decade of the present century. The relevant statistics were assembled and sifted and the figures relating to Burma separated by a Special Officer (Shri K. L. DATTA) appointed by the Government of India in 1910. The figures for *undivided* India, averaged for five-year periods, are as follows :

TABLE 18

(IN LAKHS OF TONS)

| *Five year period* | *Exports* | *Imports* | *Net Exports* |
|---|---|---|---|
| 1890-91 to 1894-95 . . . . | 14.5 | 2·1 | 12·4 |
| 1895-96 to 1899-1900 . . . . | 11·0 | 4·8 | 6·2 |
| 1900-01 to 1904-05 . . . . | 16·6 | 6·2 | 10·4 |
| 1905-06 to 1909-10 . . . . | 14·8 | 9·6 | 5·2 |

The first half of the famine decade shows the level of net exports to be much the same or as a little above the level reached some 15 years earlier, and described by the Famine Commission of 1880. The second half shows a sharp drop doubtless reflecting the crop failures which led to famine. [But it is significant that exports were taking place even then—though millions were dying in many parts of the country for want of food. We noted this already in our review of policy in relation to freedom of trade.] Then there is a recovery during the first five years of this century followed by a drop. The decade as a whole shows a small decline of about 3 lakhs in ten years—which may not be specially

significant. But the trend shown in the table below was undoubtedly quite significant :

TABLE 19

(IN LAKHS OF TONS)

| *Five-year period* | *Net exports out of undivided India and Burma* | *Net exports out of undivided India* | *Net exports out of Burma* |
|---|---|---|---|
| 1890-91 to 1894-95 . . . | 25·5 | 12·4 | 13·0 |
| 1895-96 to 1899-1900 . . . | 21·4 | 6·2 | 15·2 |
| 1900-01 to 1904-05 . . . | 31·6 | 10·4 | 21·2 |
| 1905-06 to 1909-10 . . . | 28·4 | 5·2 | 23·2 |

There is no mistaking the rising tempo of exports of foodgrains from Burma. British rule was established in Burma later than in India. Suppression of civil disorder, settlement of title to land on durable and secure tenures, development of transportation, creation of a free market and its linkage with a free world market—these were the measures which had already started the development of agricultural production and the canalisation of the resultant surplus into the growing world market. What had already occurred in *undivided* India was now occurring in Burma after a time lag of a few decades. In *undivided* India, the effects of development were beginning to wear-off ; and one may, in retrospect, already note signs of the steep diminution of exports of foodgrains which was to follow. In Burma, on the other hand, there was still very considerable scope for profitable development of agricultural production ; net exports of foodgrains were, therefore, still rising. The policy of non-interference with private trade in grain (even if famine raged in parts of the country)—the doctrine of the Famine Commission of 1880—worked successfully for nearly forty years, because India, Pakistan and Burma formed a single trading unit and this combined unit had a large and growing exportable surplus of grain. A physical shortage of supply over the entire territory of India, Pakistan and Burma was out of the question; and the development of modern transportation by rail and steamship assured the availability of commercial supplies in all parts of this territory at all times as required.

56. From about the period of World War I, separate statistics for India have been worked out by the Directorate of Economics and Statistics of the

Ministry of Food and Agriculture. They tell us what happened during a succession of five five-year periods ending with the outbreak of World War II. During the first of these periods *i.e.*, 1915-16 to 1919-20, *undivided* India was still functioning as a net exporter. Exports were 15·9 lakhs tons and imports were 11·9 lakhs of tons. Net exports were 4·0 lakhs of tons which is smaller than the last figure we saw for the period 1905-06 to 1909-10. It is significant that in spite of all the inducements and pressures which must have stimulated exports during war-time, the figure was smaller than 10 years earlier. This helps us to understand why it turned out to be the last five-year period when *undivided* India was a net exporter of foodgrains. Thereafter, there was a net import during every five-year period as shown by the table below :

TABLE 20

(IN LAKHS OF TONS)

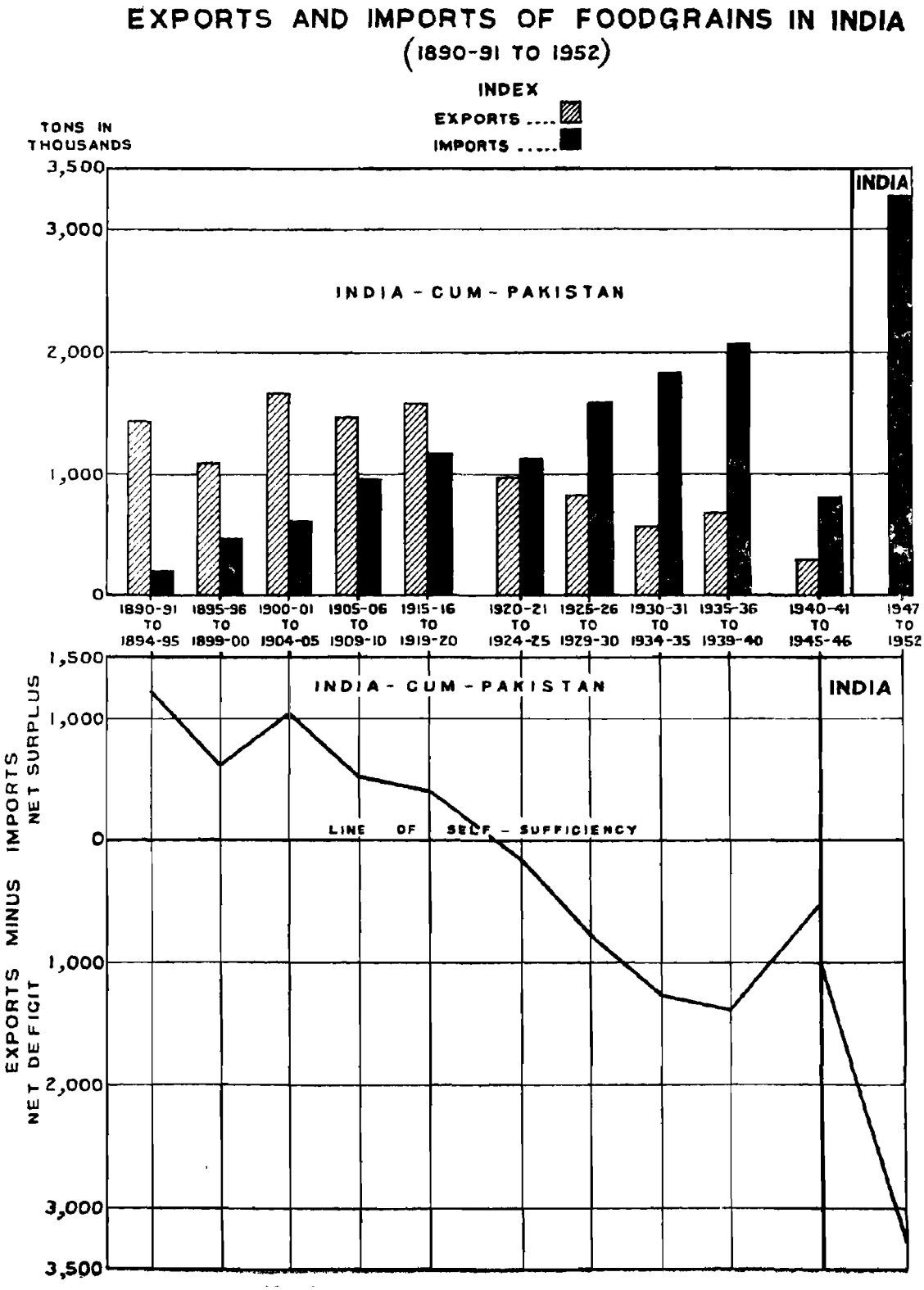
| *Five-year period* | *Imports* | *Exports* | *Net Imports* |
|---|---|---|---|
| 1920-21 to 1924-25 | 11·4 | 9·8 | 1·6 |
| 1925-26 to 1929-30 | 15·9 | 8·3 | 7·6 |
| 1930-31 to 1934-35 | 18·4 | 5·7 | 12·7 |
| 1935-36 to 1939-40 | 20·7 | 6·9 | 13·8 |

There can be no mistake about the meaning of these figures*. They show a consistent trend of increase in average annual imports of foodgrains (mainly rice) and an almost equally consistent decrease in the export of foodgrains (mainly wheat). Net exports had ended. Net imports were increasing rapidly in *undivided* India. At the same time, however, the development of Burmese agriculture was still proceeding. The average level of net exports out of Burma had risen from 23·2 lakhs of tons per annum during 1905-06 to 1909-10 to 30·6 lakhs of tons per annum during the quinquennium preceding World War II.

57. The subsequent changes during and since World War II may be briefly told. During 1940-41 and 1941-42 net imports diminished to 9·6 lakhs and 4·3 lakhs. During 1942-43 imports were cut off and India supplied Ceylon and a few other places; net exports reappeared for about one year though the quantity was small—only 2·9 lakhs. The Bengal Famine occurred during 1943-44

*The figures relate to India and Pakistan jointly. We are not perhaps likely to be far wrong if we identified the 'imports' and 'exports' figures for the quinquennium 1935-36 to 1939-40 as the net import requirement and net export capacity of India and Pakistan respectively, on the eve of World War II.

FIG. 21


EXPORTS AND IMPORTS OF FOODGRAINS IN INDIA
(1890-91 TO 1952)
INDEX
EXPORTS ....
IMPORTS .....
TONS IN THOUSANDS
3,500
3,000
2,000
1,000
0
INDIA
INDIA - CUM - PAKISTAN
1890-91 TO 1894-95
1895-96 TO 1899-00
1900-01 TO 1904-05
1905-06 TO 1909-10
1915-16 TO 1919-20
1920-21 TO 1924-25
1925-26 TO 1929-30
1930-31 TO 1934-35
1935-36 TO 1939-40
1940-41 TO 1945-46
1947 TO 1952
EXPORTS MINUS IMPORTS
NET SURPLUS
NET DEFICIT
1,500
1,000
0
1,000
2,000
3,000
3,500
INDIA - CUM - PAKISTAN
INDIA
LINE OF SELF - SUFFICIENCY

when India received, under international allocations, a net supply of 3·0 lakhs. The next two years were managed with only 7·3 and 9·3 lakhs of tons. The shortage was made good mainly by eating into the carry-over ; the stocks normally carried by farmers, traders and consumers were reduced, thus adding greatly to the difficulties of distribution and creating the risks of break-down which was the nightmare of 1946. The first full post-war year (1946-47) saw India importing 25·8 lakhs and the next year (1947-48), 26·6 lakhs. At that stage, the agitation against state trading commenced. These imports seemed to be both enormous and unnecessary ; hence the demand for stoppage of imports and lifting of controls. This did not, however, work. During 1948-49, the first full year after partition, India imported 30·5 lakhs. Then it was reduced to 28·6 and 27·2 lakhs. This was followed by two successive years of very large imports. The Report of the Planning Commission mentions 32·7 lakhs as the average level of imports during 1947-52.

58. 32·7 lakhs of tons may seem, at first sight, to be a large figure for importation every year. But it would not surprise anyone who was familiar with the trend of changes in population and cultivation as well as of imports and exports of foodgrains and who had appreciated the significance of the figures in TABLE 20. Indeed, as we shall see later, the real occasion for surprise and perplexity is that the level of average imports rose so slowly and is still so low, when compared with the rapidity of decline of cultivation *per capita.*

One other comment which should be made at this stage is the fact that the composition of the imports had changed greatly ; there was very little rice and a great deal of wheat and coarse grains. Before World War II, it will be recalled, India was importing rice heavily, but still exporting wheat. The change of composition became necessary because the grain was procured mostly from new sources of supply. It is necessary to note what happened to Burma whose steadily increasing exports of rice were the main source of supply of steadily increasing imports into India. During the war, of course, Burma exported no rice to India. After the war ended, a trickle of exports re-started. On an average of three years 1948-50 it has risen only to 12·1 lakhs, which was lower than the level reached over sixty years ago ; and less than two-fifths of the level reached just before World War II. As it is obvious that the population of Burma could not have grown during these 10 or 12 years to the point at which its export surplus could be so largely eaten up, it is evident that cultivation must have diminished, or the marketing of the surplus is being held up or both must have happened. The disturbed conditions which have, no doubt, contributed to these results may be overcome at a not too distant date. But would

exports from Burma ever again reach the pre-war level ? Or may it be that it would reach only a lower level and then Burma would repeat the history of India with a declining level of exports ?

59. Did the rapid growth of net imports after 1921 owe its origin to the decline of cultivation *per capita*, or could it be that it was due to a shift of cultivation away from foodgrains to other crops. There was indeed a decline in the percentage of area sown to foodgrains to the total sown area under all crops. The figures for the districts whose statistics were specially compiled and set out in the last section were 80·7 per cent in 1891, 77·8 per cent in 1921 and 77·2 per cent in 1951. The difference between 1921 and 1951 is hardly significant. *The main increases in imports, which took place during the last three decades, cannot therefore be attributed to the shift in cultivation away from foodgrains.* This is an important fact.

While this is true of India as a whole, the shift is somewhat more clearly marked in particular areas. This is seen from the table below :

TABLE 21

| *Natural division* | *Percentage of area under food-crops to total areas sown* | | |
|---|---|---|---|
| | *1891* | *1921* | *1951* |
| Bombay Deccan Northern (part) | 81·1 | 74·3 | 73·4 |
| Bombay Deccan Southern | 77·3 | 68·7 | 70·4 |
| Bombay-Konkan (part) | 92·6 | 75·9 | 72·1 |
| Mysore | 85·4 | 82·5 | 76·1 |
| North-West Madhya Pradesh | 80·2 | 77·8 | 81·7 |
| South-West Madhya Pradesh | 57·7 | 53·7 | 58·4 |
| Madras Deccan | 76·8 | 72·6 | 66·4 |
| West Madras | 71·4 | 64·8 | 59·6 |
| South Madras (part) | 84·0 | 78·2 | 74·7 |
| East U.P. Plain | 88·2 | 91·8 | 90·3 |
| Central U.P. Plain | 90·4 | 91·6 | 90·2 |
| West U.P. Plain (part) | 82·3 | 81·3 | 81·4 |
| U.P. Hills & Plateau (part) | 80·4 | 86·1 | 92·1 |

These figures show (*i*) that the shifts away from foodgrains to other crops (presumably oilseeds and cotton) were more significant before 1921 than later ; (*ii*) they were more significant in South India and West India than elsewhere; and (*iii*) that shifts in the opposite direction also occurred, these being significant in North India and Central India.

60. The period of several years during which India was forced to manage without adequate imports of grains witnessed an increase of grain prices of an altogether unprecedented character. When it took place, there was no question of its being dictated by economic necessity. There was a shortage of foodgrains ; and people must eat or starve to death. Under conditions of free trade, those who held grain could, by the simple process of declining to sell it for a time, raise the price to almost any height. And they did so, repeatedly. The first wave of increase took place in this manner until the Governments stepped in, and by their intervention froze the prices at whatever levels had been reached in different parts of the country on various dates in the second half-year of 1942 and the first half-year of 1943. In Bengal, the freezing came later. As a result not of price control orders but of the operation of the state trading system, the price of foodgrains was held for sometime at a stable level. But the consequences of the original rise were working themselves out. The prices of other foodstuffs and agricultural produce went up because the price of grain had gone up. The cost of food having gone up, wages had to be raised or supplemented by dearness allowances. The price of other commodities went up because wages and dearness allowances increased the cost of production. When the wheel had thus come full circle, the farmers complained that other prices had risen against them while the price of grain was held down by Government control. They also complained about the arbitrary differences between grain prices allowed to farmers in different parts of the country which had only a historical (and no economic) justification. Complaints of this nature helped to swell the general chorus of discontent which led to de-control early in 1948. A second wave of rise in prices followed. *Re-control froze the grain prices at the higher levels reached by the second wave.* The repercussions of these higher prices of grains were reinforced by the effects of the Korean War. The struggle of the Governments against the persistent tendency of prices to rise still continues. The tap-root of this continued pressure still remains—the fundamental disparity between the demand for and supply of foodgrains, and the fact that the consumer cannot stand out against a rise in grain prices in the same way in which he can stand out against a rise in prices of almost any other commodity or service. History provides no more vivid demonstration of the crucial role of grain prices in the life of the people.

61. It so happens that the longest continuous record of carefully ascertained prices is available with the Madras Government. From this record a chart has been prepared which shows the trend of South Indian paddy prices

over a period of 150 years. The chart will repay careful study. For the first fifty years one can see a level course; the price bobs up and down, but the fluctuations are relatively small. Then for another fifty years one can see that the line—above and below which fluctuations take place—is no longer level. Each decade is a little higher than the preceding one. At the same time, the fluctuations tend to be sharper. We get peaks arising suddenly; they are the famine years. This part of the diagram shows the trend of India's free market, firmly linked to a growing world market. And then the last fifty years—with the first big peak marking out World War I, then a valley marking the world economic depression and, finally, the tallest of all peaks on which we stand today.

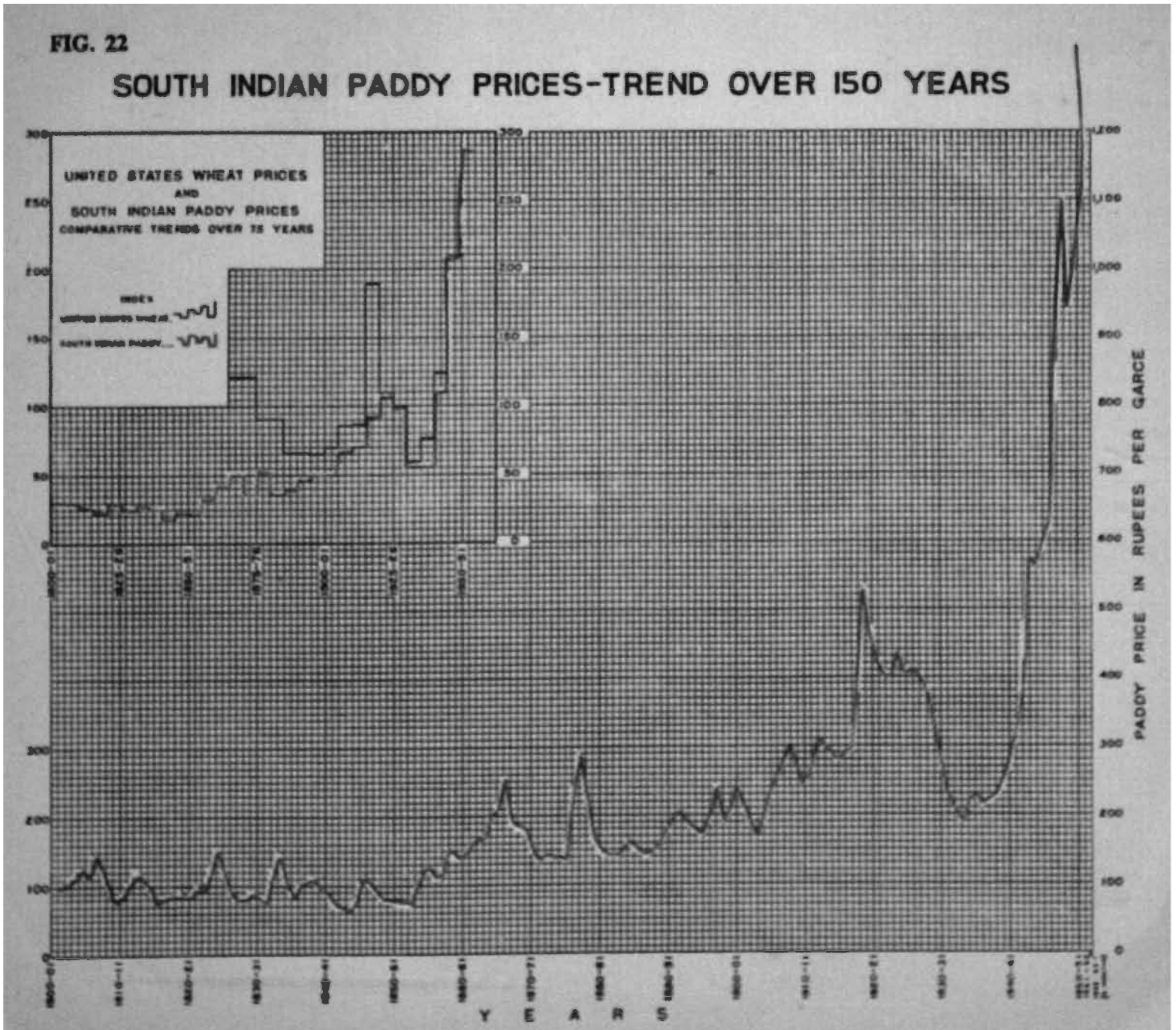
62. On the top left-hand corner, in the same chart, there is an inset diagram which is also well worth study. It shows the comparison between the course of wheat prices in the United States of America (marked by a black line) and South Indian paddy prices (marked by a red line)—both being reduced to a common index with the years 1925-26 to 1929-30 as the base period. It is a convenient base—for, it marks the level from which grain prices plunged downwards and caused great hardship among farmers. Until a few years before World War I, wheat prices in the United States had been moving downwards—over a long period. During the same period, the South Indian paddy price was moving upwards. The American peak during World War I was very much taller than the Indian peak. Then the two prices moved in step, and followed a remarkably similar course—sometimes one leading and sometimes the other—throughout the period between the two world wars, and since the end of World War II upto 1948. Whereas, however, the American price has stayed behind at a level which is just under 200 per cent of the base period level, ours has moved up to 292 per cent.*

63. In our attempt to establish the real existence, to assess the size, and to determine the rate of growth of our shortage of foodgrains, we have relied so far only on figures of imports and exports. We have brought in the figures about foodgrain prices, as corroborative evidence of a telling nature, and to indicate how the entire economy in all its parts is detrimentally affected by the present condition of supplies and prices of foodgrains. We now proceed to a much

*It should perhaps be made clear here that the chart shows the South Indian paddy prices— not because they are peculiar— but because they are the only prices which happen to be available over such a long period and they are known to be fully reliable. Their relationship with the U.S. prices during the period when there was an effectively free world market in foodgrains shows that over this period long-term trend must have been the same in respect of the grain prices generally in all parts of India. Statistical data showing the course of prices after free trade ended have been assembled for different grains and different parts of the country. They will be found among the papers printed as APPENDIX V. They do not modify, in any material particulars, the general picture conveyed by this chart relating to South India.

FIG. 22

# SOUTH INDIAN PADDY PRICES-TREND OVER 150 YEARS



more hazardous undertaking—the direct determination of the shortage as the difference between production and consumption. Why is this undertaking hazardous ? About seventy years ago, as we saw, the Famine Commission attempted this task and reached the conclusion that there was a surplus of about 42 lakhs of tons per annum in the territory now divided into India and Pakistan, and there was in addition a surplus of about 8 lakhs in Burma. Two members of the Commission rejected the figures as well as the conclusion and gave quite convincing reasons for doing so. Seven decades have passed since then. Our state of knowledge is not much better today. A little less than ten years ago, the Commission which enquired into the Bengal Famine attempted a similar task, limited however to the territory and population of *undivided* Bengal. A relevant extract from the analysis made by the Commission (part of which is useful for our enquiry) will be found in APPENDIX V. The conclusion reached by the Commission (which indicates the hazard clearly) runs as follows :

> "It may thus be concluded that the information available is such that an estimate of the annual consumption of the province based on population statistics and an assumed average rate of individual consumption is likely to err by as much as 2 million tons—or about 25 per cent of the estimate. So wide a margin of error blocks this method of approach."

A few weeks ago, the Department of Economic Affairs of the Government of India issued a report on the results of the "First Round" enquiry of the National Sample Survey. An attempt had been made to ascertain both production and consumption in rural areas by enquiries made from heads of households selected on a random sample basis. The enquiry yielded the following results :

> *The average rural household produced 19·9 maunds of foodgrains every year and ate 26·4 maunds during every year.* As this obviously cannot be correct, the report proceeds to distinguish between its consumption estimate and its production estimate and found reasons for rejecting the latter and accepting the former as reliable. But then there was a difficulty. If its consumption estimate was substantially correct then the figures compiled by all the State Governments and the Central Government and annually published as the estimated yield of crops could not also be correct. The report preferred the consumption estimate ascertained by the "First Round" enquiry and recorded the opinion "on the basis of the above conclusions, the magnitude of under-estimation of the official figures of production would seem to lie between 20 and 27 per cent of the estimated consumption out of domestic production". This particular conclusion may or may not be correct. Even if it is correct it does not prove (as some commentators thought it did) that India's production of foodgrains exceeded its requirements and there was no shortage of foodgrains. What the report does really

prove in relation to India as a whole is what the Famine Enquiry Commission had already stated about *undivided* Bengal. *Our knowledge of the absolute magnitude of either production or consumption is subject to a wide margin of uncertainty—so wide that it is larger than the magnitude of our shortage.*

64. That this is the present state of our knowledge is a fact, and we have to face it as a fact. But it does not follow, in consequence, that we shall be wise to hold any opinion we please about food shortage. It does not absolve us from the obligation to form as sound a judgment as possible on all the evidence available to us. A detailed study of this evidence will be found in a note entitled "Production, consumption and shortage of foodgrains (1951)", printed as one of the papers of APPENDIX V. The main conclusions may be set out as below :

*I*—The average yield (*less* seed) on one acre sown to all foodgrains is 6·0 maunds in the country as a whole. The rate is highest in South India (8·2 maunds) and lowest in West India (3·6 maunds). The rates in other zones, in order, are : East India (7·3), North India (6·6), North-West India (6·2) and Central India (4·5).

*II*—The average rate of consumption of foodgrains per head of population per annum is 4·5 maunds. The rate is highest in North-West India (5·0 maunds) and lowest in South India (3·8 mounds). The rates in other zones, in order, are : Central India (4·8), North India (4·6), East India (4·6) and West India (4·0). [No separate allowance is made for grain fed to cattle and grain wasted between the field and the kitchen. The rates include such grain also.]

*III*—India's shortage of foodgrains, round about 1951, was 34 lakhs of tons—being the difference between 590 lakhs of tons of consumption and 556 lakhs of harvested yield (*less* seed). The shortage is equivalent to the foodgrains needed for consumption during 21 days in the year. Among the zones, the shortage is negligible in Central India and relatively small in North India and North-West India.

The shortages in the other three zones expressed in the number of days of consumption requirements are as follows: West India (67 days), South India (34 days) and East India (17 days). It should be clearly borne in mind that these are only the best estimates which can be framed on the basis of official figures of acreage and yield of crops. They may be wrong. The total production may be higher. If so, the total consumption must also be higher correspondingly.

65. A great many people are puzzled by the fact that the shortage is admittedly a small proportion of total consumption—the food needed for only 21 days in the year. Why should there be so much difficulty about managing without imports and without controls ? This question has been posed and conclusively answered in a number of reports—a few relevant extracts will be found in APPENDIX V. It is necessary that the answer should be understood and conviction attained that *free trade cannot function in a market which is genuinely short of foodgrains—however small the shortage.*

66. Another question arises in relation to the relative smallness of the shortage of foodgrains. We have seen that about thirty years ago, *undivided* India was neither a net exporter nor a net importer of foodgrains. At that time production *per capita* and consumption *per capita* were in balance. Since then, there has been a decline of cultivation *per capita* of not less than, say, one-fifth. If our rate of consumption *per capita* had been 4·5 maunds then, as it is assessed to be now, then the shortage today must be of the order of 0·9 maunds—nine-tenths of a maund to a maund *per capita*. But this is assessed at about 34 lakhs of tons per annum in absolute quantity or rather less than 0·3 of a maund *per capita*. The difference is large and it raises an important issue. We can understand why imports have been steadily growing. Once we admit cultivation *per capita* has been declining for 30 years and the percentage of foodgrain cultivation remained substantially the same, the need for imports on an increasing scale is clear and calls for no further explanation. What needs explanation is—why the imports were not so much larger than they actually were. If the figures so far mentioned are correct, the correct level of imports should be about 100 lakhs of tons. Why are they only 34 lakhs of tons ? We must face this question—not as a matter of arithmetical curiosity—because of its implications for the future.

What are the possible explanations ?

*First*,—Our assessment of the decline of cultivation *per capita* was based on areas for which we had statistics. Could it be that in the areas for which there were no statistics, cultivation kept pace with population and there was no decline, or a smaller rate of decline. This is not impossible, for these are generally backward areas, where modern transportation and commercialised agriculture might have been late in arriving. But the net effect on the average rate of decline for India could not have been very large.

*Secondly*,—We took note only of double-cropping and irrigation as the factors which might have raised the yield per acre of cultivated land. What

about other factors? Could it be that the scale of manuring has increased. For a number of reasons this seems very unlikely; the contrary is more probable. Could it be that cultivators put in more effort and got a better yield. The 'official estimates' of yield over a long period do not show any such thing; but that is not very conclusive, because they are not refined methods of measurement and might have easily failed to detect a very small but pervasive increase, if it had occurred gradually over a long period. This possibility is not to be dismissed lightly; because when people have to extract a subsistence out of the same land for larger numbers, they do have a strong incentive to look after cultivation better and more people to do it with. During the thirties especially cultivators had an extremely bad time. It was precisely when prices were very low, they were obliged to mobilise and sell all the grain they could grow in order to meet their money obligations which were then very heavy. Getting in the extra quantity of grain was much more important then, than it had been during the last decade. There may, therefore, have been something in this—though it is very difficult to put a figure on it.

*Thirdly*,—It seems likely that a progressive reduction of wastage of grain and its use as cattle-feed might have occurred. Some old estimates supplied to the Famine Commission of 1880 (which will be found in APPENDIX V) seem extremely generous today. It is common experience that people tend to waste more when they have more to waste.

*Fourthly*,—It may be that, as population increased under conditions of growing food shortage, the average rate of consumption has also fallen. Is this likely? It is generally believed, with fairly good reason, that cultivators throughout the country have been eating better during the last decade than during the preceding decade. The results of some diet surveys made within the last ten years lend support to this belief. During the thirties, the abnormal fall of prices compelled sales of margin which might have forced cultivators on the margin to stint themselves. This pressure has been wholly removed and along with it, no doubt, the stinting. Except in areas which are liable to drought, cultivating labourers are in a stronger bargaining position *vis-a-vis* cultivators than they used to be; and it is likely that they are less underfed than they used to be.

In areas where prohibition has worked successfully, it is likely that there has been an increase of purchasing capacity and better consumption of grain. All these are indications to the contrary. At the same time there has been a very large growth of urban population. The average level of grain consumption in towns is lower than in villages. It is possible that the migrants from villages to towns are more largely drawn from the poorest classes of villagers, and they

may have relatively lower rates of grain consumption. On a balance of all considerations, it seems likely that *when population grows in number in conditions of growing food shortage the average level of food consumption does tend to fall* ; that this tendency was probably fully operative during the thirties and that it probably continued to be operative during the forties also, though not perhaps to the same extent as during the thirties.

CHAPTER V

# The Prospect—1981

## A—*Future Growth of population*

OF ALL COUNTRIES in the world, Great Britain has perhaps the largest assemblage of the most reliable population data, extending in a systematic time-series over the longest period in the past. Yet when the Royal Commission on population set out to "examine the facts relating to the present population trends in Great Britain; to investigate the causes of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population and to make recommendations", it found the data insufficient in material particulars. So, arrangements were made for special enquiries to be conducted in order to provide the additional information required by the Commission.

After a thorough analysis and prolonged study of abundant material, the Commission achieved a forecast of the future growth of population. Before setting out and discussing the forecast, the Commission made the following preliminary observations:

> "In this and the following chapter we shall try to follow the trend of population some way into the future. Our first and main concern will be to explore the prospects of natural increase. Making the assumption that there is no net migration, we shall seek to find out how the population might develop under the influence of fertility and mortality alone....."
>
> "We shall have to begin by looking at the existing population, which naturally conditions future possibilities. We shall be led thereby into a consideration of the number of probable survivors at various future dates of the population now living, and for this purpose it will be necessary to make some assumptions about future deaths. We shall have, therefore, to consider in the light of past history and present knowledge what seems likely to be the trend of mortality rates in future. To complete the picture it will be necessary to have figures for the numbers in the age-groups not yet born, and this involves forecasting future fertility rates. The analysis we have made of the past suggests that this will have to be taken in two stages—(1) forecasting the number of married couples and (2) forecasting marital fertility rates. We must emphasize that we do not use the word 'forecast' here in the sense of confident prediction; the procedure will rather be to work out the consequences of various alternatives within the

bounds of reasonable probability. It is when we come to the forecasting of births that these bounds are widest and the prediction of the numbers of any group containing persons as yet unborn is, therefore, particularly difficult."

2. The passage has been reproduced because it explains clearly what is involved in the attempt to peer into the future in order to form an opinion about future numbers, the nature of the data required for the attempt and the strictly conditional nature of the results to be expected. We shall presently see the application of these observations to ourselves. It is, however, not irrelevant for purposes of this report to set out at this stage the forecast made by the Commission of the future of the British population.

3. The total population of Great Britain had been 105 lakhs in 1801. This had grown, at an enormously rapid rate, to 370 lakhs in 1901. The 1951 Census showed the number had grown further (though more slowly) to 488 lakhs. The Commission (making its calculations in 1947) looked into the future for a century ahead. It made three different assumptions which led to three different conclusions as below:

TABLE 1

(IN LAKHS)

| *Year* | *First assumption* | *Second assumption* | *Third assumption* |
|---|---|---|---|
| 1962 . . . . . | 502 | 499 | 508 |
| 1977 . . . . . | 507 | 486 | 518 |
| 2007 . . . . . | 489 | 415 | 523 |
| 2047 . . . . . | 455 | 296 | 527 |

All the three assumptions relate to the future of the 'family size' (by which term, the Commission refers to the average of the total number of children born to every married woman, on completion of her child-bearing period). If the present level (indicated by the actual experience of women who married during the years 1927 to 1938) remained unaltered in future, the rate of growth of population will slow down and stop sometime towards the end of this century and a reduction of numbers will begin. But the reduction will be small—there would be 455 lakhs in 2047. But if the tendency to reduction of the 'family size' continues further and stability is attained only at four-fifths of the present level, then the reduction of numbers will start much earlier and occur more rapidly. There would be only 296 lakhs in 2047. If, however, the present level is slightly increased—by 6 per cent only—and stability is attained at this

slightly higher level, a slow rate of growth may be kept up for a very long time and the possibility of absolute decline in numbers postponed for at least a century. Accepting these conclusions as data, the Commission then proceeded to discuss the social, economic and other implications of these different possibilities for the future.

4. From what has been said earlier in this report, it will be observed that we do not possess population data which can be compared even remotely with those available to the Royal Commission. Our attempt to peer into the future must, therefore, be limited to a relatively short time ; and our conclusions must be based on methods of deduction of a much less rigorous nature. To make two simple alternative assumptions first, let us suppose that during each of the three decades 1951-60, 1961-70 and 1971-80 the mean decennial rate of growth of population will be—(*a*) the same as that of the average of the three decades 1921-50 ; or (*b*) the same as that of the latest of the same three decades (when the growth rate was higest). These two assumptions may be regarded as yielding the lower and upper limits (TABLE 2) of the probable future figures.

TABLE 2

| *Year* | *Lower limit* | *Upper limit* |
|---|---|---|
| 1951 . . . . | 3,613 | 3,613 |
| 1961 . . . . | 4,077 | 4,119 |
| 1971 . . . . | 4,585 | 4,697 |
| 1981 . . . . | 5,276 | 5,355 |

5. The foregoing table shows the results of a very simple calculation. Another line of approach—which involves somewhat more complicated calculations—yields the figures of TABLE 3 on next page. They represent a forecast for the years 1961, 1971 and 1981 of the population of three states (Uttar Pradesh, Madras and Madhya Pradesh) showing the total number, its division into three broad age-groups (*viz.*, under 15, 15 to 54 and 55 and over), and their subdivision by sexes. The forecast is based on the following assumptions :

*First*,—Apart from the disappearance of child marriages, there will be no material change in marital or conjugal habits ; married women of the same number and the same age will be giving birth to appoximately the same number of children during each of the thirty years 1951-1980 as on an average of the thirty years 1921-50.

*Secondly*,—The mortality rates in every age-group will be approximately the same during each of the next thirty years 1951-1980 as on an average of the thirty years 1921-50.

## TABLE 3

*Population*
(IN THOUSAND)

| Year | All ages | | | 0—14 | | 15—54 | | 55 and over | |
|---|---|---|---|---|---|---|---|---|---|
| | Persons | Males | Females | Males | Females | Males | Females | Males | Females |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| **Uttar Pradesh** | | | | | | | | | |
| 1921 | 46,669 | 24,451 | 22,218 | 9,233 | 8,237 | 13,531 | 12,287 | 1,687 | 1,694 |
| 1931 | 49,777 | 26,147 | 23,630 | 10,181 | 9,189 | 14,371 | 12,870 | 1,595 | 1,571 |
| 1941 | 56,532 | 29,639 | 26,893 | 11,292 | 10,225 | 16,211 | 14,635 | 2,136 | 2,033 |
| 1951 | 63,216 | 33,098 | 30,118 | 12,648 | 11,696 | 17,715 | 15,836 | 2,735 | 2,586 |
| 1961 | 70,017 | 36,641 | 33,369 | 14,316 | 12,851 | 19,275 | 17,683 | 3,050 | 2,835 |
| 1971 | 78,036 | 40,677 | 37,359 | 15,953 | 14,671 | 21,473 | 19,733 | 3,251 | 2,955 |
| 1981 | 87,437 | 45,644 | 41,793 | 18,124 | 16,303 | 24,132 | 22,439 | 3,388 | 3,051 |
| **Madras** | | | | | | | | | |
| 1921 | 40,593 | 20,060 | 20,533 | 7,672 | 7,648 | 10,763 | 11,252 | 1,625 | 1,633 |
| 1931 | 44,650 | 22,091 | 22,559 | 8,744 | 8,641 | 11,771 | 12,302 | 1,576 | 1,616 |
| 1941 | 49,831 | 24,796 | 25,035 | 9,773 | 9,633 | 13,233 | 13,575 | 1,790 | 1,827 |
| 1951 | 57,016 | 28,419 | 28,597 | 10,334 | 10,291 | 15,599 | 15,804 | 2,486 | 2,502 |
| 1961 | 64,231 | 32,028 | 32,203 | 12,234 | 12,122 | 16,915 | 17,172 | 2,879 | 2,909 |
| 1971 | 70,173 | 35,023 | 35,150 | 13,055 | 12,937 | 18,831 | 19,033 | 3,137 | 3,180 |
| 1981 | 79,429 | 39,648 | 39,781 | 15,279 | 15,086 | 20,986 | 21,306 | 3,383 | 3,389 |
| **Madhya Pradesh** | | | | | | | | | |
| 1921 | 15,797 | 7,891 | 7,906 | 3,285 | 3,194 | 4,070 | 4,085 | 536 | 627 |
| 1931 | 17,792 | 8,899 | 8,893 | 3,596 | 3,543 | 4,759 | 4,721 | 544 | 629 |
| 1941 | 19,632 | 9,837 | 9,795 | 3,813 | 3,711 | 5,325 | 5,271 | 699 | 813 |
| 1951 | 21,248 | 10,663 | 10,585 | 4,137 | 4,014 | 5,758 | 5,627 | 768 | 944 |
| 1961 | 23,453 | 11,745 | 11,708 | 4,585 | 4,467 | 6,293 | 6,172 | 867 | 1,067 |
| 1971 | 25,811 | 12,934 | 12,877 | 5,011 | 4,907 | 6,958 | 6,768 | 965 | 1,202 |
| 1981 | 28,636 | 14,340 | 14,296 | 5,632 | 5,492 | 7,693 | 7,512 | 1,015 | 1,293 |

NOTE—All persons who were aged 10 and over at the Census of 1931 were all alive in 1921 and must have been counted at the 1921 Census. It is possible to identify the corresponding numbers, age-group by age-group. Thus we may compare the number aged 15 to 24 in 1921 with the number aged 25 to 34 in 1931 and express the latter as a proportion of the former. This can be done for three successive ten-year periods (1921-30, 1931-40 and 1941-50) and an average struck. In this manner an average (which may be called the 'surviving population rate') can be struck for every age-group into which all persons aged 10 and over are divided and for the two sexes separately. This is the first step.

All persons who were under age 10 at the Census of 1931 must have been born after the 1921 Census. They may be divided into four groups : under age 5 and between ages 5 to 9, separately for males and females. These are the four 'new population' groups at each census. It is assumed that their numbers are correlated directly to the mean of the numbers of women aged 15 to 44 at two successive censuses. The multiplying factors which when applied to the latter will yield the former, are then worked out for each of the three decades. Their average is then struck for the three decades—they may be called the 'new population rates'. This completes the second step.

We then proceed to the third step which consists of three stages. First, the surviving population rates are applied to the 1951 Census figures and we get the age-groups by sexes for 1961 of all persons aged 10 and over. The application of the new population rates then completes the 1961 figures by yielding the numbers of males under age 5, males aged 5 to 9, females under age 5 and females aged 5 to 9. The process is repeated with reference to the 1961 figures thus obtained, and the 1971 figures are secured. By a repetition of the same process in relation to the 1971 figures, 1981 figures are obtained.

We shall consider presently whether these assumptions are reasonable and likely to hold good. But assuming they do, the results for the three states may be fairly expected to be as indicated in TABLE 3. We may (by a further deduction) arrive at a minimal estimate of the future growth of population for the country as a whole up to 1981 as shown in the table below:

TABLE 4

| *Growth of population (Past actuals since 1891)* | | | *Growth of population (Minimal estimates upto 1981)* | | |
|---|---|---|---|---|---|
| *Year* | *Population* (IN LAKHS) | *Increase during preceding 10 years* | *Year* | *Population* (IN LAKHS) | *Increase during preceding 10 years* |
| 1891 | 2,384 | .. | 1951 | 3,613 | 445 |
| 1901 | 2,384 | 0 | 1961 | 4,078 | 465 |
| 1911 | 2,522 | 138 | 1971 | 4,527 | 449 |
| 1921 | 2,514 | *Decrease* | 1981 | 5,157 | 630 |
| 1931 | 2,791 | 277 | | | |
| 1941 | 3,168 | 377 | | | |
| 1951 | 3,613 | 445 | | | |

NOTE—The figures include the state of Jammu and Kashmir and allow for 'inflation' in the 1941 Census by an estimated 20 lakhs.

The calculations which yielded the forecasts furnished in TABLE 3 for the three states are explained in the note below the table. Calculations of the same nature were not attempted for the country as a whole because of difficulties in reconstructing age/sex details with reference to territorial changes. The forecast for India was deduced from the forecast for the three states*—Uttar Pradesh, Madras and Madhya Pradesh. These three states—which had added

*It is possible to compute forecasts for Bombay, in the same manner as for the three states mentioned above. But it was not considered safe to apply the same calculations to that state in view of the large part played by migration in the growth of population of that state. If it is justifiable to assume that migration would continue on the same scale up to 1981 (this is not very likely) the forecast for Bombay would be a steady growth from 360 lakhs in 1951 to 427 lakhs in 1961, 507 lakhs in 1971 and 607 lakhs in 1981. When these figures were added to those of other three states and alternative forecasts for India were deduced by comparison with the total of all the four states inclusive of Bombay, the results were as follows: 4,072 lakhs in 1961, 4,585 lakhs in 1971 and 5,276 lakhs in 1981. These figures (which are not so very different from the minimal estimates furnished in TABLE 4 above) give an indication of the order of magnitude of the uncertainty involved in our necessarily rough calculations.

to their population during 1921-50, 384 lakhs—will add 540 lakhs during 1951-80. India had added to its population during 1921-50, 1,099 lakhs. Assuming that its growth during 1951-80 will bear the same proportion to its growth during 1921-50 as the three states combined, the addition during 1951-80 should be 1,544 lakhs The figures for growth up to 1971 and 1961 are also arrived at by like reasoning.

6. Both types of calculations are of a rough and ready nature. One type of calculation makes some sort of allowance for differences in rates of growth likely to be caused by changes in the age-sex pattern ; the other type does not.

Th important thing to note is not the exact figures—for it is no use attempting to forecast in units smaller than a crore. What should be noted is the fact that, *if we start with the assumption that the future growth will be limited by the experience of 1921-50, we get by different methods numbers of much the same order—41 crores in 1961, 46 crores in 1971 and 52 crores in 1981.* We should also note from TABLE 2 that the figures we are likely to get by assuming that future growth will reproduce the experience of 1941-50 throughout the next thirty years would be higher, but not very much higher. *Are we right in assuming that maternity rates and mortality rates will be the same during the next thirty years,* as during the last thirty years ? Do we have any indications from past experience which would help us to answer this question ? Let us review the past briefly from this point of view. In doing so, we should make a distinction between two quite different sets of questions. We have already seen that the period of thirty years before 1921 differed sharply from the thirty-year period since 1921. The difference, as we have seen, consists in the virtual elimination (barring one exception) of deaths from famine and pestilence ; and the commencement of a process of significant reduction in what may be called normal mortality. May we assume that these gains are permanent ? Or should we accept as a possibility that famine and pestilence may return and the level of normal mortality may rise again, within the next thirty years ? Let us dismiss this possibility from our mind for the present and assume that the gains are permanent. *We shall enquire whether, on a comparison of 1921-30 with 1931-40 and the latter with 1941-50, there is such a definite trend as regards changes either of mortality rates or of maternity rates or both that we should expect the growth of population during 1951-80 to be substantially faster or substantially slower than during 1921-50.*

7. For information on these trends we have to turn to the statistics of registration of births and deaths—which, as already explained, are defective in many ways. In the country as a whole, the system of registration has been

in force throughout the period 1921-50 in roughly three-quarters of the country (on a population basis). The following table shows the numbers of births and deaths which were registered in each of the three decades, as well as the average birth rates and average death rates for each decade derived therefrom :

TABLE 5

| *Decade* | *Registered births* (IN LAKHS) | *Registered deaths* (IN LAKHS) | *Mean decennial birth rate (Registered)* | *Mean decennial death rate (Registered)* |
|---|---|---|---|---|
| 1921-30 . . . | 669 | 502 | 33·7 | 25·3 |
| 1931-40 . . . | 753 | 512 | 33·8 | 23·0 |
| 1941-50 . . . | 680 | 486 | 27·2 | 19·4 |

Before proceeding to draw any inferences from these figures we should observe that the birth rate is deduced to be 27·2 for the decade 1941-50 when we have already in an earlier chapter, concluded that the correct level is 40. Evidently, 32 per cent of all births escaped registration during 1941-50 (apart from the fact that the births occurring among a quarter of the population were not attempted to be registered at all). Similarly, the registered deaths yield a death rate of 19·4 when we have reason to believe the true death rate was 27. It follows that 28 per cent of all deaths escaped registration during 1941-50, in the areas where registration was being effected.

8. It is usual to assume that the rates derived from the registration data for different years may be compared with one another and correct conclusions drawn regarding time-trends even though the absolute values are incorrect. The assumption would be justified so long as we are dealing with areas in which the omissions are not unduly large and with periods during which the system was worked with much the same degree of efficiency year after year, without any material improvement or deterioration. Whether this assumption holds good of the comparison between 1921-30 and 1931-40 is doubtful; it is certain that it is wholly inapplicable to the comparison between 1931-40 and 1941-50 even in those states where the omissions are not unduly large. This negative conclusion is so important that the reasons should be placed on record:

*First*,—We may observe from the figures of TABLE 5 that it is not merely the registered birth rate's and registered death rates which have fallen; the absolute numbers of registered births and registered deaths have also fallen. This raises the suspicion that what we are witnessing may not be a fall in the number of births but a rise in the number of births which have escaped registration.

*Secondly*,—The suspicion is confirmed when we compare the difference between the birth rate and death rate, with the growth rate ascertained by the census. The difference is 7·8 during 1941-50 against a growth rate of 13·1 whereas it had been 10·8 during 1931-40 against a growth rate of 12·7. To put the matter in another way, the registered rates show the birth rate to have fallen more rapidly than the death rate. If we may ignore the effects of migration, this would mean a substantial reduction of the rate of growth. But the census figures show that there was no reduction of the rate of growth. We have good reasons to believe that migration cannot have affected the rate of growth in the country as a whole by even as much as one per cent (though the position is different in certain zones). The figures confirm the suspicion that the system of registration of births and deaths might have been working much less efficiently during 1941-50 than in 1931-40. The comparison between the decades may be bringing to light a fall in the registration of births and not necessarily a fall in the actual number of births.

The point was specially examined by every Superintendent of Census Operations in relation to conditions in his state. The converging testimony of all officers—which will be found in the State Census Reports—confirms the view that there has been a definite deterioration in the efficiency of registration. This conclusion need not cause any surprise. During the war and for some years thereafter, the district administrative establishments were loaded with too much new work in connection initially with the prosecution of the war and later increasingly with the problem of keeping food supplies moving and prices under control. 'Routine' work of every description sufferred, including the maintenance of adequate supervision over the staff entrusted with the duties of registration of births and deaths and submission of returns relating to them.

Comparison of the data relating to 1921-30 with those of 1931-40 is not vitiated in the same way ; though, even here, it seems possible that special efforts undertaken in some areas to *improve* the efficiency of the system may have also introduced an element of non-comparability.

9. We may now make the following observations on the figures for India in TABLE 5 :

(*i*) The registered birth rate was the same during 1931-40 as during 1921-30. This is probably true also of the actual birth rate.

(*ii*) The registered death rate during 1931-40 was smaller than that of 1921-30. There was probably a genuine fall in the actual death rate.

(*iii*) There are large reductions, both in the registered birth rates and registered death rates, when we compare 1941-50 with 1931-40; the reduction of the registered birth rate actually exceeding that of the registered death rate. It should not be supposed that the true birth rates and true death rates changed in this manner. It is not possible to say, from these figures alone, whether they changed at all; and if so, how.

10. Among the states where births and deaths are registered, there are only four in which it has been computed that the omissions are fewer than one in four during 1941-50; and consequently, even smaller, in earlier decades. These are, in order of efficiency of registration: Punjab, Madras, Madhya Pradesh and Bombay. Let us observe the trends disclosed by the registration data in these states, as shown in the table below:

TABLE 6

| *State* | *Natural division* | *Registered birth rate* | | | *Registered death rate* | | |
|---|---|---|---|---|---|---|---|
| | | *1921-30* | *1931-40* | *1941-50* | *1921-30* | *1931-40* | *1941-50* |
| Punjab | Himalayan | 34·7 | 35·8 | 34·1 | 31·4 | 26·9 | 23·8 |
| | Plain | 41·2 | 43·6 | 40·0 | 30·3 | 26·3 | 23·9 |
| Madras | Deccan— | 35·7 | 38·5 | 33·1 | 25·7 | 26·1 | 22·7 |
| | West | 35·8 | 35·0 | 31·3 | 22·2 | 20·6 | 18·3 |
| | North | 30·9 | 34·7 | 30·5 | 21·3 | 22·4 | 20·7 |
| | South | 31·0 | 34·0 | 30·4 | 21·9 | 21·9 | 20·7 |
| Bombay | Deccan—Northern | 38·9 | 39·5 | 35·3 | 27·7 | 26·0 | 24·4 |
| | Deccan—Southern | 37·4 | 38·5 | 36·0 | 27·2 | 26·3 | 24·5 |
| | Gujrat | 36·2 | 38·9 | 36·2 | 26·7 | 26·6 | 24·8 |
| | Greater Bombay | 18·8 | 25·4 | 23·1 | 28·1 | 21·1 | 16·0 |
| | Konkan | 33·9 | 33·0 | 27·0 | 23·3 | 21·3 | 18·3 |
| Madhya Pradesh | North-West | 41 2 | 43·7 | 36·8 | 32·5 | 35·0 | 31·5 |
| | East | 39·4 | 39·2 | 35·2 | 29·8 | 27·8 | 28·1 |
| | South-West | 43·8 | 41·1 | 39·4 | 33·3 | 33·6 | 32·1 |

Though we have had to exclude all the areas where the registration data are too defective for purposes of assessing trends, we are left in TABLE 6 with figures for sufficiently large and widely dispersed areas in the country. Whatever inferences are legitimately drawn from these figures would probably reflect

the true position in the country as a whole. The following inferences seem credible to the present writer :

(*i*) *Changes between 1921-30 and 1931-40*—The general picture is made up of two features : *one*—a definitely rising or stationary birth rate ; and *the other*—a significant, though rather small, fall in the death rate. The rise in the birth rate was probably associated with a passing change in the age structure, reflecting the abnormal consequences of selective mortalities of influenza, plague and famine in earlier decades. In some places (*e.g.*, North Madras and South Madras) the rise may be probably deceptive and indicative merely of the results of special efforts to improve the efficiency of registration.

(*ii*) *Changes between 1931-40 and 1041-50*—The general picture is made up of two features : *first*,—there is a fall in the birth rate which consists in part of the cancellation of the rise which had occurred in the earlier decade and in part also of a further fall below the levels reached in 1921-30; and *secondly*,—there is a further drop in the death rate between1931-40 and 1941-50 which is a shade more pronounced than the dropwhich had occurred between 1921-30 and 1931-40.

Where an earlier increase in the birth rate (or death rate) had been due to improvement in the registration of births and deaths, it is almost certain that the improvement was not maintained and a set-back occurred. To this extent, there was no real change in either decade. It is also possible that—even where there was no special improvement originally—deterioration in registration has occurred in the last decade and has exaggerated the trends. After making due allowance for such vagaries of registration, it is difficult to rule out the possibility that the true birth rate of 1921-30 might have been a little higher than the true birth rate of 1941-50 (*viz.*, 40). We should accept it as probable that there has, in fact, been a small reduction of the birth rate. We are on much firmer ground about the death rate. The trend of the death rate differs from that of the birth rate in two ways : the former has fallen in both decades successively, whereas the latter has moved up and down; *and*, the drop in the death rate is clearly visible to the naked eye, while that of the birth rate is microscopic.

11. The fact that the true death rate of 1941-50 must have been definitely lower than the true death rate of 1921-30 is brought out independently by the Life Tables which have been computed for the two periods—by Shri L. S. VAIDYANATHAN for the former and by Shri S. P. JAIN for the latter. The life table data are fully discussed in Shri JAIN's report. The salient features are as follows.

The expectation of life, at any particular age, is a good index of the net result of the incidence of mortality at all subsequent ages. But the nature of the data used for purposes of calculation is such that a good deal of guess-work enters into this factor at very young ages. The values of expectation of life at birth must, therefore, be treated with some reserve ; but the values for expectation of life at higher ages may be relied upon more confidently. The relevant figures are shown below :

TABLE 7

| —— | *1921-30* | *1941-50* | *Increase in expectation of life during 20 years* |
|---|---|---|---|
| Expectation of life at birth | 26 years and 11 months | 32 years and 5 months | 5 years and 6 months |
| Expectation of life at age 10 | 36 years and 5 months | 39 years | 2 years and 7 months |

These figures leave no room for doubt that there has been a significant increase in the expectation of life—which is the same thing as a significant decline of mortality rates. This conclusion indicates a trend of which we should take notice when making estimates of future growth. But before following up that point, a brief digression is necessary in order to prevent the possibility of any sense of complacency arising out of our finding that the death rate has, in fact, fallen and the expectation of life has increased.

12. The expectation of life at age 10 is 59·0 to 60 in England and Wales, Australia and New Zealand. It is 56 in the United States of America, about 50 in Japan and 47 in Egypt. It is *now* 39 in India. We continue to retain the unpleasant distinction of having the lowest expectation of life among all the peoples for whom figures are available.

13. We should also remember that preventable deaths continue to occur in especially heavy numbers among infants and young children under age 5. Our information about mortality rates at different ages is very poor. The best judgment which the present writer is able to form on this subject from available data is furnished in TABLE 8 on next page.

TABLE 8

| | *Number of deaths occurring among 1,000 persons of all ages during any one year (1941-50)* | | | |
|---|---|---|---|---|
| | *All ages* | *Under age 5* | *Ages 5 to 54* | *Ages 55 and over* |
| South India (Madras) | 21 or 22 | 8 or 9 | 7 or 8 | 6 |
| West India (Bombay) | 26 | 11 | 9 | 6 |
| North India (Uttar Pradesh) | 27 or 28 | 11 | 10 or 11 | 6 |
| Central India (Madhya Pradesh) | 34 | 15 | 13 | 6 |
| INDIA | 27 | 11 | 10 | 6 |

In all the four zones for which available data permit a judgment, it will be seen that the number of deaths occurring under age 5 equals or exceeds the number of deaths occurring at all ages between 5 and 54; and is substantially in excess of the deaths occurring among elderly persons aged 55 and over.

14. The mortality of children under age 5 is heavy. Among them the mortality of infants, who die before they complete one year of age, is especially heavy. It is true that our infant mortality rate is diminishing. During the decade ending 1931, it was 176 infant deaths per 1,000 births. During the next decade, it was 164. During the last decade, it was 152. These are the figures based on registration. When we allow for omissions in registration (which are almost certainly more numerous among infants who die shortly after birth than among infants who survive), the true rates would probably be higher than these figures (which are, even as they stand, extremely high). *We have seen that out of 27 deaths of persons of all ages (which occur annually among 1,000 persons in India) 11 deaths occur among children under 5 years of age. Out of these 11 deaths, it is almost certain that 7 occur among infants who have not completed one year of age.* This appalling waste of life and maternal suffering so largely preventable, goes on day after day in all parts of the country. Madhya Pradesh seems to have an unenviable distinction. Whereas in the country as a whole, 40 child births occur every year among 1,000 people, Madhya Pradesh has 44. *Whereas in the country as a whole, 7 infants die before they are one year old, the number in Madhya Pradesh is 11.* The entire excess of births is matched by an equal excess of infant deaths.

15. Let us now leave these unpleasant figures behind and resume our discussion of trends during the last three decades. We may be satisfied that there has been a real drop in the death rate from decade to decade. The drops are real though they are small. They reflect the modest success, which has undoubtedly been achieved in successive decades, in reducing the incidence of premature death of the type which is normal in our country.

What about the rise and fall of the birth rates, from which we concluded that there was perhaps a net diminution of the birth rate to a small extent during 1941-50 as compared with the level of 1921-30 ? The changes would appear to be attributable to two causes of which one is indicated by the figures in the table below :

TABLE 9

| Decade | Age-group | *Number of married females per 1,000 persons of both sexes and all ages in* | | | |
|---|---|---|---|---|---|
| | | *Uttar Pradesh* | *Madras* | *Bombay* | *Madhya Pradesh* |
| 1921-30 | 15-24 | 74 | 73 | 72 | 7 |
| | 25-34 | 71 | 71 | 69 | 73 |
| | 35-44 | 42 | 38 | 37 | 43 |
| | **15 to 44** | **187** | **182** | **178** | **191** |
| 1931-40 | 15-24 | 76 | 74 | 78 | 80 |
| | 25-34 | 72 | 70 | 70 | 75 |
| | 35-44 | 43 | 38 | 36 | 42 |
| | **15 to 44** | **191** | **182** | **184** | **197** |
| 1941-50 | 15-24 | 73 | 67 | 74 | 69 |
| | 25-34 | 70 | 69 | 71 | 76 |
| | 35-44 | 46 | 42 | 40 | 46 |
| | **15 to 44** | **189** | **178** | **185** | **191** |

NOTE—The figure for each decade is arithmetical mean of two figures computed from the data relating to the censuses at the beginning and end of the decade.

It will be observed that the figures of Madhya Pradesh, Bombay and Uttar Pradesh show significant increases in the numbers of married women of child-bearing age from 1921-30 to 1931-40, while those of Madhya Pradesh and Madras show significant decreases from 1931-40 to 1941-50. A detailed analysis of such changes in Madhya Pradesh (the analysis took into account changes within natural divisions) shows that they must be due to the distortions caused by selective mortality inflicted by the great influenza epidemic on a generation

whose age structure had been distorted by the great famines of the decade 1891-1900. There is little doubt that, where there are real ups and downs in the birth rate (and not merely ups and downs in the efficiency of registration of births), the principal operative cause has been the changes in the age-sex structure arising in the manner just described. That is probably the correct explanation of the ups and downs of the birth rate. But is it a complete explanation also of the finding that there is a net resultant drop ? It is very difficult to say. It is not impossible that the average age of marriage of girls may have risen somewhat and caused this net resultant drop. The rise in the age of marriage may have come about, as a result of the Child Marriage Restraint Act of 1929—even though (as pointed out in an earlier chapter) the law still continues to be disregarded by quite considerable numbers of people in many parts of India. It must be borne in mind, however, that the net resultant drop, for which an explanation is sought, is so very small that the reality of its existence has to be established by elaborate argument.

16. In the light of this review of the past what do we infer about the future?

So far as maternity is concerned, our assessment of the past does not indicate a trend which would justify us in assuming any very materially different future unless something happens which leads to the wide-spread adoption of contraception—a contingency which we shall reserve for later discussion. The position is different about mortality. Our assessment of the past would justify us in assuming that a further decline of mortality might take place in the next thirty years. It is perfectly obvious that a large proportion of deaths which occur at present are preventable. There is, therefore, quite considerable scope for reduction of mortality, especially among infants and very young children.

*It follows that (unless the rate of growth of population is checked by contraception or a breakdown of food supply of such a serious nature as to entail a return to the abnormal mortality conditions of 1891-1900) population will increase during 1951-80 at a faster rate than during 1921-50. Nevertheless, it is expedient for purposes of further discussion that we should accept a forecast which errs on the side of under-statement rather than the contrary.* With reference to the two sets of figures already mentioned in (TABLES 2 & 4) *let us finally assume that the future growth of population will be as shown in* TABLE 10.

TABLE 10

| *Year* | *Population* (IN CRORES) |
|---|---|
| 1951 | 36 |
| 1961 | 41 |
| 1971 | 46 |
| 1981 | 52 |

17. We have seen that during the three decades before 1951, cultivation *per capita* has been steadily declining and food shortage growing. We shall examine, in the last section, whether these tendencies will be arrested and reversed during the next three decades. In doing so we shall endeavour to think *quantitatively. Shall we be able to develop agriculture so as to keep pace with the numbers specified in* TABLE 10 ? That is the question we shall seek to answer.

Before we start, let us be quite clear about this—our growth in numbers may prove to be even faster than is shown by TABLE 10. It will not be slower. It is nearly as certain as any prediction can possibly be that our number will rise to 52 crores round about 1981, *unless any of the two developments occurred beforehand.* The first of these conceivable developments may be described as the 'catastrophe'. Our food shortage which has grown in the past, in the manner described in the last chapter, might—if permitted—grow still further, with the result that the distribution of food supplies might breakdown (as it did in 1943, in Bengal). If this happens over extensive areas for a few years in succession, it will bring in its wake famine and epidemic diseases on the scale which prevailed during 1891-1900. Our assumption that 1951-80 will be governed by the trends of 1921-50 in respect of mortality, would have broken down.

The second contingency may be described as the 'near-miracle'. Our womenfolk might begin to practise contraception and voluntarily limit childbearing, as they are doing in Western European countries today. In that case, our assumption that 1951-80 will be governed by the trends of 1921-50 in respect of maternity, would have broken down.

18. If we assume (as most people would like to do) that the 'catastrophe' will not be permitted to occur and that the 'near-miracle' should not also be counted on, then we are committed to the development of agriculture at a rate sufficient to feed *at least* 52 crores of people in 1981. Can we do this ? The answer to this question, according to the best judgment of the present writer is in the negative. The reasons are explained in the next section. The conclusion is then drawn that we must count on the 'near-miracle' and bring it about while we are developing agriculture as fast as we can. This view is explained in the next succeeding section of this chapter.

## *B—Agricultural Productivity : Development Targets*

19. When we discuss agricultural development and frame programmes and targets therefor, it is convenient to use two different terms—'productivity' and 'production'—to signify two different things. We often hear, for instance, of planning the production of rice or wheat so as to get so many lakhs of tons in such and such a year. But that is not possible. It may be possible to plan ahead the production of a particular year in mines or factories, but it is not possible to do it on farms. For, the monsoons are (at any rate at present) beyond the control of man. The vicissitudes of the seasons alter the yield of crops, from one year to the next, by much larger amounts than any increase which can be brought about by human contrivance within the same time. This does not mean that agricultural development cannot be achieved by planning. On the contrary, we have perhaps reached a stage in the development of agriculture when further development is unlikly to occur on any significant scale without planning and state-aid. But we should be clear that what we seek to increase by planned development is *not the production of any particular year*; *but the 'average level of production'*—above and below which the production of particular year fluctuates in response to seasonal conditions. Much error and confusion will be avoided if this distinction is borne in mind more firmly than it is at present. Let us use the term *'productivity'* to refer to this 'average level of production', in order to emphasize the fact that we are *not* referring to the *production* of particular years.

20. It is useful to go a step further and dot the *i's* and cross the *t's* of the definition of 'productivity' so that it might become possible to measure it like the birth rate or the death rate or similar useful statistical concepts. A difficulty is presented by the fact that the same land is used in different seasons (sometimes even simultaneously) to grow different crops. When we raise the productivity of a plot of agricultural land, we can grow more rice or more jute, more millets or more cotton—more or less as needed. Development of productivity is one thing, and the allocation of increased productivity to different alternative uses is another. It is not unusual for people to imagine that productivity has been increased when there is merely diversion from, say, short staple cotton to millets or from millets to groundnuts. We cannot add up the weight of different crops and arrive at a single total of the combined weight of all crops. So we need a conventional method of establishing equivalence between different crops in order to arrive at a single yardstick for the measurement of productivity.

Let us accept two conventions. *First*,—all foodgrains (when they are clean, dry, dehusked and fit for human consumption) may be regarded as equivalent to one another, maund for maund, and added up on that basis. *Secondly*,—the productivity of any plot of agricultural land is the weight of the average annual yield (*less* seed*) of foodgrains actually grown on such land; provided that where a crop other than a foodgrain is grown, it is assumed that the foodgrains normally grown on such land or similar land in the vicinity had been grown instead.

21. With the help of these conventions we may fix the present level of productivity of agriculture in India as follows: We have already assumed† the average yield (*less* seed) of foodgrains cultivated in India (as an average of five years preceding 1951) was 556 lakhs of tons. The gross area sown to foodgrains is 78 per cent of the gross area sown to all crops. The total productivity may therefore be assumed as [$556 \times 100/78$, *i.e.*] 700 lakhs of ANNUAL tons.

22. Seven hundred lakhs of ANNUAL tons round about 1951 is then our starting point; when our total number was 36 crores. What is the level of productivity needed round about 1981, when we expect our number to have grown to 52 crores? Before we estimate this, however, we should take note of the shortages which were present round about 1951.

The shortage of foodgrains has already been estimated. Round about 1951, the annual average was 34 lakhs of tons. There are known to be shortages of smaller order in other crops also. *Let us, therefore, assume in round figures that 750 lakhs of* ANNUAL *tons of agricultural productivity are required in order to feed and clothe 36 crores of people at the current levels of consumption. This is the same thing as saying 5* ANNUAL *tons are required for every 24 persons.* At this rate, we can compute that we shall need by way of agricultural productivity in 1961 when we shall be 41 crores; in 1971 when we shall be 46 crores; and in 1981 when we shall be 52 crores—*if we are to overcome existing shortages and maintain current levels of consumption without deterioration.* The results are shown in TABLE 11 on next page.

*It is very necessary that seed should be deducted from the gross yield (among other reasons) because the proportion of seed to gross yield is very different for different grains.

†*cf* Chapter IV, para 64; and APPENDIX V.

TABLE 11

| Year | Population (IN CRORES) | Needed agricultural productivity (IN LAKHS OF ANNUAL TONS) | Targets of development of agricultural productivity (IN LAKHS OF ANNUAL TONS) |
|---|---|---|---|
| 1961 . . . | 41 | 850 | 150 |
| 1971 . . | 46 | 960 | 260 |
| 1981 . . . | 52 | 1,080 | 380 |

23. As long as the population grows, our agricultural productivity must also grow. *Our target for development is, therefore, a moving target which is indicated by the figures of the last column of* TABLE 11. If we express these figures as percentages of the level of productivity prevailing in India round about 1951 (*viz.*, 700 lakhs of ANNUAL tons), we may say that *the increase required is of the order of 21 per cent before 1961, 37 per cent before 1971 and 54 per cent before 1981.*

Let us recall the fact that we have taken care to avoid over-estimating either the probable increase of numbers or the probable requirements of foodgrains per head of population or the probable proportion of all crops to foodgrains.* The targets set out in TABLE 11 are, therefore, minimal estimates of the scale and tempo of development which are essential if existing shortages are to be overcome and if we are to supply the food and cloth needed by our growing numbers out of the produce of our land. If our future rate of development of agricultural productivity falls short of these targets we must expect to have less food and cloth to go round for all, or to have to import more foodgrains or more cotton or both.

24. No one is likely to dispute these statements. In fact, everyone is anxious to see that agricultural productivity is developed as rapidly as possible. The Central Government and all the State Governments are concentrating their

*The last mentioned point is especially important. The high proportion of foodgrains (especially cereals) to all crops in our cultivation reflects the high proportion of foodgrains (especially cereals) in our diet. If we are to have more vegetable oil and more ghee, more milk or butter-milk, more vegetables and fruits, more sugar and spices in our food (and more of these are badly needed if we are to have better nutrition) we should increase the proportion of foodcrops other than foodgrains. At present we cannot do this because any increase in such crops cannot be secured *except at the cost of a more than commensurate loss of cereals, which we cannot afford.* The point should, however, be noted that the targets of development specified in TABLE 11 are *minimal in the sense that they do not include provision for material improvement of current nutritional standards.*

energies on it. Our First Five Year Plan, it is well known, has placed the programmes needed for this development in the forefront. About 45 per cent of the planned expenditure on all development schemes is earmarked for the development of agriculture, irrigation and power. Funds necessary for these purposes, it is agreed, are to be made available on a very high priority. What is not, however, equally clear is whether the schemes are sufficient to solve our problem. Let us examine how far the schemes included in the Plan will take us towards the attainment of the targets of TABLE II. How much will remain to be provided by future Five Year Plans ?

25. The most reliable as well as the most durable of all the methods of increasing agricultural productivity is to increase the irrigated area. This involves construction of new irrigation works or improvement of existing irrigation works. It is well known that schemes for the development of irrigation are placed in the forefront of all schemes for the development of agricultural productivity in the First Five Year Plan. All are familar with the great multipurpose river valley projects, as well as numerous other irrigation projects (major and minor) which are either under construction or are about to be undertaken. Though they are well known, it is to be doubted whether there is a correct quantitative perception of the scale of the undertaking or realisation of the fact that, *in the literal sense of the phrase, it is altogether unprecedented in the history of the world.*

26. To begin with, we are far too apt to imagine that our country is poorly equipped with irrigation, as compared with other countries of the world. From this it is deduced that we have a much larger leeway to make up than other countries. This is entirely wrong. We can have a correct idea of the immensity of the task which we have undertaken only if we realise the truth, which is—we have already gone very far in developing the use of usable resources of water, just as we have already gone very far in developing the use of usable resources of land. Unfortunately, the true position cannot be established by figures because it is very difficult to get hold of comparable statistics of irrigated area in different countries. Such figures as there are go to show that India irrigates a higher proportion of its crops than the world as a whole and that probably no other large country except China irrigates a higher proportion. In particular, the proportion of irrigated area to gross area sown is much smaller in Europe or North America than in India. The relevant figures for India, round about 1951, are given below.

India's cultivated land now measures 2,867 lakhs of acres. The gross area sown is just over 3,244 lakhs of acres ; the difference being the area sown more

than once during the same year. Out of 3,244 lakhs of acres sown, the crops on no less than 503 lakhs of acres are irrigated. The irrigated area is thus 15·5 per cent of the total area sown. The proportion of irrigated area for different zones is shown in the table below :

TABLE 12

| *Zone* | *Percentage of irrigated area to area sown** |
|---|---|
| North India . . | 23·4 |
| East India . . | 17·0 |
| South India . . | 25·8 |
| West India . . | 4·8 |
| Central India . . | 5·3 |
| North-West India . | 24·3 |
| INDIA . . | 15·5 |

27. We must have some idea of the rate at which irrigation has developed in the past if we are to assess correctly the scale of the effort we are making for the future. How many of the works which at present provide irrigation for 5 crores of acres antedate British rule —we have no means of computing. It is certain that some of them are well over two thousand years old. It is probable the greater part of the present irrigated area had been brought under irrigation long before British rule. It is, however, characteristic of irrigation works that they fall into disrepair and disuse in times of anarchy and misrule and get restored and improved under conditions of settled administration. There is little doubt that a good deal of restoration and improvement of this nature has taken place during the last century. It is also certain that considerable development has also occurred through the construction of private wells and other small scale works undertaken by farmers themselves. Such development was also fostered by the grant of loans and concessions in respect of land revenue and rent. In addition to all this, it is a fact that very large areas were newly brought under irrigation by major irrigation projects constructed as public enterprises within the last century.

We have got detailed and accurate information about this. It has been reckoned that the total area irrigated by public works projects (for which capital and revenue accounts have been maintained) is 291 lakhs of acres in *undivided* India. Out of this, it is estimated that 142 lakhs of acres are in areas now in Pakistan. The development of irrigation, within India in its present limits, was 149 lakhs of acres. It took roughly a century for this development to

*The area of cultivated land (or net area sown) should be distinguished from the total (or gross) area sown. Similarly the area of irrigated land is distinguishable from the total area irrigated. The most appropriate comparison is between the total area irrigated and the total area sown.

occur. The table below shows the break up of this total by zones and periods of construction :

TABLE 13

(IN LAKHS OF ACRES)

| Zone | Constructional period | | | Total |
|---|---|---|---|---|
| | *Before 1891* | *1891-1920* | *1921-1940* | |
| North India . . | 32·5 | 5·1 | 18·2 | 55·8 |
| East India . . | 5·1 | 7·0 | .. | 12·1 |
| South India . . | 12·6 | 13·1 | 2·4 | 28·1 |
| West India . . | 0·7 | 1·6 | 1·5 | 3·8 |
| Central India . . | .. | 0·7 | 5·9 | 6·6 |
| Noth-West India . | 27·5 | 9·1 | 6·4 | 43·0 |
| INDIA . . | **78·4** | **36·6** | **34·4** | **149·4** |

The figures indicate a fairly steady, but slowly diminishing, tempo of construction. The marked inequalities of development in the different zones should also be noted. One should not imagine this involves arbitrary preference for some areas and neglect of others. North India, North-West India and South India presented much better scope for profitable development than West India and Central India. East India was better provided by nature with rainfall and soil moisture than other zones and was less in need of new works of irrigation.

28. We must not under-estimate the scale of the effort which the figures of TABLE 13 stand for. We can appreciate how large an undertaking it was, if we compare this history of development with that of the United States of America as indicated by the following passage from the report of the Hoover Commission :

> "At the time, the great multi-purpose projects were inaugurated, the earlier projects of irrigation had been largely completed and were furnishing water to about 2,790,000 acres. In the 18 years since that time about 1,500,000 acres of additional soil have been brought under irrigation with perhaps another 550,000 acres more benefiting indirectly from the water supplied by the multi-purpose projects."

It is evident that the development of irrigation by the construction of large scale public works projects was undertaken in India on a much larger scale and carried out at a much faster pace than in the United States of America.

29. *Now, it is scarcely credible but nevertheless true that the First Five Year Plan includes major irrigation projects which are calculated to bring more area under new irrigation than the entire area brought under new irrigation by all major irrigation projects which were constructed during a century of British rule.* The relevant figures are shown in the table below :

TABLE 14

| Zone | *Irrigated area under major projects** (IN LAKHS OF ACRES) | |
|---|---|---|
| | *Projects constructed during the last century* | *First Five Year Plan Projects* |
| North India | 55·8 | 19·5 |
| East India | 12·1 | 55·0 |
| South India | 28·1 | 10·3 |
| West India | 3·8 | 10·5 |
| Central India | 6·6 | 10·7 |
| North-West India | 43·0 | 54·9 |
| INDIA | **149·4** | **160·9** |

A complete specification of the individual projects, of which the planned results are shown in the last column of this table, will be found in the papers printed as APPENDIX VI.

30. Judged in the light of the scale and tempo of past development the present undertaking appears to be so stupendous that it may well be asked whether the planned results are not seriously over-estimated. *There is no reason to believe they are.* It is true that no one can be absolutely certain of the

*These figures relate to irrigation benefits from these projects *on completion*. The five multi-purpose projects—Kosi, Koyna, Chambal, Rihand and Krishna Valley on which work has yet to be started and certain tube-well schemes in Uttar Pradesh which would be completed in 1966-67, are excluded.

FIG. 23

# DEVELOPMENT OF IRRIGATION
# MAJOR IRRIGATION PROJECTS

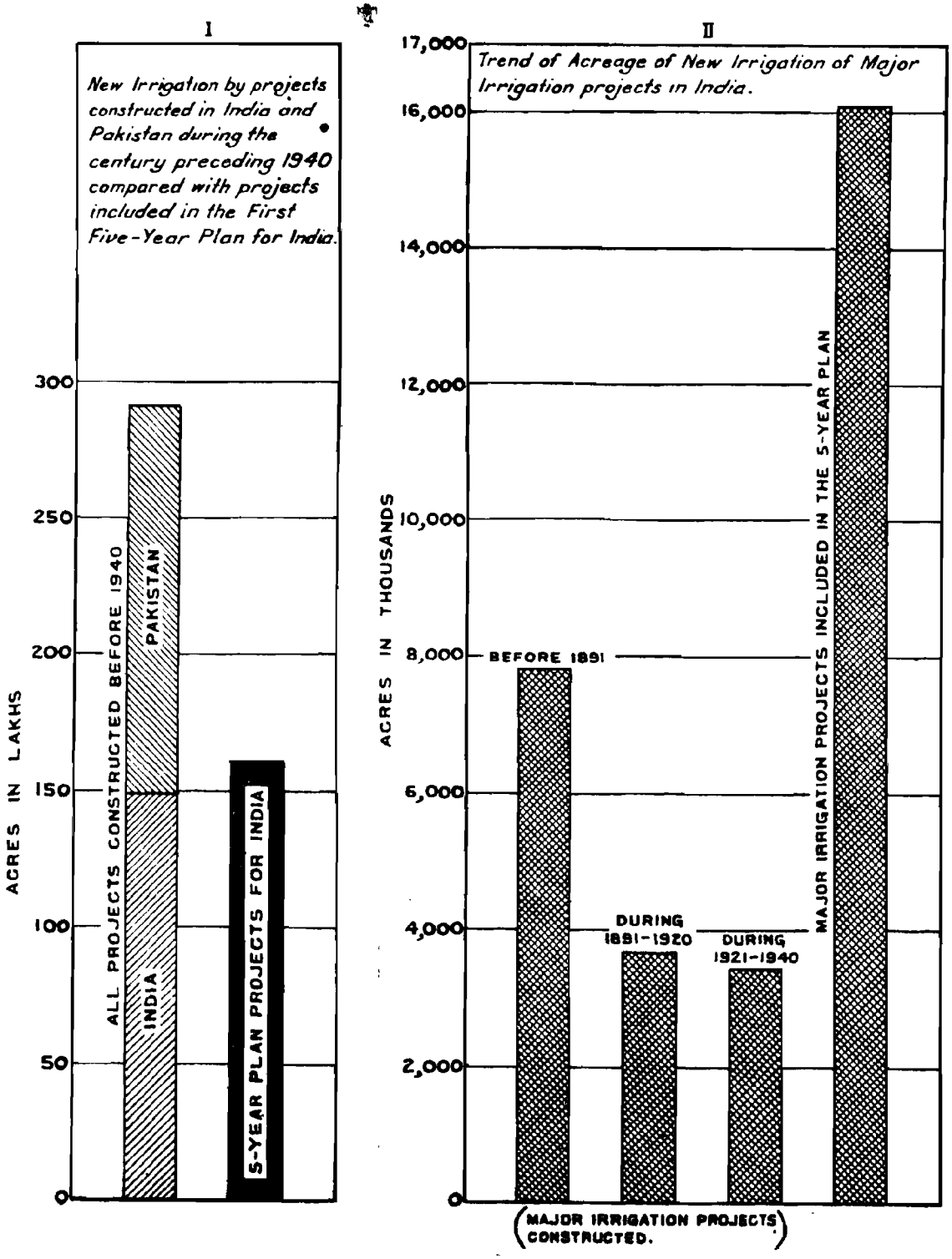
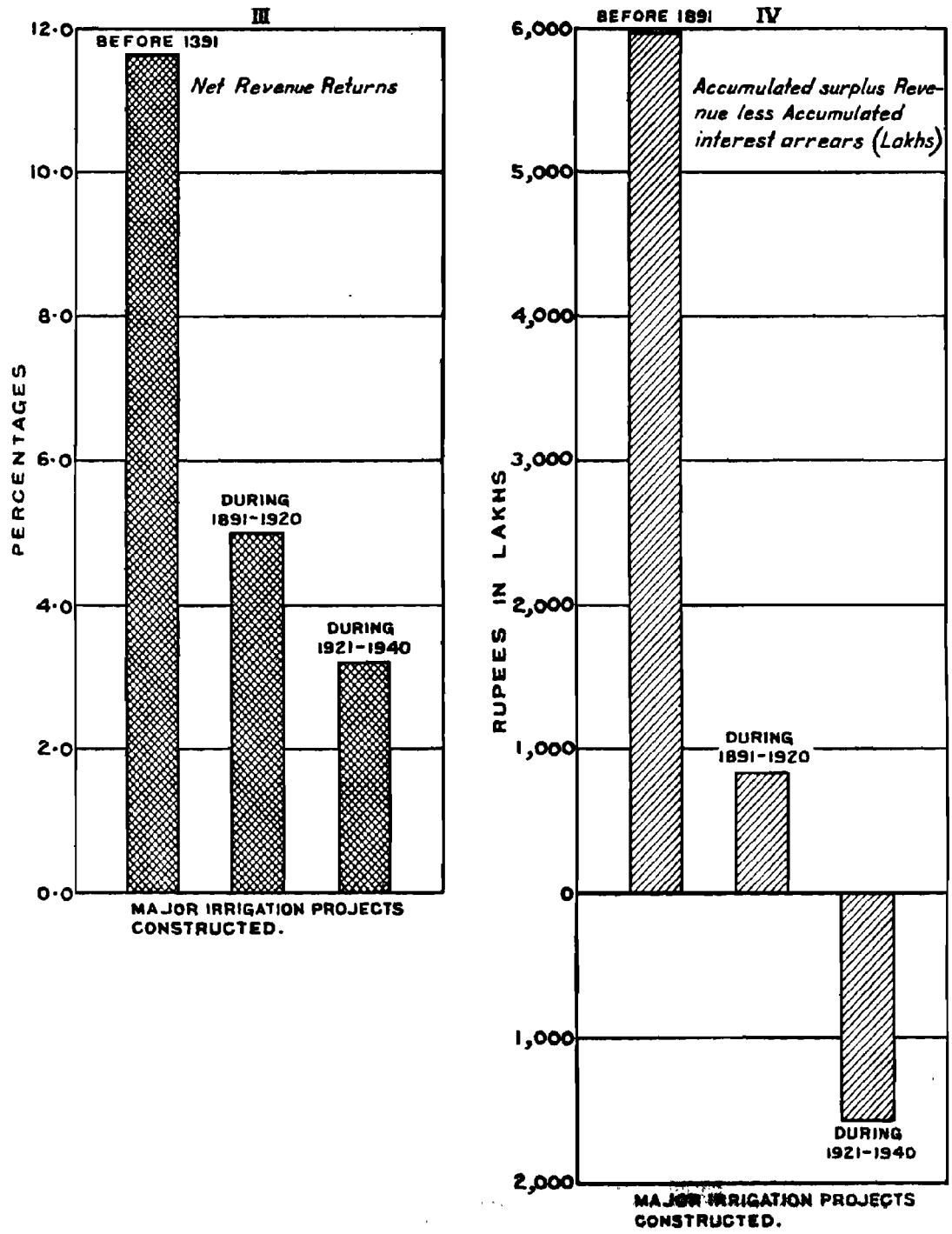


FIG. 24

# TREND OF FINANCIAL RETURNS



results of any undertaking until one has got them. But there is no justification for misgivings, because planning of major irrigation projects is not a new task. The engineers of North-West India, North India and South India have got nearly a century of experience to go upon. The projects may indeed take some what longer to complete than eager people may desire. The people may take time to adapt the land under these projects to irrigated cultivation. Even after irrigation starts, it may take a little time before the yield increases to the normal level of irrigated crops. Experience shows that we must be prepared for all this. But, there need be little doubt that the availability of water would have been correctly estimated and *the planned extension of irrigated area will, in fact, take place.*

31. Now, it may be asked if all this is now possible, why was it not attempted before ? It is necessary that we should ask this question explicitly and make sure that we have answered it correctly. The right answer is to be found in the relation between costs and results. An analysis of costs and results of the old major irrigation projects and the major development plan projects under the First Five Year Plan is made in a note printed as *Part B* of APPENDIX VI. The main conclusions are as follows: In the old days, the selection of projects for execution was limited by the consideration that the net revenue return should suffice to render the enterprise a profitable undertaking for the state. [There were well-recognised exceptions to the rule, but they were limited.] We have discarded this limitation, and hence the large scope for development which we are now using up. It is necessary, however, to face the fact that, with every new advance made in the utilisation of usable water supplies, the real cost (and not merely the money cost) of new works necessary for making a further advance has been increasing. *The figures make it quite clear that the 'law of diminishing returns' is in effective operation and that every acre of new irrigation has to be subsidised by the general tax-payer.* The diagrams which precede this page illustrate clearly the enormous scale of the development which we have undertaken, as well as the trend of diminishing returns against which we have to contend. This situation is not peculiar to India. It exists in the United States of America also*. India is distinguishable from United States only in the fact that here the need for an uphill struggle to get water for irrigation, even at a loss, is very much more urgent and imperative.

32. What is the probable increase of agricultural productivity to be expected when, as planned, these projects are completed and 161 lakhs of acres are brought under irrigation ? The detailed data necessary for making a firm

*of APPENDIX V, *Part B*.

estimate do not seem to be available. From the published papers it may be concluded that the schemes postulate an increase, in terms of foodgrains, of about two ANNUAL tons for every 9 acres of new irrigation. This means an increase of agricultural productivity of the order of 36 lakhs of ANNUAL tons. It should be mentioned here that we are dealing with the results to be expected, when all the major irrigation projects included in the First Five Year Plan are completed and the anticipated new irrigation is developed fully. This is not the same as the area likely to be brought under irrigation within the period covered by the First Five Year Plan. As we are not limiting our review to the next two or there years only, we may assume that the planned increase will be forthcoming in gradual instalments year by year, and will be substantially completed before 1961. According to TABLE 11, we shall then need 150 lakhs of ANNUAL tons in order to overcome current shortages and keep pace with the growth of population. *The contribution secured from all the major irrigation projects will fall short of one-fourth of the total needed. If the scale of our effort is unprecedented, the magnitude of our growing need is even more unprecedented.*

33. But major irrigation projects do not exhaust the provision made for irrigation in the First Five Year Plan. There are 'minor irrigation' schemes also. The name is rather deceptive, because the schemes in question are by no means of minor importance. As a matter of fact we shall have to secure an even larger increase of productivity from such schemes than from major irrigation projects.* Minor irrigation works are of many different types—dams, channels, ordinary wells, tube-wells (other than those included in major irrigation projects), tanks and pumping installations. They include public works to be constructed and maintained by State Governments, as well as private works, which cultivators are to be subsidised and helped to undertake. The schemes of various State Governments added up to a programme designed to yield about 83 lakhs of acres of new irrigation. As this was found to be insufficient (alongwith other measures) to attain immediate future requirements, supplementary provision has been made by the Planning Commission which calls for another 30 lakhs of acres of new irrigation, at an extra cost of 30 crores.

Altogether, the minor irrigation programme is designed to increase the irrigated area by 113 lakhs of acres—which is between one-fifth and one-fourth of the total area under irrigation in the country.

*This does not mean that minor irrigation can be a *substitute* for major irrigation. We shall see presently that their combined output will not be enough.

TABLE 15

| Zone | First Five Year Plan *Minor Irrigation Programme* | |
|---|---|---|
| | *Area of new irrigation* (IN LAKHS OF ACRES) | *Unit cost of minor irrigation developments* Rs. as. |
| North India . . . | 11·1 | 43 4 |
| East India . . . . | 42·3 | 31 0 |
| South India . . . | 7·6 | 186 14 |
| West India . . . | 8·0 | 104 12 |
| Central India . . . | 5·2 | 121 15 |
| North-West India . . | 8·6 | 15 10 |
| ALL STATES . . . | 82·8 | 60 4 |
| Supplementary (Zonally unspecified) | 30·0 | 100 0 |

The figures call for the following comments :

*First,*—They include, as mentioned already, small scale works to be undertaken as public works and other works to be undertaken by cultivators with the help of loans, grants and technical assistance. As the figures are not separated, it is difficult to assess the prospects of realisation of the programme within the time and at the unit costs specified ;

*Secondly,*—In so far as they are public works undertaken by State Governments which possess staff experienced in this type of work, it is likely that planning and organisation are sufficiently well-advanced and the programme would be carried out. Not all State Governments, however, are equally well-equipped with staff possessing the necessary technical qualifications and experience ; and

*Thirdly,*—The schemes which visualise an offer of financial and other assistance being made by the State Governments in order to stimulate cultivators to sink wells in their holdings or construct dams, or improve dams, channels, embankments, ponds, etc., are of very great importance. But the arrangements necessary for putting such programmes through are not easy. Some State Governments have inherited a strong enough machinery of administration from the past. They have acquired experience (during several years of 'Grow More Food' effort), in the organisation of the administration of such programmes. Many other states

lack these advantages. Unless, however, these arrangements are perfected and efficiently operated in such states also, it may not be possible to spend the money provided or money may be spent without securing an equivalent increase of productivity. That is one important consideration. There is another. No scheme of subsidisation of private works will succeed unless the subsidy was carefully adjusted. If the subsidy is lavishly given, the development of productivity will be too small in relation to the expenditure; and progress will be too slow and too costly. If, on the other hand, the subsidy is not clearly adequate, it will fail to induce cultivators to undertake improvements. The subsidy must be sufficient to reduce the net investment by the cultivator to a level at which he could be assured of a profitable return. As large numbers of cultivators have already been induced by loans and subsidies to carry out such works during the last few years, it should be possible to settle—in the light of experience—which is the right subsidy to be offered. It would be surprising if the requirements turned out to be smaller than the average rate of Rs. 100 per acre provided by the Planning Commission. The cost figures of at least two zones—where much smaller figures are provided—would seem to call for upward revision, if the indicated targets are to be attained.

34. This programme, it has been reckoned in the report on the First Five Year Plan, is calculated to increase productivity by 24 lakhs of ANNUAL tons. From what has been said above, it seems reasonable to conclude that the chances of the entire programme being implemented within the next two or three years are poor. More time will be necessary ; and, very probably, more money also. Experience must show the practicable rate of progress and necessary cost. The rate of progress can, indeed, be rapid if adequate administrative, financial and technical arrangements are perfected and the cultivators are properly organised to co-operate with one another and with the local officers of Government. How to bring about such organisation is a question which admits of no simple or ready-made answer. It is known, however, that active steps are being taken to find the answer and perfect the arrangements. For our present purposes, we may, therefore, assume that the two parts of the programme of irrigation development—major irrigation projects at present estimated to cost 445 crores and minor irrigation schemes at present estimated to cost 77 crores—will be put through ; and that they will yield, in reasonable time, an increased agricultural productivity of the order of (36+24, *i.e.*,) 60 lakhs of ANNUAL tons. *When we have got it, where shall we be ? We shall have secured just about two-fifths of what we need by 1961.*

35. Irrigation, of course, is not the only means of increasing yields. There is 'fertilisation'—the effort to increase the supply of mineral fertilisers as well as organic fertilisers and green manure. This effort merges in the various measures by which cultural practices are improved—the use of the right seed, proper preparation of the seed-bed and care of the seedling, the protection of the growing plant against pests and diseases, etc. Lastly, there are arrangements for reclaiming waste land as well as land which has gone out of cultivation owing to the growth of deep-rooted weeds. The latter is closely linked to development of the use of tractors. There is no doubt that every one of these different types of schemes will contribute something towards the attainment of our target. But how much would that contribution be and when shall we get it ? In attempting to answer this question, we enter the arena of high debate—for we deal, mostly, in opinion. There are few reliable statistics based on adequate experience in the country. We have, instead, varying moods of optimism and pessimism.

Data regarding responses to the use of mineral fertilisers are coming in, in recent years, and we are perhaps already in sight of a firm basis for quantitative assessments. Even then, we should pass beyond the purely technical relationship between quantities of fertilisers and quantities of additional yield. We should count the cost — as we have done about irrigation. We should take account of the arrangements necessary for ensuring that the fertilisers are distributed at a price at which it will be remunerative for the cultivators to use them on the production of foodgrains. Here again, we should face the fact that we are probably up against the imposibility of progress without subsidisation.

When we turn from mineral fertililisers to all other measures for the improvement of cultural practices, it is extremely difficult to achieve a realistic and measurable basis such as we need when we are dealing with the vitally important issue of assessing the prospects of food supply of the people.

36. The rest of this section is devoted to a purely subjective assessment, by the present writer, of the prospect for increase of agricultural productivity. The assessment is not based on any statistical projection of 'natural' growth ; for we may be sure it would be very small—probably negligible. *It is assumed that the preponderant part, if not the whole, of future development will be secured as a result of public works which will not be fully self-financing, as well as by state-aided and state-subsidised private effort on a nation-wide scale.* On this basis, the question is not merely what is technologically feasible (though that is very important), but also how much unremunerative outlay and how much subsidy are involved. The idea that development can be achieved without

counting the cost is unpractical. Concentration on subsidised development of agricultural productivity will involve a corresponding retardation of the effort to improve communications, housing, hygiene, health, education and the amenities of life. There are limits to the extent to which such development can be retarded without creating so much disappointment and discontent as to prejudice the success of the whole conception of planned development.

37. Our present level of gross area sown (reckoning the double-crop area more than once) is 32 crores. What is it likely to be in 1981 ? It is suggested that 35 crores is probably about the limit. We have found, in Chapter I, good reasons for believing that India has already brought under cultivation an exceptionally large proportion of usable land. It is common knowledge that over very large areas, land which should have been reserved for use as woodland or pasture has been brought under the plough. In a great many villages we shall indeed need *a carefully organised survey of waste lands, in order to localise all the areas which it would still be possible to reclaim and bring under cultivation without excessive subsidisation. In the course of such survey we shall have to ascertain the different forms of state-aid necessary for bringing them under cultivation.* It would, however, be unjustified optimism to imagine that very large areas of land which would yield a return commensurate with the labour of cultivation—even after subsidised reclamation—will be found very quickly. Progress in this respect, will be both small and slow.

It is possible to increase crop-acreages, without extension of cultivation to waste land, if we can increase double-cropping. Here again we already have a very large proportion under double-cropping. The duration of soil moisture is the principal limiting factor and it is doubtful whether there can be much increase, except *pari passu* with the growth of irrigation—especially irrigation under private wells.

The assumption that the crop-acreage under both heads can be increased by 3 crores of acres before 1981 is probably optimistic, but not perhaps unjustifiably so. Let us make it. What would be the resultant increase of productivity ? We should assume a rate representing the average of the lower range of yields of unirrigated crops at current standards of husbandry. It is necessary to do this, because estimates of increased productivity consequent on irrigation or other measures for increasing the yield rate per acre should be made separately and no item should be counted twice. On this basis, estimate of increase by one ANNUAL ton on every 8 acres newly added to our crop-acreage would perhaps err on the side of optimism. Let us assume it ; and count an increase of agricultural productivity of the order of 40 lakhs of ANNUAL tons.

38. We have reviewed the facts and figures about irrigation at considerable length. We have now got 5 crores of acres of irrigated crops. How many acres of irrigated crops shall we have in 1981 ? The First Five Year Plan budgets for an increase of irrigated area of the order of 2·8 crores of acres. The budgeted increase is certainly feasible, though not within the time. There will also, no doubt, be scope for further increases. Let us take a long-term view, in the full knowledge that every lakh of acres newly added to the irrigated area will render the addition of another lakh more difficult and more costly. What shall we assume as the final result of this uphill struggle—4 crores of acres ? Shall we succeed in increasing the irrigated area of about 5 crores of acres (built up during some thousands of years)—by about 80 per cent—to about 9 crores within the next thirty years. Let us assume that we set this long-term target for ourselves and attain it, through a succession of Five Year Plans. What would be the result ? If we attribute to irrigation the difference between the average yield of irrigated crops and the average yield of unirrigated crops—we would be justified in taking credit for one ANNUAL ton for every five new acres of irrigation*. [In this, we do not take credit for better manuring or other improvement of cultural practices. This comes later.] We shall get a total increase of productivity of the order of 80 lakhs ANNUAL tons by irrigation. Let us add this to the result of increasing crop-acreage, already mentioned. We shall get increased productivity of the order of 120 lakhs of ANNUAL tons.

39. Let us now take into account all other methods of increasing the yield per acre—mineral fertilisers ; green manuring ; better rotations calculated to improve soil fertility ; the so-called Japanese method of rice cultivation ; improved seeds (already known) ; improved seeds which may be expected to be thrown up by research within the next ten years ; contour-bunding and dry-farming ; better protection against pests and diseases ; and greater care and attention to all the processes of cultivation. Every one of these measures will undoubtedly help. We should count on them—but we should not count on them indefinitely. In particular, we should refrain from making a double count of the results attributable to irrigation and to manures—once separetely, and once again when assessing the value of particular methods of improving yields per acre. *We should steer clear of a common mistake which consists in confusing these improvements of methods of cultivation which enable us to secure the same yield per acre with less labour, with others which help to increase the yield per acre.* The former (however beneficial) are not relevant to the present discussion. Finally, there is the

*If land is reclaimed from waste and is also brought under irrigation, we assume 1/8th of a ton per acre on reclamation and 1/5th of a ton per acre *in addition* on irrigation.

tendency to attribute increased yields to changes in the system of ownership and management of land. What sort of land reform is calculated to improve farming effciency is a question on which diverse views are (and will continue to be) held. But we should be careful to distinguish between efficiency in the realisation of technological possibilities which otherwise exist, and the creation of new possibilities. No measure of land reform will *add* to the technological possibilities of cultivation. Well-conceived reforms will remove impediments to their realisation ; ill-conceived changes will create new impediments. Let us not put 'co-operative farming', 'collectivization', 'redistribution of land' and so forth in the same category as water, manures, and improved seed and add up targets of increases attributed to each of them separately. The upshot of all the genuine possibilities which do certainly exist cannot (in the opinion of the present writer) be put higher than the combined effect of the two targets already mentioned—*i.e.*, 120 lakhs of ANNUAL tons. The scale of effort needed to secure this result may be indicated by the break up of the total into three equal parts as shown below :

*First,—Forty lakhs of* ANNUAL *tons* to be secured by concentrating the use of mineral fertilisers (whose use can be stepped up considerably with advantage) improved seeds and improved cultural methods from about 2 crores of acres of land having an assured supply of water;

*Secondly,—Forty lakhs of* ANNUAL *tons* to be secured in the same way as above but without the concentrated use of mineral fertilisers, from about 4 crores of acres of land having a reasonably satisfactory supply of water ; and

*Thirdly,—Forty lakhs of* ANNUAL *tons* to be secured by better cultivation of about 8 crores of acres of unirrigated land situated in areas with low rainfall. This is the most conjectural item, because known methods (*e.g.*, contour-bunding and dry farming) might not suffice for this purpose. On the other hand, if intensive researeh could give us some improved seed similar to the 'hybrid corn' of America, the proposed programme may be over-fulfilled.

40. At the end of all this, our estimate of increase of agricultural productivity is still only 240 lakhs of ANNUAL tons ; of which one-sixth is to be secured by increase of acreage under crop ; one-third by increase of acreage under irrigation ; and one-half by all methods of increasing yield per acre other than irrigation. *This increase will fall short of our needs before 1971. It will be just about sufficient to overcome the present shortages and meet our growing needs until our number reached 45 crores*—which will occur round about 1969. By that time we shall have completed three successive Five Year Plans,

each more difficult than its predecessor, and embarked on the fourth. If even then, our population is still growing unchecked, what are the prospects of our being able to continue to force the development of agricultural productivity so as to keep pace with it. Of course, there will never be a point of time at which it can be said that the last improvement has been effected. But if we draw the moral correctly from the many unmistakable signs which go to show that the law of diminishing returns is in effective operation, we should make up our mind to face the fact that *our effort to keep pace with unchecked growth of population is bound to fail at some point.* If the analysis of the subject contained in this chapter is even approximately valid, we should be able to go one step further and *fix this point by saying that it is the time at which our total number reaches and passes 45 crores.*

## C—*Improvident Maternity : Reduction Targets*

LET US ACCEPT the position that we shall not be able to overcome our existing shortages and also in addition keep pace with the unchecked growth of population. Then what follows—that food shortage will grow and grow until it ends in a breakdown of food distribution and return of famine and pestilence? That is indeed a dark prospect which 1943 warns us to face as a possibility. But not all events which are possible are probable, and very few are inevitable. After all, we have been failing to keep pace with the growth of population for about thirty years and the life of the people is still being carried on, though not without visible adverse results. We must study the trend of these results in the past, in order to have a realistic idea of what to expect in future.

42. First, it is certain that if agricultural productivity fails to keep pace with the growth of population, our need for imported foodgrains will increase steadily. We may do with a little less in a year following a good monsoon, and need a little more in a year following a bad one; but there is a norm above and below which these fluctuations* take place. It is this norm which has steadily increased during the past 30 years ; and it is certain to go up in the future also, unless the development of productivity keeps pace with the growth of population. Round about 1951, we reckoned that the average shortage of foodgrains required

*Incidentally, these year to year fluctuations in import needs will be only a fraction of the year to year fluctuations of production.

to be made good by imported stocks was 34 lakhs of tons. This was the level of the norm at that time. At what rate will it rise in future ? Our current rate of consumption of foodgrains is 4½ maunds (or one-sixth of one ton) *per capita* per annum. Our current rate of increase of population is about 47 lakhs each year. Suppose there is no development at all, will our import norm increase by as much as 8 lakhs of tons per annum, from each year to the next? Will the import norm be 74 lakhs of tons per annum in 1956? We touched on this question before*; and our answer must be in the negative. *Experience shows that in conditions of growing food shortage, every newly added consumer does not set up the same demand as the average of all existing consumers. This is somewhat similar to the fact that every acre newly added to cultivation does not add to productivity to the same extent as the average acre of existing cultivation.* We have not succeeded in tracing the causes of the phenomenon sufficiently clearly to indicate what the future will be like in this respect. It is probable that consumption rates will not be found to be susceptible of reduction to the same extent in future as in the past. *Let us assume that so long as conditions of food shortage continue, the demand set up by every newly added consumer will be only one-half of the existing average rate of consumption.* On that assumption, our import norm will rise only by 4 lakhs tons per annum for some years to come even if no development took place. And if some development (which is significant though insufficient to keep pace with the growth of population) takes place, there will be so much less increase in the import norm.

43. We may clarify this conclusion by more precise statement as follows:

If $D$ lakhs of ANNUAL tons is the development of agricultural productivity actually achieved between the year 1951 and the year $1951+N$ ; then we may assume (for the present as a working rule) that the import norm would rise to $34+4^N-\frac{4^D}{5}$ lakhs of tons per annum by the year $1951+N$. If we can keep up a bare minimum of development of agricultural productivity at the rate of 5 lakhs ANNUAL tons every year, we should just succeed in raising average production of foodgrains by 4 lakhs tons every year. This might probably be just sufficient to stabilise our import norm at the level already reached, and also keep supplies distributed without noticeable hardship or breakdown. *If, however, we do not keep up even this minimum rate of development of agricultural productivity and if at the same time we dismantle our 'state trading system' also, then we shall have lost control over supplies and prices of foodgrains and the drift towards eventual breakdown will have started. If, while this drift was proceeding, a world war should begin and external supplies get cut off—*

*cf. Chapter IV, para 66.

*the blow will have fallen.* The people in all parts of the country must pass through the Valley of the Shadow as the people of Bengal did in 1943. That is an extreme contingency. If, however, we are able to secure imports which are not too far short of the norm indicated by the formula and if we keep up our state trading system and distribute available supplies equitably, without giving rise to panic, it should be possible to carry on for a long time without breakdown. In other words, it is not as if there are only two possibilities—complete success or total failure. The stalemate at present reached in our struggle with food shortage may continue for a long time.

44. It will be said that this is an excessively pessimistic appraisal of the future based on a wrong approach to the whole problem. The right approach, it will be said, is to base ourselves on the experience of other countries (notably Great Britain) which developed much greater dependence on imported food supplies when their population was expanding rapidly. These countries have not only not come to grief, they have raised the nutritional standard of their people. Why should we fail to do the same ? The right answer to our problem, according to this view, is not to concentrate excessively on forcing the growth of agricultural productivity but to industrialize the country more rapidly, export more and more of our industrial products; and buy enough food from foreign countries to meet the needs of our growing numbers without stinting.

It is true that Great Britain developed in this way during the last century. It is equally true that the determination of certain other countries to develop in the same way created stresses and strains which led to two World Wars. It seems most unlikely that any other country with a larger and growing population will develop in that way hereafter. Great Britain was fortunate because she was first in the field and developed her industries and foreign trade at a time when the productivity of cultivation in the world as a whole was developing at a faster rate than the population of the world as a whole. It was then possible for productivity of cultivation to move so fast mainly because a whole New World was being opened up by modern transportation. Virgin land with fertile soil was plentiful and yielded an abundant return in relation to the effort and expense involved in bringing it under cultivation. We have seen in earlier chapters that there are a number of different indications all of which point to the fact that this was an exceptional phase of human history, and that anyone who regards it in the light of a recurring normal feature of human life has not got the correct perspective. During the last few decades the population of very large parts of the world has been growing faster than the productivity of its cultivation, and—over increasingly large areas—development is ceasing to come about 'naturally' ; it has to be forced. Food

exporting countries tend to get fewer and their exportable surpluses tend to become less abundant.* Food importing countries tend to increase, as also the quantities they need to buy. In these circumstances, food importing countries should, in their own interests, limit their demands voluntarily, co-operate in buying available supplies at fair prices and sharing them equitably according to need. If instead of doing this, they adopt the policy mentioned above, *viz.*, to force the exports of industrial products and rely on the purchasing power thus acquired in order to back steadily increasing demands for food, they would only succeed in injuring themselves. The supplies available for international distribution will remain much the same; the price of food will go up and increasing quantities of industrial products will have to be sold in order to procure the same amount of food. Available supplies will be distributed unfairly and the industrially weakest will go to the wall, however urgent their need. These results are bound to follow unless the food exporting countries of the world increase agricultural productivity at a faster rate than their own rate of growth of population *and produce increasing surpluses to match increasing deficits in India and Europe.* This will not happen. It follows that industrialisation is not the answer to the food problem; the widespread belief to the contrary is a fallacy, based on a misreading of history.

This does not mean that development of industry is unnecessary or unimportant. Far from it. But, we should be clear about why we need it. We need it, in order to provide ourselves with those goods and services which add to the comforts and conveniences of life and to make life and work less laborious. Industrialisation will not help to solve our food problem, except indirectly to a limited extent in so far as it can provide the materials needed for the development of agricultural productivity.

45. So then, we have reached two conclusions. *One is*: that we cannot grow as much food as we shall need, if we go on increasing in numbers as we do. *The other is*: that if we do not grow more food, we must eat less food.

What follows—that starvation is our lot? *No.* It follows that we should make up our mind that we shall not go on increasing in numbers as we do. We should realise that it is improvident on our part to permit ourselves to increase in numbers indefinitely without taking thought of how our children and our children's children are to live; and we should resolve to put an end to this increase as soon as possible.

*Relevant data on this phenomena will be found in APPENDIX V. The position is unmistakable about rice. Though it is somewhat less difficult in recent years about wheat, the drift is in the same direction.

46. This is all very well. We may resolve on what we please. That is easy enough. But can this resolve be put into execution ? Is it possible to bring about a substantial reduction of the rate of growth of our numbers—let alone a complete stoppage of increase—sufficiently quickly to make a material difference to the prospect for 1981 (which is what we are considering) ?

The last section was devoted to an exposition of the implications of the effort to raise agricultural productivity at a fast enough rate so as to keep pace with the unchecked growth of population. The conclusion was reached that even with the best efforts we would probably succeed in increasing productivity only by about one-third of the present level ; whereas it is necessary that the increase should be in excess of one-half of the present level, if we are to succeed in 'keeping pace'. That was why we reached the conclusion that the effort to 'keep pace' with unchecked growth of population until 1981 was impracticable. How do we know that the effort to limit births and arrest the growth of population is any less impracticable ? That is the crucial question we have to answer. Before answering it, let us note and briefly dispose of a few other aspects of this highly contentious subject.

47. In recent years, the population problem is debated in almost all countries of the world and very varying views are held. *First*, there are those who hold that the practice of contraception is sinful. A sinful thing could not be necessary or desirable or other than harmful in every way. Therefore, they feel it their duty to prevent the spread of this practice. As, however, few people are now-a-days willing to accept prohibitions without explanation, they proceed to explain that the growth of population presents no problem at all or that the problem can be solved in many different ways which will not involve the use of contraception. It would be a mistake to under-estimate the force of this taboo. This force does not depend on the soundness of the reasons adduced in support of it ; but on the respect which is justly due to religion generally, and to the opinion of all people who are manifestly sincere and disinterested. If we recall the fact that, only recently, the World Health Organisation felt compelled to avoid even considering this subject, we must count it a fortunate circumstance that the religious faith of most of our people is not bound up with this taboo. It is, therefore, easier for us—while affirming due respect for religion, morality and the integrity of family life—to insist that the question whether contraception is good or bad for the people shall be considered in the light of uninhibited reason.

48. *Secondly*, there are those who are quite convinced of the complete absence of any necessity for any effort to restrain the growth of population : the population may grow to any extent—it is always possible to organise their

activities in such a way as to produce the food and all other goods and services needed for an ever-rising standard of living for all of them. To them, it is unnecessary that there should be enough land ; the secret of managing with less and less land *per capita* is simple—collectivize it ! But how can we get the same amount of food from less and less land even if the land were to be collectivized ? We are told that we may safely leave this to science. It is, it seems, an observed fact that those people who make full use of science develop technology at a faster rate than the growth of population. Collectivization of land *plus* technology means adequate food for all the people—no matter what the quantitative relation may be between the land and the people. That is the belief. It is not so much a belief in science as sciencolatry. This new religion comes in handy for a school of thought, which is on principle, opposed to admitting that the shortage of land could be an operative cause of poverty at any time. For if it can be operative in future, it might be operative already. If this belief gains ground, it would weaken a political and economic doctrine which attributes the hardships of the poor exclusively to the wickedness of the less poor. And no opinion which has such an effect can be true. Most people, however, do not reason this out at all. They are concerned with the result—all people should get all the food they need. This is happening in other countries ; and they are determined that it must happen in India also. Since science does seem to work wonders in so many other ways, why should it fail in this purpose ? To such people, the answer must be : "Yes, you are right. But, if you believe in science, you must believe in it fully. Science has placed in your hands the means of reducing births, just as much as of reducing deaths or of increasing the yield of crops. You should use all of them equally well. You should not combine a scientific approach to agriculture, hygiene and medicine with an unscientific approach to contraception."

49. *Thirdly*, there are those who agree that the growth of population should be checked ; but maintain that there is no need for the Government to mix themselves up too prominently in such a delicate and controversial matter. All that the Government need do, according to this view, is to concentrate on improving the standard of living of the people. When we attain West European standards of living we shall also have West European birth rates. Some say the reduction of the birth rate will come about by the people adopting contraception of their own accord in order to preserve their high standards of living. Others say that high standards of living (especially an adequate supply of protein food) will induce physiological changes which will bring about a reduction in the number of children born, even without the practice of contraception. Anyway, both schools agree that when the Government have

solved the problem, the people will see to it that the problem stays solved and does not reappear. That is, no doubt, comforting. But what is to happen if it is true that you cannot solve the problem unless you have checked the growth of population beforehand ?

50. That brings us back to the crucial question of practicability, still to be answered : Which is more difficult—checking the growth of population or keeping pace with the unchecked growth of population ? Obviously, the answer is bound up with the state of public opinion on the subject.

It was nearly 37 years ago when Shri P. K. WATTAL, the pioneer of Indian thought on this subject, published his luminous essay *"The Population Problem in India—a Census Study."* At that time he likened his effort to "the intrusions on the peace of mind of an occupied and self-satisfied public by faddists who put up their umbrellas and insist that it is raining when every good man of the world knows that the sun is shining". He judged the mood of the public aright.

Since then many able writers, scholars, scientists, economists and men of religion have carried on the debate—while the world and India were changing rapidly, and the problem grew and became visible to the naked eye. Within the last few years, public interest has grown enormously. There is widespread and continuous discussion in the press, the platform and among social workers. At the same time, the practice of contraception is beginning to take root among wide sections of the urban intelligentia—the people who are hardest hit by recent economic changes.

*This movement of public opinion has now acquired coherence, crystallisation and a sense of direction with the publication, by the Planning Commission, of its report on the First Five Year Plan.*

51. The views expressed by the Planning Commission are extracted below:

> "The recent increase in the population of India and the pressure exercised on the limited resources of the country have brought to the forefront the urgency of the problem of family planning and population control. The application of medical knowledge and social care has lowered the death-rate, while the birth-rate remains fairly constant. This has led to the rapid increase in the growth of population. While a lowering of the birth-rate may occur as a result of improvements in the standards of living, such improvements are not likely to materialise if there is a concurrent increase of population. It is, therefore, apparent that population control can be achieved only by the reduction of the birth-rate to the extent necessary to stabilize the population at a level consistent with the requirements of national economy. This can be secured only by the realisation of the need for family limitation on a wide scale by the people. The main appeal for family planning is based on considerations of the health and

welfare of the family. Family limitation or spacing of the children is necessary and desirable in order to secure better health for the mother and better care and upbringing of children. Measures directed to this end should, therefore, form part of the public health programme.

"All progress in this field depends, first, on creating a sufficiently strong motivation in favour of family planning in the minds of the people and, next, on providing the necessary advice and service based on acceptable, efficient, harmless and economic methods. But these presuppose (1) intensive studies about the attitudes and motivations affecting family size and techniques and procedures for the education of the public on family planning, and (2) field experiments on different methods of family planning as well as medical and technical research.

"A programme for family limitation and population control should :

(*a*) obtain an accurate picture of the factors contributing to the rapid population increase in India ;

(*b*) discover suitable techniques of family planning and devise methods by which knowledge of these techniques can be widely disseminated ; and

(*c*) make advice, on family planning, an integral part of the service of Government hospitals and public health agencies.

"A sum of Rs. 65 lakhs has been allocated by the Central Government in the Plan, to the Ministry of Health for a family planning programme.

"This programme includes :

(1) The provision, in Government hospitals and health centres, of advice on methods of family planning for married persons who require such advice : Medical Officers working at hospitals and health centres like maternity and child welfare clinics should give advice to women regarding family planning when such advice is necessary for health reasons. If a doctor feels that a woman patient cannot undergo again the strain of pregnancy and parturition without danger to health, it is obviously the duty of the doctor to give such advice as is necessary to enable the person to prevent conception. In these circumstances, the doctor would be justified in suggesting any chemical, mechanical or biological methods of contraception or sterilization as may be indicated for the individual case. The giving of advice on birth control has been a procedure allowed by the Ministry of Health in U.K. in medical centres maintained by the local authorities.

(2) Field experiments on different methods of family planning for the purpose of determining their suitability, acceptability and effectiveness in different sections of the population : If it can be demonstrated that our people, particularly those living in rural areas, can be educated to accept the rhythm method and use it as a practical method of limiting family growth, Governmental support should be extended to the propagation of this method. From the point of view of avoiding enormous

expenditure as well as that of securing the ethical values that community life would gain by the self-imposed restraint which the rhythm method involves, it would seem desirable to try out this method fully and thus ascertain its practicability. Whether the rhythm method is capable of wide application in the community with adequate results or not, actual experimentation alone can tell. Research and experiments need not however be confined to a single method. There are numerous voluntary agencies which are currently propagating the spread of information on family planning and the use of chemical and mechanical contraceptives. Their activities would need support.

(3) Development of suitable procedures to educate the people on family planning methods : Inexpensive means of rapidly educating the public in matters relating to family size will have to be evolved if large-scale reduction in the national birth-rate is to be obtained. Scientific techniques are available to assess the effect of mass educational campaigns. These techniques should be used to develop educational programmes suitable for the different economic and social sections of the population.

(4) Collection, from representative sections of the population, of information on reproductive patterns, and on attitudes and motivations affecting the size of the family : The reproductive pattern in any population is largely determined by social and cultural factors which may differ from one area to another. A thorough investigation of the differences in attitudes and motivations towards family size and of the factors responsible for producing such differences is important. Research along these lines is necessary if we are to understand the particular sentiments and aspirations to which programmes of family limitation in various sections of the population should appeal.

(5) Study of the Inter-relationships between economic, social and population changes : The information obtained by such studies will form the necessary background for the formulation of a national population policy and the development of appropriate measures for population planning based on factual information.

(6) Collecting and studying information about different methods of family planning (based on scientifically tested experience in India and abroad) and making such information available to professional workers.

(7) Research into the physiological and medical aspects of human fertility and its control.

"It is considered that the problems of population and family planning may be divided into those relating to :

1. **Policy and approach, and**
2. **Research and programmes**

Two committees have accordingly been constituted. It would also appear desirable to set up at a later date a population commission to assess the population problem, consider different views held on the subject of population control, appraise the results of experimental studies and recommend measures in the field of family planning to be adopted by the Government and the people."

52. That is as far as we have reached to-day in the evolution of public opinion about this highly contentious subject. Conflicting voices are still heard, but the ultimate outcome of the debate is no longer in much doubt. *People are coming to believe that population control is necessary and that it is unlikely to come about quickly enough unless Government took some steps to bring it about. That is a great advance.* But we are not yet sure how we are going to set about the task of inducing the people to limit births. It seems so visionary—almost unreal—when we think about the villages which are five-sixths of the problem. We are also not very clear in our mind how much time we have in this matter. Perhaps limitation of births is merely a desirable thing to be achieved in due time when it becomes practicable. Or is it something about which it is essential in the national interest that definite results of a measurable character should be achieved within a specified time ? We do not know; we are not sure. We have not yet reached the point at which consideration of targets and priorities can be placed on the agenda. But we must look ahead—as far ahead as 1981—and consider targets and priorities. Otherwise, the efforts of Government will prove to be inadequate and half-hearted. The great advance already made in the evolution of public opinion may fail to take us anywhere.

53. Our appraisal of the possibilities of development of agricultural productivity has led us to the conclusion that it might be possible to achieve an overall increase of agricultural productivity by about one-third of its present level—and this would correspond to the needs of a total population strength of 45 crores. This may be reached sometime round about 1969. That would give us a maximum of about 15 years for planned measures to limit births, to become effective and yield results. It is not a very long period for such a large enterprise; but it cannot also be said to be far too short. Let us then define our general aim to be: *so to limit the number of births that they do not materially exceed the number of deaths and thus achieve a substantially stationary population before our number exceeds 45 crores.* That would be the first step towards a crystallisation of ideas on targets and priorities.

54. Though the objective as thus defined is clear enough, it will serve the purpose of indicating the needed practical measures much better, if it can

be put in a form in which every one may perceive his or her own share of the collective obligation. It is in this context that the conception of 'improvident maternity,' which was touched upon in an earlier chapter, acquires practical importance. The birth rate is something for which responsibility can be fastened on no one. But the number of births which occur to a married couple are, *ex hypothesi*, controllable by them. Is it possible to specify a maximum number of child-births which every married couple can have without creating a national problem regarding the future of their offspring. There are reasons to believe that this is possible; and that the number is three. *Let us, therefore, define 'improvident maternity' as a child-birth occurring to a mother who has already given birth to three or more children, of whom at least one is alive.* Let us also define the 'incidence of improvident maternity' as the figure obtained by expressing the number of births of this nature as a percentage of all births occurring in any particular area during any particular period of time. *A relatively simple calculation shows that if we can put an end to improvident maternity as thus defined, or at any rate reduce its incidence drastically, the excess of births over deaths will be reduced to negligible numbers and a substantially stationary population achieved.* As this conclusion is important, the relevant calculation should be explained.

55. It has been estimated that the incidence of improvident maternity is, at present, somewhere between 40 per cent and 45 per cent in our country. Out of every 40 births which occur among every 1,000 people in the course of one year, 17 births are of this nature. Suppose we succeed in inducing the people to avoid such births. Our national birth rate would then fall from 40 to 23. Our national death rate is at present 27. Out of the 27 deaths which occur among 1,000 people in the course of one year there are 11 children under 5 years of age, of whom 7 are infants who have not completed one year of age. A reduction in the number of births from 40 to 23 is likely, therefore, to be followed by a reduction of these 11 deaths to 6. In other words, avoidance of improvident maternity will not only reduce the national birth rate from 40 to 23* but it will also reduce the national death rate from 27 to 22 at the same time. The net result will be to reduce the rate of growth of population from about 13 per cent per decade to about one per cent per decade. If improvident maternity is not avoided altogether, but its incidence is very substantially reduced—to (say) 5 per cent—, we shall still get a birth rate of 25 and a death rate of 23 and a growth rate of only two per cent

*Earlier in this report (*cf.* Chapter II, para 80), the view has been expressed that such measures as raising the age of marriage will have only a very limited effect, and cannot bring about large reduction of the order indicated by these figures.

per decade. When that stage is reached, it is no doubt likely that further diminution of the death rate might be expected to occur as a result of general improvement of health standards. We may confidently expect this to be offset by further diminution of the birth rate. This will happen because the people who have got rid of improvident maternity will, *ex hypothesi*, have acquired effective control over child-bearing. It will then be easy and natural for them to pass over from avoidance of 'improvidence' to positive 'prudence'. An increasingly large proportion of mothers will limit themselves, of their own accord, to two children without being urged to do so. Thus the fall in the birth rate may be expected to keep pace with the fall in the death rate.

56. Let us, therefore, define our objective, not in the general terms already mentioned in paragraph 53, but specifically in relation to improvident maternity. The task before the nation is first of all to bring about such a change in the climate of public opinion that every married couple will accept it as their duty (to themselves, to their family, and to that larger family—the nation) that they should avoid improvident maternity. The occurrence of improvident maternity should evoke social disapproval, as any other form of anti-social self-indulgence. This is necessary ; but not enough. There should be standing arrangements for ensuring that advice is given to every married couple on the various ways open to them for discharging this duty and to make available the necessary facilities. In order to regulate the scale and tempo of planned measures designed to achieve this purpose, the following target should be fixed: *The incidence of improvident maternity should be reduced from its present level of over 40 per cent to under 5 per cent within 15 years.*

57. It will be noted that we are moving beyond the general statement that it is desirable for mothers to limit the total number of births, to space births, and so on. Approaching the subject from the point of view of national necessity, a single common limit is suggested for all. Consistently with this approach it is immaterial if, in a particular case, the pecuniary circumstances of the family or the state of health of the mother are such that further maternity may be allowed to occur and the offspring supported without much difficulty. Whether or not the individual can afford it, the nation cannot—and hence it is 'improvident maternity' all the same. While this must be made clear beyond doubt, it is also necessary to point out that there is, in fact, no conflict in this matter between the interests of the individual, of the family, and of the nation as a whole. No elaborate argument is necessary in order to show that if improvident maternity were universally avoided, no one will be unhappy or worse off. On the other hand, mothers will live longer, healthier and happier lives; and

children will be better fed, better looked after and acquire an altogether better start in life. There will be an enormous reduction in the numbers of infants who die within a year of their birth. If we can convert ourselves to the view that improvident maternity is a form of anti-social self-indulgence which all of us should avoid—and if we can equip ourselves with the knowledge and the material means of avoiding it—, we shall have done more to reduce human suffering and promote human happiness than by all other measures of economic and social planning combined.

58. Let us suppose that the target for reduction of improvident maternity is accepted; and consider how to set about the task of attaining it.

To begin with, we should be careful not to rush into the streets with trumpets and drums in order to preach the new faith and count the converts. There will be need for something of that kind—but in due time. The first phase of the programme of measures must be devoted to thorough preparation. Out of the total of 15 years which are available to us for the attainment of the target, the first phase would need at least three years from the word "GO". It may take as long as five years. The preparation should consist of two sets of measures, of which one may be described as the creation of organisation and the other as the standardisation of technique. Both are equally important ; they should proceed, side by side.

59. What sort of organisation shall we need ? It is clear that it must command the services of a sufficient number of workers, distributed over the whole country, in such a way that they will have friendly personal access to all mothers in the country, and effective opportunity to assist and advise them. No such organisation exists at present. Nor can one be created, whose function is limited solely to the dissemination of birth control appliances and advice.

This function must, therefore, be performed as a subsidiary activity of an organisation whose main function would embrace the whole field of maternity and child welfare.

It is first of all necessary, therefore, that an adequate number of maternity and child welfare centres should be set up and they should be so sited as to establish practically complete coverage over all villages and towns. The centres should be developed as agencies which render practical help to mothers before, during, and after child-birth. Before they begin to advise the avoidance of improvident maternity they should win friendship and trust by rendering service which seem to save life and promote health and strength among mothers and children. Does this mean then, that we are harking back to the view (dismissed a short while ago as a fallacy) that it is impossible to make

any progress in limiting births until we have completed our development programme in other respects. *No.* It is unnecessary to wait for the completion of the agricultural, industrial, or other economic development programmes. It is not even necessary to wait for the development of a full-fledged National Health Service. *But it is necessary to isolate that part of our health programme which relates to the provision of maternity and child welfare services; give it top priority (along with, say, irrigation and ahead of all other development) and undertake accelerated development of these services to the point at which the needed organisation is created.*

60. How long will this take ? Will it not be held up like many other health and education schemes by lack of trained personnel. Obviously, the services of trained personnel will be needed—qualified midwives will be essential. But the problem would be a manageable one if care is taken to locate, and fully utilise, the services of all the *'dais'* who are to be found in all parts of the country—practising midwifery in its traditional form. It is possible, even probable, that these humble women hold the key to the solution of the population problem. They should be given simple training and instruction, advised and assisted by duly qualified midwives and helped to perform their useful services better than they do at present. Those who render satisfactory service should be encourged by payment of a modest bonus, to supplement their professional earnings. They should then be required, in return, to function in the villages as the agents of the maternity and child welfare centres. If this is done and the number of duly qualified midwives is increased rapidly and substantially, the staff requirements should be met. It is true that higher supervisory staff might be scarce for a long time, but the shortage can be largely made good by making the fullest use of the services of public-spirited social workers. This is, in any case, necessary in order to develop the usefulness of the services as quickly as possible. All social workers who are willing to help should be effectively organised (at the local level, the state level and the national level) and firmly linked with appropriate governmental agencies at all three levels. Given the necessary determination and drive, as well as the funds, the personnel needed for the work can be got together—at any rate over the greater part of the country—within five years.

61. This will complete one part and, no doubt, the more difficult part of the preparation which is necessary before a nation-wide campaign for reduction of improvident maternity can be launched. The second part is the one already visualised by the Planning Commission and provided for in the current Five Year Plan. A Central Research and Information Unit should be set up, in order to carry out the various items of work described by the Planning

Commission. In one sense, the activities of the Unit will have to be continued for an indefinite period—for there is scope for a great deal of research. But certain tasks should be laid down as required to be completed within a specified time :

(*i*) The Central Research and Information Unit should be required to recommend a few *acceptable, efficient, harmless and economic methods* which are suitable for being sponsored by Government. It is prefectly obvious that no one contraceptive appliance is likely to fulfil all the criteria equally well. Therefore, harmlessness alone should be the decisive test; and cheapness the second most important consideration. One at least, among the recommended methods, should be based entirely on very cheap materials readily available in all parts of the country, even if the appliance is not entirely efficient or acceptable to all people.

(*ii*) This does not mean that methods of avoidance of undesired births other than those involving the use of contraceptive appliances are to be ignored. On the contrary, they have an important part to play in achieving the national purpose, and it should be the duty of the Central Research and Information Unit to formulate correct ideas and guidance on the subject :

(*a*) The so called 'rhyth mmethod' has received considerable publicity recently. There is much difference of opinion about a somewhat complicated version of this method, which is under investigation. There is also a simpler version, according to which people are merely advised to *abstain from conjugal relations during the middle-third of every menstrual cycle.* It is not asserted that those who follow this simple rule of what may be called 'conjugal temperance' can be *certain* that conception will be avoided thereby. It is freely conceded that the 'safe period' is a misnomer and might not always be safe. But it is claimed that the observance of this simple rule is calculated (in many cases though not all) to reduce the chances of conception very substantially. If a large proportion of people living in a locality observe the rule, it would be reflected in a material diminution of the birth rate of that locality. Such a method will obviously be of no use to persons to whom certainty of avoidance of pregnancy is essential on grounds of health. It is also useless to persons who have had three or more children already (in the context of national policy envisaging the abolition of improvident maternity). But, if the claim is verified to be correct, it may be very useful for married couples to practise 'conjugal temperance' during the first

decade or [illegible] married life before they have had three children. It should be [illegible] of the Central Research and Information Unit to formulate [illegible] guidance on this matter.

(*b*) Another non-appliance method of contraception which requires consideration is '*coitus interruptus*'. There is, at present, practical unanimity (of a somewhat disconcerting nature) about this subject among social workers engaged in the popularisation of birth control. They dismiss it with a brief reference to neurasthenia. Doubts about the wisdom of this attitude arise when one studies the report on an "investigation carried out by the Council of the Royal College of Obstetricians and Gynaecologists into family limitation and its influence on human fertility during the past five years". A few extracts will be found in APPENDIX VII. The statistics collected during this investigation prove that "among a group of couples married in 1935-39, all of whom had practised some form of birth control between marriage and 1946, as many as 44 per cent had never employed any kind of appliance contraceptives." Forty-four per cent is a very large proportion ; and they do not seem to have done so badly. The finding is that "pregnancy rates during the practice of 'non-appliance'* birth control were found to be about one-fifth higher than under appliance methods". Other figures show that the proportion of people who successfully limit their families in this way used to be still higher in the past. The Commission finds that this is not due to ignorance of the existence of more effective methods or a mere prejudice against their use. "It must not be assumed", the Commission reports, "that in the present state of birth control technique there may not be a considerable number of people who positively prefer non-appliance methods". Now, it is impossible to believe that people would practise this method in such large numbers over a long time if it was invariably calculated to make them nervous wrecks. There are, no doubt, circumstances in which harmful results would follow. But equally clearly there must be circumstances in which they would not ; otherwise the facts found by the Commission could not exist. There is, at present, a complete absence of serious information on the subject. It is necessary that correct information should be collected on this point. *It is possible—to put it no higher—*

*It is made clear in the report that 'non-appliance methods' are to all intents and purposes synonym for *coitus interruptus* in the United Kingdom.

*that a large proportion of people who are unable or unwilling to use appliance methods of contraception for one reason or other, might yet succeed in avoiding improvident maternity by the practice of 'conjugal temperance' until three children are born and 'coitus interruptus' thereafter.* If this possibility can be confirmed by the Central Research and Information Unit, after careful study, the resulting social gain would be enormous.

(*c*) Apart from methods developed in foreign countries, it is possible that there are also some indigenous methods of a traditional nature, which are reasonably effective. There are references in old census reports to the belief that the tea garden coolies of Assam have long practised some effective method of contraception. This may or may not be the case now; but an effort should be made to locate indigenous methods which may be locally well-known but not generally talked about.

(*d*) There is a good deal of ignorance over the whole subject of conjugal relations. This is due, as the Royal Commission observes, "to the furtive air that clings to the subject. Despite the efforts of organisations and individuals, through books and pamphlets and other educational means, to impart contraceptive knowledge in a healthy context, many persons still acquire the information only through dealers in pornography and from furtive talks". It should be the duty of the Central Research and Information Unit to cleanse the atmosphere and let in fresh air.

(*iii*) Apart from appliance methods and non-appliance methods of contraception, there is the method of sterilisation—especially of the male. The technique is believed to be making good progress in recent years. The claim is made that the minor operation invloved is safe, effective and free from any disabling effect both from the point of view of general health and the continuance of normal conjugal relations. If this is true and is brought home to the people, sterilisation of the male may become an important part of the methods by which improvident maternity is avoided. It is understood that the rapid expansion of facilities needed for meeting a rapidly growing demand will not present any formidable difficulty. Provision of authoritative guidance on this subject will be very valuable.*

*Paragraph 61 deals with *voluntary* resort to sterilisation by people who wish to avoid improvident maternity. It has nothing to do with the proposal that people suffering from certain types of diseases should be compulsorily sterilised—a very different matter.

62. While these preparations regarding organisation and standardisation of methods are proceeding, those agencies which are already working in this field (mainly in cities) should be actively encouraged and assisted to develop their activities. Experience and information which become available thereby should be fully utilised by the Central Research and Information Unit. When the preparations are completed and the responsible authorities are satisfied that they are ready, the second phase should commence. A nation-wide campaign should be launched for the elimination of improvident maternity from the life of the people. The campaign should be explained to the people in villages, as well as towns as a national movement designed to achieve a social reform indispensable for assuring the safety of the nation and promoting the welfare of its mothers and children. It will be essential for the success of this campaign that it should be launched and directed by a national organisation of women social workers, which should have actively helped earlier in the development of maternity and child welfare services. The educative campaign should receive political backing at the highest level. The elected representatives of the people who are members of Village *Panchayats*, Municipal Councils and District Boards should personally take active interest in the progress of the compaign in their areas.

Once the mind of the people has been won, the rest will be easy. The recommended practices will spread, and the advice and facilities provided by the maternity and child welfare centres will be readily utilised. Progress achieved from year to year can be precisely measured by the statistics of registration of births and deaths—which will become complete and accurate as a result of the working of these services. The Central Government and Parliament, the State Government and the State Legislature, Municipal Councils, District Boards and *Panchayats*—all of them could review once every year at what rate the incidence of improvident maternity was actually following among the people committed to their charge. On the basis of such review they can take special steps to stimulate effort in areas which were lagging behind. If we set about the work in this way, we shall be able to secure—in about 15 years—that *India has the lowest incidence of improvident maternity among all the countries of the world.* Why should we imagine that something which is demonstrably good for mothers and children—and which the western peoples have adopted without any help or encouragement from the State—would be rejected by our people, even when they are helped and encouraged by the State ?

63. Obviously, all this will cost money. How much money will be needed ? We cannot be sure about this, until we are nearing the end of the preparatory

phase of the whole programme. But some idea, however tentative, is necessary at least in order to get a dimensional picture. The subject was discussed in this light by the present writer with Dr. T. LAKSHMINARYANA, the Adviser of the Planning Commission on Health Programmes. A tentative estimate drawn up by him is included among the papers printed as APPENDIX VII.

His conclusion is that the expenditure chargeable to public funds will be approximately half-a-rupee per head of population, as the cost of providing maternity and child welfare services in the manner described. This will be the annual recurring expenditure required when the services are fully developed ; the expenditure will be smaller during the preparatory phase when the services are being built up.

For a poor country with a large and growing population, half-a-rupee per head is not a small sum ; it is quite a lot of money. We have to face the fact. We must consider the problem on the basis that the growth of population cannot be checked unless there are maternity and child welfare services ; and we cannot have such services unless we find the money for it. If the cost is fairly shared between the Central Government, the State Government and the local body concerned, it should not press unduly heavily on any of them.

64. We may now hark back to paragraph 46, where the crucial question was formulated : If the effort to develop agricultural productivity with such rapidity as to overcome present shortages and keep pace with unchecked growth of population until 1981 is impracticable, is the effort to limit births and arrest the growth of population any less impracticable ? The answer, it is now suggested, is in the affirmative. It would be idle, in any case, to maintain that there is any solution for our population-land-food problem which does not call for difficult, costly and sustained effort over an extended period of a type for which no precedent exists in history. We have already embarked on such effort. What we have now got to do is to take stock of the *entire* problem, and not merely the reflection of it over the limited period covered by one Five Year Plan or two. We should take a long-term decision envisaging the complete solution of the problem. If we find, on a long-term view, that more than one course is open to us, we should choose the one which is less difficult, less costly and more likely to solve the problem permanently.

The general tenor of the conclusion to which we are led by the analysis made in this chapter may be stated as below :

> The effort to overcome present shortages and keep pace with unchecked growth of population until 1981 involves the development of agricultural productivity by 380 lakhs of ANNUAL tons.

If the effort to develop agricultural productivity is combined with a simultaneous effort to reduce incidence of improvident maternity to about five per cent, it will be sufficient to limit the development of agricultural productivity to 240 lakhs of ANNUAL tons.

The former is unlikely to cost less than the latter or prove to be more practicable. The latter offers a permanent solution of the problem, while the former does not. The former opens up a prospect of indefinite duration of hard labour without immediate results. The latter will be rewarded by visible reduction of human suffering and promotion of human happiness while the effort is still proceeding. The choice is clear.

## D—*Conclusion*

WE HAVE COME to the end of our attempt to project our mind some way into the future and visualise the prospect for 1981. We have seen clearly the drift of the current on which we have been moving since 1921 and whither it was taking us. We have taken note of the efforts now being made to steer the ship of State in an altogether different direction and studied the chart of this new course—the First Five Year Plan. Let us summarise the broad conclusion :—

*First,*—If we can be sure that food will be available to the people during the next thirty years, at least as well as it has been during the last thirty years, and if no popular movement in favour of limiting births develops (as it has done among Western peoples), then the further course of population growth may be foreseen with confidence. Our number will grow from about 36 crores in 1951, to about 41 crores in 1961, 46 crores in 1971 and 52 crores in 1981.

The growth will, indeed, be somewhat more rapid as (in the conditions assumed) the expectation of life will continue to increase.

*Secondly,*—The likelihood of the last figures being actually reached is, however, small. The governing assumption—continued availability of food supply at undiminished rates of consumption along with unchecked growth of population—is unlikely to hold good for as long as thirty years.

This conclusion is reached after taking full account of the technological possibilities of development of agricultural productivity.

*Thirdly*,—The experience of 1943 gives warning of the possibility that growing food shortage might lead to a breakdown of the distribution of food supply and thus open the way to a return of those 'natural' checks to population growth which were in operation during the thirty years preceding 1921.

This possibility, however, is unlikely to be permitted to materialise. The system of planned 'state trading' in foodgrains, developed during the last decade, is now well-established. So long as we hold fast to it, there is a guarantee that food shortage will be kept under control and prevented from developing into a breakdown of food supply. Sufficient time will, therefore, be available for wise planning and efficient execution of measures designed to overcome food shortage permanently.

*Fourthly*,—It is possible to overcome food shortage permanently, by taking suitable measures over an extended period of about fifteen years.

For this purpose, development of agricultural productivity on an even larger scale than that undertaken in the First Five Year Plan will be necessary, but it will not be sufficient. Effective steps should be taken concurrently to limit births to approximate parity with deaths and thereby achieve a substantially stationary population.

*Fifthly*,—Births will get limited to approximate parity with deaths, if what has been described as 'improvident maternity' is avoided by all or most married couples. ['Improvident maternity' consists of all births occurring to mothers who have already had three or more children, when at least one of them is alive.]

*Sixthly*,—A combined approach to the solution of our problem calls for the following targets :

(*i*) Increase of agricultural productivity from the present level of approximately 700 lakhs of ANNUAL tons to about 940 lakhs of ANNUAL tons.

(*ii*) Reduction of improvident maternity from over 40 per cent (its incidence at present) to under 5 per cent.

If these two targets are accorded equal priority and ranked higher than all other development targets, they can be attained before population increases beyond 45 crores—our total number will then become substantially stationary round about 45 crores ; and

*Seventhly*,—The attainment of the target of reduction of improvident maternity will necessitate the prior creation and permanent maintenance of a nation-wide organisation of maternity and child welfare services.

This is difficult, but feasible and essential.

66. This report began with a citation from the CONSTITUTION OF INDIA. It is appropriate that it should end with another.

The CONSTITUTION enjoins that the

> ***"State shall regard the raising of the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties....."***

and that it shall

> ***"direct its policy towards securing that the citizens, men and women equally, have the right to an adequate means of livelihood".***

Who are the STATE ? They are

> ***"the Government and Parliament of India, the Government and the Legislature of each of the States, and all local or other authorities within the territory of India or under the control of the Government of India".***

This report, being a review of the life and livelihood of the people, has been written with the conscious aim that it should be of practical assistance to the STATE in the execution of this mandate of the people. In is humbly submitted accordingly, for the consideration of the STATE.

# Natural Regions, Sub-Regions and Divisions

1. HIMALAYAN REGION

1·1 *Western Himalayan Sub-Region*--
- 1·11 Himalayan Uttar Pradesh division
- 1·12 Himachal Pradesh and Bilaspur division
- 1·13 Himalayan Punjab division
- 1·14 Jammu and Kashmir division.

1·2 *Eastern Himalayan Sub-Region*—
- 1·21 Assam Plains division
- 1·22 Assam Hills division
- 1·23 Manipur division
- 1·24 Tripura division
- 1·25 Himalayan West Bengal division
- 1·26 Sikkim division.

2. NORTHERN PLAINS REGION

2·1 *Lower Gangetic Plains Sub-Region*—
- 2·11 West Bengal Plains division
- 2·12 North Bihar Plain division
- 2·13 South Bihar Plain division
- 2·14 East Uttar Pradesh Plain division.

2·2 *Upper Gangetic Plains Sub-Region*—
- 2·21 Central Uttar Pradesh Plain division
- 2·22 West Uttar Pradesh Plain division.

2·3 *Trans-Gangetic Plains Sub-Region*—
- 2·31 Punjab Plain division
- 2·32 Patiala & East Punjab States Union division
- 2·33 Delhi division
- 2·34 East Rajasthan Plain division
- 2·35 Madhya Bharat Lowland division
- 2·36 Ajmer division.

2·4 *The Desert Sub-Region*—
- 2·41 Rajasthan Dry Area division.

3. PENINSULAR HILLS AND PLATEAU REGION

3·1 *North-West Hills Sub-Region*—
- 3·11 Rajasthan Hills division
- 3·12 Rajasthan Plateau division
- 3·13 Madhya Bharat Plateau division
- 3·14 Madhya Bharat Hills division.

3·2 *North Central Hills and Plateau Sub-Region*—
- 3·21 Uttar Pradesh Hills and Plateau division
- 3·22 Vindhya Pradesh division
- 3·23 Bhopal division
- 3·24 North-West Madhya Pradesh division.

3·3 *North-East Plateau Sub-Region*—
- 3·31 Chhota Nagpur division
- 3·32 East Madhya Pradesh division
- 3·33 Orissa Inland division.

3·4 *North Deccan Sub-Region*—
- 3·41 South-West Madhya Pradesh division
- 3·42 North Hyderabad division
- 3·43 Bombay Deccan Northern division.

3·5 *South Deccan Sub-Region*—
- 3·51 South Hyderabad division
- 3·52 Bombay Deccan Southern division
- 3·53 Mysore division
- 3·54 Madras Deccan division.

4. WESTERN GHATS AND COASTAL REGION

4·1 *Gujrat-Kathiawar Sub-Region*—
- 4·11 Bombay-Gujrat division
- 4·12 Saurashtra division
- 4·13 Kutch division.

4·2 *Malabar-Konkan Sub-Region*—
- 4·21 Greater Bombay division
- 4·22 Bombay-Konkan division
- 4·23 West Madras division
- 4·24 Travancore-Cochin division
- 4·25 Coorg division.

5. EASTERN GHATS AND COASTAL REGION

5·1 *North Madras and Orissa Coastal Sub-Region*—
- 5·11 Orissa Coastal division
- 5·12 North Madras division.

5·2 *South Madras Sub-Region*—
- 5·21 South Madras division.

# Population Zones, States, Natural Divisions and Districts

| *Zone/State/Natural division (with code number)* | *Districts included* |
|---|---|
| **North India** | |
| UTTAR PRADESH | |
| 1·11 Himalayan Uttar Pradesh division | Garhwal, Tehri-Garhwal, Nainital, Almora, Dehra Dun. |
| 2·14 East Uttar Pradesh Plain division | Gorakhpur, Basti, Gonda, Bahraich, Deoria, Banaras, Jaunpur, Ghazipur, Ballia, Azamgarh. |
| 2·21 Central Uttar Pradesh Plain division | Kanpur, Fatehpur, Allahabad, Lucknow, Unao, Rai-Bareli, Sitapur, Hardoi, Fyzabad, Sultanpur, Pratapgarh, Bara Banki. |
| 2·22 West Uttar Pradesh Plain division | Saharanpur, Bareilly, Bijnor, Pilibhit, Rampur, Kheri, Muzaffarnagar, Meerut, Bulandshahr, Aligarh, Mathura, Agra, Mainpuri, Etah, Budaun, Moradabad, Shahjahanpur, Etawah, Farukhabad. |
| 3·21 Uttar Pradesh Hills & Plateau division | Jhansi, Jalaun, Hamirpur, Banda, Mirzapur. |
| **East India** | |
| BIHAR | |
| 2·12 North Bihar Plain division | Saran, Champaran, Muzaffarpur, Darbhanga, Purnea, Saharsa, Monghyr *North*. |
| 2·13 South Bihar Plain division | Patna, Gaya, Shahabad, Bhagalpur, Monghyr *South*. |
| 3·31 Chhota Nagpur division | Hazaribagh, Ranchi, Dhanbad, Palamau, Singhbhum, Manbhum, Santhal Parganas. |
| ORISSA | |
| 3·33 Orissa Inland division | Mayurbhanj, Keonjhar, Dhenkanal, Sundergarh, Phulbani, Ganjam *Plain*, Sambalpur, Bolangir, Kalahandi, Koraput. |
| 5·11 Orissa Coastal division | Balasore, Cuttack, Puri, Ganjam *Agency*. |
| WEST BENGAL | |
| 1·25 Himalayan West Bengal division | Darjeeling, Jalpaiguri, Cooch-Behar. |
| 2·11 West Bengal Plain division | Hooghly, Howrah, 24 Parganas, Calcutta, Burdwan, Birbhum, Bankura, Midnapur, Nadia, Murshidabad, Malda, West Dinajpur. |
| *Chandernagore* | Chandernagore. |
| ASSAM | |
| 1·21 Assam Plains division | Cachar, Goalpara, Kamrup, Darrang, Nowgong, Sibsagar, Lakhimpur. |
| 1·22 Assam Hills division | United Khasi and Jaintia Hills, Naga Hills, Lushai Hills, Garo Hills, United Mikir and North Cachar Hills, Mishmi Hills, Abor Hills, Tirap Frontier Tract, Balipara Frontier Tract. |
| MANIPUR | |
| 1·23 Manipur division | Manipur. |

| *Zone/State/Natural division (with code number)* | *Districts included* |
|---|---|
| TRIPURA | |
| 1·24 Tripura division | Tripura. |
| SIKKIM | |
| 1·26 Sikkim division | Sikkim. |
| **South India** | |
| MADRAS | |
| 3·54 Madras Deccan division | Bellary, Anantapur, Cuddapah, Kurnool. |
| 4·23 West Madras division | Malabar, South Kanara, Nilgiris. |
| 5·12 North Madras division | Srikakulam, Visakhapatnam, East Godavari, West Godavari, Krishna, Guntur, Nellore. |
| 5·21 South Madras division | Chittoor, North Arcot, Salem, Coimbatore, Tiruchirapalli, Madurai, Chingleput, Madras, South Arcot, Tanjore, Ramanathapuram, Tirunelveli. |
| MYSORE | |
| 3·53 Mysore division | Bangalore, Kolar, Tumkur, Mysore, Mandya, Chittaldrug, Hassan, Chickmaglur, Shimoga. |
| TRAVANCORE-COCHIN | |
| 4·24 Travancore-Cochin division | Trivandrum, Quilon, Kottayam, Trichur. |
| COORG | |
| 4.25 Coorg division | Coorg. |
| **West India** | |
| BOMBAY | |
| 3·43 Bombay Deccan Northern division | West Khandesh, East Khandesh, Dangs, Nasik, Ahmednagar, Poona, Satara North, Satara South, Kolhapur, Sholapur. |
| 3·52 Bombay Deccan Southern division | Belgaum, Bijapur, Dharwar |
| 4·11 Bombay-Gujrat division | Banaskantha, Sabarkantha, Mahsana Ahmedabad, Kaira, Panch Mahals, Baroda, Broach, Surat, Amreli. |
| 4·21 Greater Bombay division | Greater Bombay. |
| 4·22 Bombay-Konkan division | Thana, Kolaba, Ratnagiri, Kanara. |
| SAURASHTRA | |
| 4·12 Saurashtra division | Halar, Central Saurashtra, Zalawad, Gohilwad, Sorath. |
| KUTCH | |
| 4·13 Kutch division | Kutch |
| **Central India** | |
| MADHYA PRADESH | |
| 3·24 North-West Madhya Pradesh division. | Mandla, Sagar, Jabalpur, Hoshangabad, Nimar, Betul, Chhindwara. |
| 3·32 East Madhya Pradesh division | Balaghat, Bhandara, Chanda, Raipur, Bilaspur, Durg, Bastar, Raigarh, Surguja. |
| 3·41 South-West Madhya Pradesh division. | Amraoti, Buldana, Akola, Yeotmal, Wardha, Nagpur. |

| *Zone/State/Natural division (with code number)* | *Districts included* |
|---|---|
| MADHYA BHARAT | |
| 2·35 Madhya Bharat Lowland division | Bhind, Gird, Morena. |
| 3·13 Madhya Bharat Plateau division | Shivpuri, Guna, Mandsaur, Rajgarh, Shajapur, Ujjain, Ratlam, Bhilsa, Indore, Dewas. |
| 3·14 Madhya Bharat Hills division. | Dhar, Jhabua, Nimar. |
| HYDERABAD | |
| 3·42 North Hyderabad division | Aurangabad, Parbhani, Nanded, Bidar, Bhir, Osmanabad. |
| 3·51 South Hyderabad division. | Hyderabad, Mahbubnagar, Raichur, Gulbarga, Adilabad, Nizamabad, Medak, Karimnagar, Warangal, Nalgonda. |
| BHOPAL | |
| 3·23 Bhopal division. | Sehore, Raisen. |
| VINDHYA PRADESH | |
| 3·22 Vindhya Pradesh division. | Sidhi, Rewa, Satna, Shahdol, Datia, Chhatarpur, Tikamgarh, Panna. |
| **North-West India** | |
| RAJASTHAN | |
| 2·34 East Rajasthan Plain division | Jaipur, Tonk, Sawaimadhopur, Bharatpur, Alwar, Sikar, Bhilwara, Jhunjhunu. |
| 2·41 Rajasthan Dry Area division | Ganganagar, Bikaner, Churu, Jodhpur, Barmer, Jalore, Pali, Nagore, Jaisalmer. |
| 3·11 Rajasthan Hills division. | Udaipur, Dungarpur, Banswara, Sirohi. |
| 3·12 Rajasthan Plateau division. | Chittorgarh, Kotah, Bundi, Jhalawar. |
| PUNJAB | |
| 1·13 Himalayan Punjab division | Kangra, Simla. |
| 2·31 Punjab Plain division. | Ambala, Gurdaspur, Hoshiarpur, Amritsar, Jullundur, Ludhiana, Ferozepur, Karnal, Hissar, Rohtak, Gurgaon. |
| PATIALA & EAST PUNJAB STATES UNION | |
| 2·31 Patiala & East Punjab States Union division | Patiala, Barnala, Bhatinda, Mohindergarh, Kapurthala, Sangrur, Kohistan, Fatehgarh Sahib. |
| JAMMU & KASHMIR | |
| 1·14 Jammu & Kashmir division | Jammu, Kathua, Udhampur, Reasi, Mirpur, Chenani Jagir, Poonch Jagir, Baramulla, Anant Nag, Muzaffarabad, Ladakh, Astore, Gilgit (Leased Area), Gilgit (Agency). |
| AJMER | |
| 2·36 Ajmer division. | Ajmer. |
| DELHI | |
| 2·33 Delhi division. | Delhi. |
| HIMACHAL PRADESH AND BILASPUR | |
| 1·12 Himachal Pradesh and Bilaspur division | Chamba, Mandi, Sirmoor, Mahasu and Bilaspur. |
| *Bay Islands.* | Andaman and Nicobar Islands. |

## List of Agents in India from whom Government of India Publications are available

AGRA—
English Book Depot, Taj Road
Modern Book Depot, No. 4, Taj Road
National Book House, Jeonimandi
Wadhwa & Co., Raja Mandi
Lakshmi Narain Agarwal Hospital Road
Peoples Book-Centre M. G. Road (R).

AHMEDABAD—
Chandra Kant Chiman Lal Vora, Gandhi Road
New Order Book Co., Elis Bridge
Hari Har Book Depot.

AJMER—
Book Land. 663, Madar Gate
Rajputana Book House
Law Book House (R).

AKOLA—
Bakshi M. G.

ALIGARH—
Friend's Book House, M.U. Market

ALWAR—
Jain Book Stores, Hope Circus.

ALLAHABAD—
Superintendent Printing & Stationary U.P.
Central Book Depot, 44 Johusto Ganj
Kitabistan, 17-A Kamla Nehru Market
Law Book Co., Post Box No. 4, Albert Road
Ram Narayan Lal, 1, Bank Road
Students Friends, 224, Hewett Road
Universal Book Co.
University Book Agency (of Lahore), Post Box No. 63
Wheeler & Co., S/S. A. H.
Wadhwa & Co. (R).

AMBALA CANTT.—
English Book Depot
Sohan Lai Publications.

AMRITSAR—
The Law Book Agency, G.T. Road, Putlighar
S. Gupta, Near Arya Samaj Bazar
Pasharwala (R).

ANAND—
Charter Book Stall, Station Road
Vijay Stores (R).

BANARAS—
Students Friends, University Gate
Banaras Book Corporation, University Rd., P. O. Lanka
Chowkhamba Sanskirt Series Office
K. 37/108. Gopal Mandir Lane
Kohi-Noor Stores.

BANGALORE—
The Bangalore Legal Practisioner Co.-Op. Socity Ltd.,
S. S. Book Emporium, 118, Mount Joy Road, Baswangudi, P.O.
Standard Book Depot Avenue Road
The Bangalore Press, Lake View, Mysore, P.O. Box. 7
Vichar Sahitya Ltd., Balepet
Makkala Pustaka Press, Jayachamaraja Road (R)
Maruthi Book Depot (R).

BAREILLY—
Saraswati Sadan, 19, Subhas Market
Agarwal Brothers, Bara-Bazar (R).

BARODA—
Good Companions.

BHAGALPUR—
Dealers Welfare Syndicate, 13, Anant Ram Lane
Paper stationery stores, D. N. Singh Road.

BHOPAL—
Suprintendent State Government Press
Allied Traders, Motia Park.

BOMBAY—
Supdt. Printing & Stationery, Queens Road
Charles Lambert & Co., P. B. 1032
Co-operators Book Depot, 9, Bake House Lane, M.G. Road
Current Book House, Hornby Road
Current Technical Literature Co. Ltd. 133 M. G. Road
International Book-House Ltd., Ash Lane, M. G. Road
Lakhani Book Depot
Elpees Agencies
P.P.H. Book Stall
New Book Co., 188-190, Hornby Road
Popular Book Depot, Lamington Road
Sunder Das Gain Chand, 163, Samuel Street
Taraporevala Sons & Co., S/S. D. B.
Thacker & Co.
Tripathi & Co., S/S N. M. Princess Street
Wheeler & Co., S/S. A. H. 249, Hornby Road
The Kothari Book-Depot King Edward Road
The Book Centre Ltd., Ranade Road Dadar
Indo Overseas Trading Co.
Arjan Das Gajan Das (Air Fort) (Lib)
Shreyansh Prakashan, 46/48 Champa Gali (R)
International Agencies, 195 Hornby Road (R)
P. H. Rama Krishna & Sons, Shivaji Park Road, No. 5 (R)
D. Wamadeo & Co. (R)
Bhayani Bros. & Co. (R).

CALCUTTA—
Chakarvarty Chatterjee & Co. Ltd., 15, College Square
Chatterjee & Co., 3, Bacha Ram Chatterjee Lane
Das Gupta & Co. Ltd. 54/3, College Street
Hindu Library, 69-A, Balaram De Street
Lahiri & Co., Ltd., S/S. S. K.
M. C. Sarkar & Sons Ltd., 14, Bankim Chatterji Street
Newman & Co.
Orient Book Co., 9 Shyama Charan De Street
Oxford Book & Sty. Co. 17, Park Street
R. Canbray & Co. Ltd., Kant House, P. 33, Mission Road
Sarkar & Sons Ltd., S/S. 1/1/IC College Square
Thacker, Spink & Co., (1933) Ltd.
M. N. Roy-Choudhary
Firma K.L. Mukhopadhaya 6/IA, Bacha Ram Akrur Lane
Eastern Trading Co., 64 A, Dharamtola Street (R)
K.K. Roy (R)
Foreign Publishing Agency (R).

CALICUT—
P.K. Brothers, Huzur Road.

CHANDIGARH—
Supdt. Government Printing & Stationery Punjab
Jain Law Agency, Flat No. 8, Sector No. 22
Rama News Agency.

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COCHIN—
Saraswat Corporation Ltd., Main Bazar Road.

CUTTACK—
Press Officer, Orissa Secretariat
Cuttack Law Times
Prabhat K. Mahapatra, Chandni Chowk
Utkal Stores, Balni Bazar.

DEHRA DUN—
Jugal Kishore & Co.
National News Agency, Paltan Bazar
Bishan Singh (R).

DHUBRI
The Students Library (R).

DELHI—
Atma Ram & Sons, Kashmere Gate
Behri Brothers, 188, Lajpat Rai Market
Bawa Harkishan Dass Bedi (Vijay General Agencies)
Ahota Kedara Road, P. B. 2027
Federal Law Book Depot, Kashmere Gate
Bookwell E 4/8 Krishna Nagar
Imperial Publishing Co., Faiz Bazar, Daryaganj
J.M. Jaina & Brothers, Morigate
Metropolitan Book Co., Delhi Gate
N.C. Kansil & Co., Delhi Gate
New Stationery House, Subzimandi
Youngman & Co. (Regd.), Egerton Road
General Book Depot
Indian Army Book Depot, 3, Daryaganj
Knowledge Emporium. (R)
All Educational Supply Co. (R)
Dhanwantra Medical & Law House (R)
Finance Budget Publishing Ltd. (R)
Aggarwal & Co. (R)
Raja Brothers. (R)
University Book-House (R)
Government Book Agency (R)
Sumer Brothers (R)
Kaviraj Harnam Das (R)
Universal Book & Stationery Co. (R)
B. Nath & Brothers, 3808, Charkhewalan (R).

DHANBAD—
Ismag Co-Op. Store Ltd.
Indian School of Mines & Applied Geology.

ERNAKULAM—
Bharat Stores
Probhat Book House (R).

FEROZEPORE—
English Book Depot.

GUNTUR—
Globe Traders
Bharat Book Centre.

GORAKHPUR—
Halchal Sahitya Mandir. (R)

GWALIOR—
Supdt. Printing & Stationery (M.B.)
M.B. Jain & Brothers
Saraswati Sadan (Legal Book Depot).

HANAMKONDA—
Decan Book Stall.

HAZARIBAGH—
Gaya Prasad Khandelwal (R).

HOSHIARPUR—
Universal Book Stores.

HYDERABAD (DECCAN)—
Director Govt. Press (Publication Bureau)
Hyderabad Book Depot
People's Book House, Nizamabad Road
Swaraj Book Depot, 1368, Lakri-ka-Pul.

INDORE—
Rupayama Rampur Wala Buildings
Shri Indore Book Depot, 33 Mahatma Gandhi Road
Wadhwa & Co., 56, Mahatma Gandhi Road.

JAIPUR CITY—
Govt. Printing & Stationery Department, Rajasthan
Garg Book Co., Tripolia Bazar
Rajasthan Pustak Mandir, Tripolia Bazar
Vani Mandir, Sawai Man Singh Highway.

JAMMU (TAWI)—
Krishna General Stores, Raghunath Bazar
Students Stores, Raghunath Bazar.

JAMSHEDPUR—
Amar Kitab Ghar, Diagonal Road, P.B. No. 78
Gupta Stores.

JAMNAGAR—
Swadeshi Vastu Bhandar.

JODHPUR—
Kitab Ghar, Sojati Gate
Dwarkadas Rathi
Chopra Brothers, Tripolia Bazar
Mahesh Book House (R).

JABALPUR—
Modern Book House, Jawaharganj.

JULLUNDUR CITY—
Hazooria & Sons, Mai Hiran Gate
Jain General House
University Publishers
International Book & News Co., G.T. Road (R)
The Punjab Kitab Ghar (R).

KANPUR—
Advani & Co.
Sahitya Niketan
Universal Book Stall, The Mall.

KAPASAN—
Namdhar Brothers (R).

KHANDWA—
The Suresh Trading Co.
Abhinas Stores, Sivaji Road (R).

KHURJA—
Bharti Mandir, 31-C, Nai Basti.

KODARAMA—
The Bhagwati Press, P.O. Thumaitelaiya.

KOLHAPUR—
Maharashtra Grantha Bhandar (R).

KOTTAYAM.
The Vidyarthi Mittram Book Depot, P.B. No. 8.

KOZHIKODE—
K.R. Brothers (R).

KUMTA—
S. V. Kamat.

KURNOOL—
Fineland Agencies (Regd.).

LUCKNOW—
Soochra Sahitya Depot (State Book Depot)
Balkrishan Book Co. Ltd., Hazratganj
British Book Depot, 84, Hazratganj
Law Book Agency, 29-A, Kachery Road
Ram Advani, Hazratganj
Universal Publishers Ltd., Plaza Buildings
Upper India Publishing House Ltd., Literature Place.

LUDHIANA—
Loyall Book Depot
Mohindra Brothers (R).

MADRAS—
Supdt. Govt. Press, Mount Road
Accounts Test Institute, P.O. 760, Emgore
C. Subbiah Chitty & Co., Triplicane
Higginbothams & Co.
K. Krishnamurty, Mount Road
Presidency Book Supplies, 8, Pyerofts Triplicane
Vardhachary & Co.
Sunham Publishing Co. (R).

MADURAI—
Oriental Book House
E.M. Gopal Krishna Kone, North Chitra Street
Vivoka Nanda Press, 48, West Masi Street.

MANDSAUR—
Sikhwal News Agency (R).

MANGALOE—
U.R. Shenoy & Sons, Car Street.

MASULIPATAM—
Triveni Publishers
M. Seslachalam & Co. (R).

MEERUT—
Prakash Educational Stores
Hind Chitra Press.
Loyal Book Depot. Chipi Tank
Universal Book Depot.

MORADABAD—
National Book Depot.

MUZAFFARPUR—
Sri Krishna, Seid Ali Road (R).

MYSORE—
H. Venkataramiah & Sons, New Statue Circle
J. Nanu Mal & Sons, Lansdown Buildings
Chandra Stores, New Statue Circle (R).

NAGPUR—
Supdt. Govt. Printing. (M.P.)
New Book Depot Modi No. 3 Sitabuldi
Western Book Depot.

NAINITAL—
Council Book Depot.

NEW DELHI—
Amrit Book Co., Connaught Circus
Ajmeri Gate Paper & Stationery Mart, No. 1/6 B Block, Ajmeri Gate Extension
Bhawani & Sons, Cannaught Place
Central News Agency, Connaught Circus
Empire Book Depot, 278, Alganj, Lodhi Road
English Book Stores, L-Block, Cannaught Circus
Faqir Chand Marwal & Sons. Khan Market
Jain Book Agency, Cannaught Place
Jayna Book Depot, Bank Street, Karol Bagh
Navyug Traders, Original Road, Karol Bagh
Oxford Book & Stationery Co, Scindia House
Rama Krishna & Sons (of Lahore), 13/13, Connaught Place
Raj Book Depot, 1, Bengali Mal Market
Saraswati Book Depot, 15, Lady Hardinge Road
Sikh Publishing House Ltd., 70/C, Connaught Place
Mehra Brothers, 50-G, Kalkaji
Suneja Book Centre, 24/90, Connaught Circus
Taneja Book and Stationery Mart, Raisina Road
United Book Agency, 47, Amrit Kaur Market, Paharganj
Luxmi Book Store (R)
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People's Publishing House (R).

ONGOLE—
Shri D. Sree Krishnamurthy Prop.
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Shri V. K. Ramalingam Vadakkanthera (R).

PATHANKOT—
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N.R. Bhalerao, No. 602 Shanwar Peth.
Raka Book Agency,

PUDUKKUTTAI—
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Chapla Book Stall (R).

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Shri Nishitto Sen (R).

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Minerva Book Shop, The Mall
New Book Depot
Superintendent Himachal Pradesh Government
Maria Brothers, 94, The Mall (R).

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Milapchand Balebutmal, Haran Kesar Road.

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SURAT—
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TRICHIROPOLY FORT—
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Palaniappa Brothers, Teppakulam.

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International Book Depot, Main Road.

UDAIPUR—
Vidya Bhawan (R)
Rajasthan Stores.

VELLORE—
S. Venkatasubhan, Law Booksellers.

VIJAYAWADA—
Hindustan Diary Publishers.

VISAKHAPATNAM—
Gupta Brothers, Vizia Buildings
M.S.R. Murty & Co.
Book Centre, 11/97, Main Road.

WARDHA—
Swarajaya Bhandar, Bhaji Market.

Government of India Kitab Mahal, Janapath, Opposite India Coffee House, New Delhi. } for Local sale
Government of India Book Depot, 8 Hasting Street, Calcutta. }

High Commissioner for India in London, India House, Aldwych, London W.C. 2. } For all enquiries and orders from Europe and America.

