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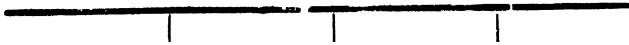
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THE POPULATION PROBLEM
IN INDIA.

THE
POPULATION
PROBLEM IN INDIA

A CENSUS STUDY

By

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PREFACE.

This book was first published in 1916 and, in bringing out a second edition, the author has enlarged its scope and rewritten it completely, so that it is now more a new book than a revised edition.

Much water has flowed under the bridge since the appearance of the first edition. At that time public interest in the Indian Census was slight. The officials concerned also did not regard the Census as anything more than a mere count of heads. All this is no longer true of the Census of 1931. Some idea of the progress of thought since 1916 may be gathered from the fact that a provincial Government which in August 1922 regarded a declining birth rate as 'a symptom of deterioration, physical, social and moral' is in 1934 taking steps to reduce the birth rate. The public press devotes far more space to the Census now than it ever did before. The Census reports also contain a great deal of interesting and useful information. They are not only a survey of the demography of the country, but may be said to be an essential part of the equipment of every political and social worker. The grateful thanks of all interested in the population problem are due to Dr. J. H. Hutton, the Census Commissioner, for increasing the scope of the Indian Census and enlarging its field of interest.

While it would be absurd for anyone to suggest that the ills of Indian Society are ascribable to any single cause, the present writer cannot help giving expression to his deep-seated conviction that biological problems do not receive in this country anything like the attention

which they deserve. There is far too much human suffering and misery around us which it is within our power to avoid. But we will not succeed unless we adopt a rationalistic outlook on life and resort to methods which are in accord with the plain indication of Nature.

A suggestion has been made in the following pages that in view of the unsatisfactory condition of the health of the people of India and the alarming growth of the population, a Commission might be appointed to inquire into the subject and to recommend measures for bringing about an improvement. Such a Commission has, it is understood, been set up in Japan where the population problem has become a pressing one. If such a step were taken in India, the public conscience would receive a much-needed stimulus, the facts would be authoritatively and comprehensively examined and recommendations emanating from such a body would command greater confidence and acquiescence than suggestions made by individuals.

It seems a great pity that even such opportunities as exist at present for a comprehensive review of the subject are not fully utilised. Public health is a transferred provincial subject, and debates in the provincial legislatures doubtless take place on the vote for public health in each province. But, so far as the present writer is aware, the annual report of the Public Health Commissioner with the Government of India is never discussed in the Central legislature. The annual debates in the British House of Commons on the vote for the Ministry of Health derive their main interest from the report of the Chief Medical Officer of the Ministry of Health, and these debates are always most

informative and widely reported in the public press in England. Were a debate on the Public Health Commissioner's report to take place in the central legislature in India, there is no doubt that the quickening of the public conscience, to which a reference has been made in the preceding paragraph, would inevitably follow. The public would be presented with a complete picture of public health in the country, and attention would be focussed on practical measures for improvement to a much greater degree than is the case at present.

We hear so much about economic planning now-a-days, but no planning is possible unless there are proper statistics and competent persons to interpret them. The position is now being reviewed by Dr. A. L. Bowley and Mr. Dennis Robertson at the instance of the Government of India, and one can only hope that as a result of their enquiry there will be created, as suggested by Dr. Hutton, 'a permanent statistical department instead of a pitiable ephemeron, (like the decennial Indian Census Department) unable to put into practice the knowledge acquired from its too brief experience or to continue experiments till a satisfactory solution is obtained for its problems.'

There is also the need of an Indian Population Society for the scientific study of population questions. Such a Society would invite the co-operation of biologists, sociologists, economists, anthropologists, statisticians, experts in agricultural economics, public health officers, census officers, etc., for the discussion of the subject from every helpful point of view. The Indian Economic Conference discusses the question of population, but in a very perfunctory manner. We have

a few birth-control organisations in the country, but a society like the one suggested above would look at the question from a wider standpoint. Birth-control aims chiefly at limitation of numbers, and, though a reduction in the birth rate in India is essential, the population problem is bigger than birth-control, pure and simple.

Great care has been taken to see that the facts and figures are correctly taken down from the official reports, but where such a large number of returns and reports (including over fifty Census Reports) have been pressed into service, it is possible that some mistake here and there may have remained undetected. The author craves the indulgence of his readers for all such shortcomings and will be deeply grateful for any advice or suggestions which may be tendered to him.

FAIR FIELDS,
FEROZEPORE ROAD,
LAHORE, 1st March 1934. }

P. K. WATTAL.

Chapter I.

THE LAW OF POPULATION.

MALTHUS' STATEMENT OF THE LAW OF POPULATION.

POPULATION, according to Malthus, has an inherent tendency to multiply beyond the means of subsistence prepared for it by nature ; for while the means of subsistence tend to increase in arithmetical progression, population, if unchecked, would multiply in geometrical progression, so that, supposing both were to start on a level of equality, the ratio between them would tend to recede farther and farther from that level. As, however, population must be limited to the means of subsistence, this general tendency to increase is held in check in two ways, by preventive and positive checks. The preventive check is voluntary, and consists in restraint from marriage when there is no reasonable chance of maintaining the habitual standard of life. The positive checks include diseases, wars, epidemics, famines, extreme poverty, unwholesome occupation, etc., in short, everything which in any way contributes to decrease the natural duration of life. Such being the nature of the checks on the increase of population, it is evident that the preventive and positive checks must vary inversely with each other ; that is to say, in countries where the preventive check prevails very little, there will be a high death rate, while in countries where the preventive check prevails the death rate will be low. It follows, therefore, that in countries with a high birth-rate there will be a rapid succession of short-lived human beings, one generation being pushed out of existence before its time to make room for the

next. The only remedy, therefore, for poverty and other evil effects of the operation of the principle of population is moral restraint, or abstinence from improvident marriages.

Such, in brief, is the doctrine of Malthus. It is as essential to a correct understanding of social problems as Newton's Law of Gravitation is to Astronomy. From the time the ball was set rolling in the "Essay on the Principle of Population", the law has been subjected to severe criticism. Much fun has been made of the ratios referred to as governing the growth of population. They, however, occupy the same place in demography as the conception of the economic man in political economy, or the Euclidean point in geometry. It would be outside the limited scope of this book—which is concerned entirely with the Indian problem—to attempt a historical survey of the question from the time of Malthus up to the present. But it is essential that we should grasp what the prevailing view in regard to the law of population is to-day, and in what light the fundamental assumptions of the Malthusians of the old school are regarded by modern thinkers.

THE PREVAILING VIEW.

It is held that the population problem of to-day, in the Western World at any rate, is very different from the problem on which Malthus laid stress more than a century ago. The problem now is not so much the possibility of population outgrowing the material necessary for its existence, as of its running counter to the maintenance of standards of living which have become customary. In support of this view, it is pointed

out that food and supplies of raw material have in recent years been increasing at a rate far more rapid than the growth of the population. Between 1913 and 1925 the world's population increased by about five per cent., whereas the increase in the production of foodstuffs was about ten per cent. Between 1925 and 1929, the increase in world population was about four per cent., whereas the increase in the production of foodstuffs was ten per cent. These are the estimates of the Economic Section of the League of Nations, and are taken from the "World Economic Survey" for 1931-32 issued by that body. Not very long ago the papers reported that in the farming State of Idaho in America wheat was being used as fuel, as, owing to the heavy fall in prices, it was cheaper to burn wheat in stoves than coal. Several International Conferences and Committees have since 1930 considered the possibility of international action with a view to adjusting the world's wheat supply which is at present in excess of the demand of the importing countries. The United States of America, Canada, Argentine and Australia have on an average 750,000,000 bushels of wheat available for export. The importing countries can consume only 450,000,000 bushels. There is consequently a surplus of 300,000,000 bushels for which there is no market. After a great deal of discussion the exporting countries in question have agreed to accept restrictions upon the amount which they will export during 1933-34 and 1934-35, based for the latter year upon a reduction of 15 per cent. in production. The importing countries have undertaken not to encourage any increase in their domestic production and to revise their tariffs and other

protective measures as soon as the price level reaches the equivalent of a little over 63 gold cents a bushel. It remains to be seen whether this agreement will succeed in its object, which is the adjustment of supply to demand.

What applies to the production of wheat applies to most of the chief foodstuffs and raw materials, of which large stocks have accumulated for which no buyers can be found at a remunerative price. (Perhaps the most serious economic problem at the moment is that world production has outrun consumption.) There is great truth in what Mr. G. D. H. Cole says :—" If the technicians of the world were free to concentrate on increasing output without considering the state of the market, there would be no real obstacle to the doubling of the Western World's production within a quite short period of years." (*Intelligent Man's Guide Through World Chaos*, page 30).

What has been stated above might seem to show that the pressure of population on the means of subsistence in the Western World is not a matter of immediate urgency. But even in Western countries the growth of unemployment among manual labourers has brought to light the fact that the poorer classes are increasing in numbers at far too rapid a rate for them to find employment, and that it is necessary for them to regulate the expansion of their families in their own interest. The general law of population is not, however, disproved by the facts and figures given above, and as a statement of tendency is as true to-day as the Law of Gravitation. Nobody would venture to assert that because a book on a table does not fall to the ground therefore Newton's

Law is false. In the same way it is no disproof of the Malthusian doctrine if a certain section of the human race, by adopting preventive checks on an extensive scale, has arrested the natural operation of the principle of population. (Dr. Frick, German Minister for Home Affairs, was evidently referring to this when he said that men to-day looked upon their wives as companions in life rather than mothers of their children.) We know of countries which have an annual birth-rate of 46 per thousand, as well as of others which have a death rate of 16 per thousand.* So, if the latter countries ceased to apply the preventive checks which they do at present, it is quite conceivable that they would have the same birth-rate as the former group, or in other words, they would have an annual rate of increase of three per cent. This, according to the calculations given by Sir George Knibbs in his 'Shadow of the World's Future,' would lead to the doubling of the population in 23·45 years, which is even less than the 25 years allowed by Malthus.

THE GROWTH OF POPULATION IN INDIA.

But whatever might be the case with regard to the countries of the West, the Law of Population needs no re-statement in regard to at least the one half of the human race which inhabits the continent of Asia, and more particularly in relation to the one-fifth of the world's population to be found in India. Japan has almost doubled its numbers in the last fifty years, and continues to lead the countries of the world in the growth of its population. The problem of feeding its 65 million

* The State of Travancore in Southern India, with a birth-rate of 41·5 per mille and a death rate of 16 per mille, is as good an example as one can get.

people, which threaten to become 86 million in thirty years (if the present rate of increase is maintained) is one of the most serious its statesmen have to face. The Chinese, who, according to an American writer, would be one of the most interesting people on the face of the earth if only they had a little more to eat, are faced with a possible increase of 37 million people in the next ten years, with diminishing internal resources and no appreciable outlet even for their present surplus millions. As things are to-day, starvation is the accepted check on over-population in the Celestial East. (Mr. J. O. P. Bland in 'China: The Pity of It').

India presents an even more serious problem than Japan and China. The seven census counts that have taken place up to date give the following figures for the total population in British India as well as Indian States :—

1872	..	..	206,162,360
1881	..	..	253,896,330
1891	..	..	287,314,671
1901	..	..	294,361,056
1911	..	..	315,156,396
1921	..	..	318,942,480
1931	..	..	352,837,778

As, at each successive census new areas have been included, and the enumeration itself has been steadily increasing in accuracy, the real rate of increase of population cannot be gauged from the figures given above. After making allowance for these factors, the rate per cent. of

real increase is as given in the following table, taken from the annual official report 'India in 1930-31' :—

Period.	Increase due to		Real increase of population.	Total.	Rate per cent. of real increase.
	Inclusion of new areas.	Improvement of method.			
	Millions.	Millions.			
1872-1881 ..	33.0	12.0	3.0	48.0	1.5
1881-1891 ..	5.7	3.5	24.3	33.5	9.6
1891-1901 ..	2.7	.2	4.1	7.0	1.4
1901-1911 ..	1.8	..	18.7	20.5	6.4
1911-1921 ..	.1	..	3.7	3.8	1.2
1921-1931 ..	.0	..	34.0	34.0	10.6
Total ..	43.3	15.7	87.8	146.8	30.7

The above table requires some explanation. The rate of increase from 1872-1881 was affected by the great Indian famine of 1876 to 1878. Famine is again responsible for the low figure for the period 1891-1901. Similarly, the figure for 1921 was unduly low owing to the influenza pandemic of 1918, which was responsible for 12½ million deaths—nearly equal to the total mortality due to plague from 1896 to 1932. The increase recorded during the period 1921-31, namely, 10.6 per cent, or one per cent per annum, may be regarded as normal in the

sense that there was no great natural calamity to check the growth of population. That this is not an abnormal rate of increase for India will be further clear when we remember that in England for many years before the War the average annual increase was approximately one per cent. In a paper read before the Royal Society of Arts, London, in March 1925, Mr. Marten, the then Census Commissioner for India, estimated that 8 per cent was the normal increase of the population over a decade in which conditions were reasonably free from famine and sickness, and in which the economic condition of the country was generally good. Mr. Marten's forecast is not borne out by the census results of 1931, but we need not waste time over the question whether 8 or 10 per cent represents the normal rate of growth for a decade. Whichever figure be adopted, the gravity of the problem remains unaffected. As the official report says, 'an advance of 11 per cent (strictly speaking 10.6 per cent) in ten years is in itself startling enough, but it becomes vastly more so when it represents an addition of 34,000,000* persons to the country's population—that is to say, of only 6,000,000 less than the total existing population of France, and of considerably more than the populations of such countries as Spain, Poland or Austria.' ('India in 1930-31,' page 145). Dr. Hutton, in his report on the 1931 census, also says that 'this increase is from most points of view a cause for alarm rather than for satisfaction'.

In a thoughtful paper on 'Population and Public Health in India', presented in December 1927 by

* This increase is more than three times the total population of Canada, whose area is double that of India.

Colonel (now Major-General) A. J. H. Russell—then Director of Public Health, Madras, and now Public Health Commissioner with the Government of India—before the Seventh Congress of the Far Eastern Association of Tropical Medicine, the conclusion arrived at is that ‘the population of India is very near its saturation point, and for all practical purposes, it may be taken as proved that India as a whole is already overpopulated.’ This was with a population of 319 millions (the census figure for 1921); it is even more true of the present day figure of 353 millions.

Major-General Sir John Megaw, till lately Director-General, Indian Medical Service, who took a very keen interest in the subject, observes as follows:—

“All the available evidence goes to show that the average duration of life in India is about half what it might be and that this abbreviated existence is lived at a very low level of health and comfort. There is some difference of opinion as to whether the conditions of life have improved or deteriorated during the past fifty years, but even if some slight improvement may have taken place *the existing state of affairs is still so profoundly unsatisfactory that it demands investigation and redress**.”

“Even more disquieting is the forecast for the future: there is every reason to believe that the maximum increase which can be hoped for in the production of the necessities of life will not keep pace with the growth of the population, so that there is a prospect of a steady deterioration in the state of nutrition of the people.”

India today is the most populous country in the world, China not excepted. It is well known that agriculture cannot support so dense a population as industry, per unit of space. Notwithstanding this,

* The italics are mine.

India, a predominantly agricultural country, with a density of 195 persons per square mile, is supporting a larger population per square mile than the highly industrialised continent of Europe, with a mean density of 127, or the United States of America, with a density of 41. Should the rate of increase recorded during the period 1921-31 be maintained in the coming decades, the twenty-first century would commence with a population of 700 millions in this ancient country—a truly staggering prospect!

Chapter II:

MARRIAGE.

THERE are two factors governing the growth of population in any country, namely, natural increase and migration. By the term natural increase is meant the excess of births over deaths, while the term migration comprises the difference of immigration over emigration. In considering the Indian population problem we must therefore take account of both the factors mentioned above.

Natural increase involves an examination of birth and death rates, for which purpose it is necessary to consider the state of feeling in the country with regard to the institution of marriage. Marriage implies the existence of males and females and unless we know the facts regarding the distribution of the sexes, we cannot form any opinion about the problem under investigation. It is therefore proposed to devote some space to an examination of the salient features regarding the sex-ratio before dealing with the question of prevalence of marriage.

SEX-RATIO.

For the social and economic welfare of a community it is very necessary that there should be no great disparity

of numbers between the sexes. Such disparity results in human beings leading an unnatural existence, which is bad for both body and mind, and exposes them to temptations which they find hard to resist. Absolute equality of numbers has, however, not been attained anywhere ; in some countries women predominate and in others men—giving rise in either case to peculiar social problems, such as traffic in girls in the Punjab, which have so far baffled solution. Biological science* has not yet brought sex determination within the control of man. Various theories have been put forward, but the question remains shrouded in mystery as ever. Indian Census returns regarding sex must be of special interest to biologists engaged in this branch of human study, considering the diversity of the material and the numbers dealt with therein.

CENSUS FIGURES.

According to the Census of 1931, 51.4 per cent of the population of India is male, and 48.6 per cent female. Ever since 1881, there has been a large majority of males over females, and since 1901 the proportion of women to men has been steadily falling. Whereas in 1901 there was a shortage of $5\frac{1}{2}$ million females in the total population, it rose to $7\frac{1}{2}$ millions in 1911, 9 millions in 1921 and nearly 11 millions in 1931. With the exception of Madras, all the provinces reflect this continuous fall in the

* The reader who wishes to get a clear idea of the contribution of biology to the solution of the question of sex-determination is advised to read 'Biology in Everyday Life', by John R. Baker and J. B. S. Haldane. Allen and Unwin.

proportion of women to men, as will be seen from the figures given below :—

	Number of females per 1,000 males.					
	1881	1891	1901	1911	1921	1931
Bombay (including Sind)	940	940	945	930	919	901
Bengal	990	970	960	950	932	924
Bihar and Orissa ..	1,020	1,040	1,047	1,040	1,029	1,005
Central Provinces and Berar ..	970	990	1,019	1,010	1,002	998
Madras	1,021	1,023	1,029	1,032	1,028	1,025
Punjab	840	850	854	820	828	831
United Provinces ..	930	930	940	917	912	902
Assam	950	942	949	940	926	900
North West Frontier Province ..	820	840	846	850	831	843
Baluchistan .. ..	..	..	..	790	730	717
Burma	877	962	964	959	955	958
All India	954	958	963	954	945	940

It will be seen from the above figures that in the regions in which the Mongolian and Dravidian race element is strongest, that is, in Burma* and the southern

* The figure for Burma is low because of the large number of male immigrants from India. If we calculate it on the indigenous population alone, it was 1,027 in 1901 and dropped to 1,025 in 1931.

and central tracts of India, there is a higher proportion of females than in the areas of north and north-west India in which the Aryan and Semitic strains prevail.

The above figures are for the total population. But for purposes of natural increase we are more concerned with the sex-ratio at the reproductive ages. This is not so unfavourable. The proportion of females aged 15 to 45 to males aged 20 to 50 is generally higher than the proportion of females to males at all ages. The figures are given below :—

Province.	Females per 1,000 males, reproductive age periods.	Females per 1,000 males at all ages.
Bombay	970	901
Bengal	1,037	924
Bihar and Orissa ..	1,130	1,005
Central Provinces and Berar	1,106	998
Madras	1,177	1,025
Punjab	918	831
United Provinces ..	995	902
Assam	991	900
North West Frontier Province	961	843
Burma.. ..	1,039	958

Though the above figures are not so unfavourable as the total sex figures, the Census Commissioner remarks that the point at which the number of females is adequate to the number of males is limited to the ages from 15 to 30 and the probability is that their deficiency from the ages of 30 to 60 is due to exhaustion by breeding as soon as the reproductive period is reached.

Several inferences are drawn from the above sets of figures, of which only the more important ones are dealt with here. The Census Commissioner agrees with the view of Westermarck, Heape and others that in-breeding increases masculinity. Or, in other words, the caste system, with its insistence on endogamy, is responsible for the excess of males in India. I agree with Dr. Hutton that it would be interesting to have reliable statistics of the sexes of the off-spring of inter-caste marriages. One could then give a definite opinion. But even in the present state of our knowledge it is permissible to point out that the caste system is most rigid in the South where there is an excess of females. It is much less rigid in the North and particularly in the North-West where there is a preponderance of Muslims. Notwithstanding all this, the excess of males is most marked in the North and North-West.

Nor does there appear much evidence to support Captain Pitt-Rivers' view that masculinity is a sign of a declining population. The accepted view with regard to progressiveness or otherwise of a population is that of Sundbärg. According to this view, if the percentage of the population aged 0-15 is double the percentage of the population aged 50 and over, the population must be regarded as progressive. In India the percentage of the

population aged 0-15 is 39.9, while that of the population aged 50 and over is only 9.6. The population, therefore, is clearly progressive and not regressive or declining.

There are other progressive countries in some of which women outnumber men and in some men outnumber women. The figures given below will make the position clear :—

Country.	Females per 1,000 males (actual population).
England and Wales (1931)	1,087
France (1926)	1,083
Turkey (1927)	1,079
Germany (1925)	1,067
Italy (latest)	1,045
Holland (1930)	1,012
Egypt (1927)	1,009
<hr/>	
Japan (1930)	990
United States of America (1930) ..	976
Australia (1921)	967
Canada (1921)	940

EXPLANATION OF THE PAUCITY OF FEMALES.

As is the case in other countries, more boys than girls are born in India. The proportion in this country of males born per every 100 females is 108. In most European countries (including England) the proportion is 105 boys per 100 girls. The male baby is more delicate than the female, and, consequently, during the earlier critical years of life the death-rate for the former is much

higher than for the latter. In India the death-rate for the first year of life is 187.3 for males and 169.6 for females, per 1,000 of the population of each sex at the age in question.¹ Not only is this the case during the period of infancy but at all ages—excepting those which include the onset of menstruation and of the climacteric in the female—the longevity of females is greater than that of males. Organically, woman is the stronger and not the weaker vessel. This constitutional superiority of the female counteracts the initial numerical advantage enjoyed by the male at birth and ultimately reduces it to inferiority.

This will be clear from the following extracts from the All-India Life Tables for males and females respectively, prepared by Mr. L. S. Vaidyanathan, F.I.A., the Actuary employed by the Government of India to report on the Census figures of 1931 :—

Males.

Age.	Living at age	Dying between ages \times and $\times + 1$.	Mortality per cent.
0 ..	100,000	24,874	24.87
1 ..	75,126	6,896	9.18
2 ..	68,230	3,850	5.64
3 ..	64,380	2,524	3.92
4 ..	61,856	1,695	2.74
5 ..	60,161	1,159	1.93
6 ..	59,002	853	1.45
7 ..	58,149	669	1.15
8 ..	57,480	539	.94
9 ..	56,941	474	.83

Marriage

Females.

Age.	Living at age ×	Dying between ages × and × + 1.	Mortality per cent.
0 ..	100,000	23,234	23.23
1 ..	76,766	6,639	8.65
2 ..	70,127	3,551	5.06
3 ..	66,576	2,262	3.40
4 ..	64,314	1,497	2.33
5 ..	62,817	1,038	1.65
6 ..	61,779	773	1.25
7 ..	61,006	616	1.01
8 ..	60,390	531	.88
9 ..	59,859	490	.82

It will be observed from the figures given above that at all ages up to 9 the mortality among boys is greater than among girls, so much so that if we started with an equal number at birth, by the age of nine the females would easily outnumber the males. As, however, 108 boys are born per every 100 girls, we have to reconstruct the life table for males on this basis in order to see how the ratio would stand in actual life. The reconstructed figures (up to the age of 9) are given below.

Males—All-India.

Age.	Living at age ×	Dying between ages × and × + 1.
0 ..	108,000	26,859
1 ..	81,141	7,448
2 ..	73,693	4,256
3 ..	69,437	2,721
4 ..	66,716	1,828
5 ..	64,888	1,252
6 ..	63,636	922
7 ..	62,714	721
8 ..	61,993	582
9 ..	61,411	

From the above figures we can see that even up to the age of nine, in spite of the higher mortality of boys, there are only 59,859 girls to 61,411 boys. From the age of ten, the mortality among girls begins to be greater than that among boys, due clearly to factors connected with marriage and child birth and this persists right through the reproductive period and up to the age of 54. The actuarial figures are as under :—

All-India Tables.

Age.	Mortality per cent. among males.	Mortality per cent. among females.	Age.	Mortality per cent. among males.	Mortality per cent. among females.
10	.79	.81	33	2.22	2.75
11	.81	.84	34	2.31	2.84
12	.84	.88	35	2.41	2.93
13	.88	.93	36	2.51	3.03
14	.93	1.02	37	2.61	3.13
15	.98	1.15	38	2.72	3.24
16	1.04	1.30	39	2.83	3.35
17	1.10	1.44	40	2.94	3.45
18	1.16	1.56	41	3.05	3.54
19	1.21	1.66	42	3.15	3.64
20	1.27	1.76	43	3.27	3.73
21	1.32	1.85	44	3.38	3.81
22	1.37	1.93	45	3.49	3.90
23	1.42	2.01	46	3.61	3.98
24	1.47	2.08	47	3.72	4.06
25	1.53	2.16	48	3.84	4.14
26	1.59	2.23	49	3.97	4.23
27	1.66	2.30	50	4.10	4.31
28	1.74	2.37	51	4.23	4.40
29	1.83	2.44	52	4.36	4.48
30	1.93	2.51	53	4.50	4.57
31	2.03	2.59	54	4.65	4.66
32	2.13	2.67	55	4.81	4.76

From the age of 55, the mortality among males is again greater than among females, and this goes on right through the remaining period of life. This feature of the Indian returns is also in accord with Western experience, and stands in no need of explanation. Women are generally known to live longer than men. Amongst the people in Great Britain who are 80 years old or over, there are about two women to every man. Of 18 British centenarians, whose deaths were recorded in 1932, only three were men. In the five years down to 1927, 327 women centenarians died, as against 122 men. The insurance companies recognise this as an accepted fact and give less favourable terms to women than to men in regard to annuities.

There is thus a very simple explanation of the disparity of sexes that the Indian Census returns bring to light. Firstly, there is the greater number of males at birth, and secondly there is the greater mortality among females during the entire reproductive period. There is no question of omission of females from the Census returns, or of female infanticide or of deliberate neglect of female life which are sometimes given as possible explanations. The number of males at birth is not amenable to human control. Any step aiming at the removal of the disparity in question must therefore be directed to the reduction of female mortality during the reproductive period.

ITS UNDESIRABLE CONSEQUENCES.

Reference has been made to one undesirable feature of the shortage of females in India, namely, the tendency it has to promote traffic in girls in certain parts of the

country. It also has another unfortunate tendency, that is, lowering the age of marriage for females, and preventing social legislation like the Sarda Act from asserting itself. This naturally leads to great disparity of age between husband and wife, which is an evil in itself. The Census Superintendent in Rajputana says :—

“ From 15-30, ages at which males contemplate or achieve marriage, there are 46 unmarried males per 1,000 persons while there are only 4 unmarried females at similar ages. It therefore follows that these 46 males must arrange marriages with girls who are aged from 5-10 and from 10-15 of whom there are 82 It looks therefore as if the discrepancy of 4 years fixed by the Sarda Act of 14 for females and 18 for males is for the present insufficient in practice and that if the provisions of the Act are rigorously complied with, the age of marriage for males will automatically rise to 21-23 for some years to come for want of sufficient girls who have reached the age of at least 14.”

This shortage of females is more marked in urban than in rural areas and where, as in big cities like Calcutta and Bombay, it is very great—the proportion for the former is 468 females per 1,000 males and for the latter 554—it leads to promiscuity in sexual relations and promotes venereal infection.

MARRIAGE.

It has become customary in census reports to comment upon the universality of marriage in India. To the Western mind this seems a striking feature, but to an Indian, apart from the marriage of children or of persons suffering from infectious diseases, or ill-assorted marriages, there appears nothing abnormal in the universality of marriage itself. Marriage is a natural condition for men and women, like eating and drinking,

and, other things being equal, the earlier physically mature persons marry the better for morality and for the race. Western peoples are beginning to realise that the postponement of the age of marriage is one of the major disharmonies of civilization, and eugenists are emphatically of the opinion that children of young parents are the best physically endowed, and therefore the most desirable from the racial point of view.

This reaction in the West in favour of early marriage has not yet affected Great Britain. One can hardly imagine an English girl of to-day cherishing what was one of Lady Rhondda's ambitions from the age of ten, namely, to be the mother of twelve children, which in her book 'This Was My World' she says she retained throughout her life. But in France, Italy and Germany the outlook of the people is being revolutionised. Every inducement is given to people by means of government loans and subsidies, exemption from taxation, etc., to enter into the married state; those who remain single are subjected to special taxation and other disabilities; it is being constantly inculcated that woman's place is in the home and that her task is to be beautiful and to bring children into the world. There is every likelihood that within the next fifteen or twenty years marriage statistics for these countries will resemble Indian figures more nearly than they do today.

FIGURES FOR THE GENERAL POPULATION.

Before giving the figures, it is necessary to prepare the background for the information of the reader, who may not be acquainted with Indian conditions. The attitude of Christian countries towards marriage is becoming slowly secularised, but the idea underlying

the teaching of the Christian churches has been that 'it is good for a man not to touch a woman.' The Council of Trent anathematised any person who declared that the married was better than the unmarried state. This is not the attitude nor the teaching of Hinduism or of Islam. For Hindus marriage is a sacrament which must be performed regardless of the fitness of the parties to bear the responsibilities of mated existence. A Hindu male must marry and beget children—sons, if you please—to perform his funeral rites lest his spirit wander uneasily in the waste places of the earth. The very name of son 'putra' means one who saves his father's soul from the hell called 'Putra'. A Hindu maiden unmarried at puberty is a source of social obloquy to her family and of damnation to her ancestors. Among Muslims, who are not handicapped by any such penalties—though they have a saying of the Prophet that 'when a man marries verily he perfects half his religion'—the married state is equally common, partly owing to Hindu example and partly to the general conditions of life in primitive society where a wife is almost a necessity both as a domestic drudge and as a helpmate in field work.

It is therefore no matter for surprise that excepting in Burma and Travancore—where more or less European conditions prevail—the married state should be universal throughout India. Of the total population of 352,837,778 persons, 83,607,223 (or 49 per cent.) females, and 84,208,467 (or 47 per cent.) males are married; 59,698,043 (or 35 per cent.) females and 86,338,001 (or 48 per cent.) males are unmarried; while the rest are widowed. These figures may be taken as typical, for the divergencies in the individual Provinces and States are not very marked,

with the exception of Bihar and Orissa and Hyderabad State, where the percentage of married males is the highest, *viz.* 53 per cent., and that of married females, *i.e.* 53 per cent., is beaten only by the record figure of 55 per cent. attained in the Central Provinces and Berar.

Of the 48 per cent. of the total male population which is unmarried, slightly more than three-fourths (77 per cent.) is under the age of 15, while 91 per cent. of the total female unmarried population is below that age. At the reproductive age period, 15—40, the proportion drops down to 5 per cent. for the unmarried female population, whereas it is 36 per cent. in England and Wales.

WIFELESS HUSBANDS.

It has been stated above that there are 84,208,467 married males and 83,607,223 married females, which means that there are 601,244 wifeless husbands. In other words, there are only 993 married females to every 1,000 married males. This phenomenon appears for the first time in the 1931 census, as at all previous censuses the proportion of married females has been greater than that of married males. In the 1921 census it was 1,008 per thousand married males and this is also the average for the last fifty years. It will therefore be obvious that an explanation must lie in something special which occurred during the decade 1921-1931 and not in any factor which was equally operative during the four previous decades. [On the latter ground, explanations, such as polyandry, omission of names of married women, inclusion of widowers among married men, inaccuracy

of census returns, etc., must be ruled out.) Dr. Hutton suggests that the reason is to be found in the Sarda Act which was passed on 28th September 1929, but took effect from April 1st, 1930. This Act prohibited the marriage of girls under the age of 14 (and of boys under 18), but none the less many girls were married in contravention of its provisions before the Census was taken on February 26, 1931. When giving particulars regarding them to the Census officers, parents in many cases described their daughters as unmarried in order to avoid the risk of prosecution. Dr. Hutton estimates on the basis of previous census figures that not less than one and a quarter million married females have been in this manner returned as unmarried. This is in all probability the correct explanation. To be absolutely sure one must wait for the results of the next census when the normal proportion of married females to males must re-assert itself in the natural course of things. Meanwhile it may be pointed out that in the Jammu and Kashmir State a similar law was passed in 1928 but no such effect is noticeable in the 1931 census figures for that State, given below :—

Jammu and Kashmir State.

—			Married males.	Married females.	Excess of married females over married males.
1921	..	..	706,736	743,980	37,244
1931	..	..	799,073	834,460	35,387

EARLY MARRIAGE.

Some idea of the early age at which marriage takes place in this country will have been gathered from the figures for the married population below the age of 15 given above. In the Bengal Census Report of 1921 the average ages of the bride and the bridegroom at marriage were calculated by a simple formula to be 12.03 years and 20.73 years respectively. In the Punjab Census Report for 1931 the average age at marriage is worked out to be 13.33 for females and 17.98 for males. The Age of Consent Committee (1929) came to the conclusion that the percentage of girls who are married before the completion of the fifteenth year is nearly 50. Sir John Megaw in his enquiry (1933) gives the average age of cohabitation as 18 for boys and 14 for girls. In Great Britain the average age of marriage for men is over 27 and for women nearly 26, and no person of either sex ever marries below the age of 15. With the passing of the Sarda Act, things have not improved in India ; if anything, there has been a set-back. There was at previous censuses a noticeable rise in the age of marriage, but in 1931—due to the rush of child marriages in anticipation of the Act—there was a decided fall, *vide* figures given below :—

Number of married persons per 1,000 of those aged 0-15.

Sex.	1881.	1891.	1901.	1911.	1921.	1931.
Males	63	59	59	54	51	77
Females	187	170	162	156	144	181

In the province of Bihar and Orissa—which is the worst sinner in respect of early marriage—the actual number of girls married before they are even 12 months old has increased tenfold since the 1921 census from 107 to 4,959 and the latter number includes 150 unfortunate infant widows. This is a most deplorable state of affairs and one can only hope that the results of the 1941 Census will show a real improvement. From the demographic point of view the marriage of immature persons is thoroughly bad. Some of its injurious features are well worth mentioning here :—

- (i) In England the average weight of a baby at birth is 7 lbs. In India it is 6 lbs. For mothers of the ages of 16 and under the average weight of the baby is only 5.88 lbs. (Age of Consent Committee Report—Para 94, pages 39-40).
- (ii) The incidence of still-birth is at the rate of 186 per 1,000 in the case of mothers of the age of 16 and under as compared with 83 per 1,000 for mothers of 17 and over. (Ibid.)
- (iii) There is a loss in fecundity. This point will be discussed in a separate paragraph.
- (iv) There is greater maternal and infant mortality. This point will be dealt with in the next chapter.
- (v) There is a large number of child widows. This point also will be discussed in a separate paragraph.

LARGE NUMBER OF WIDOWS.

A prominent feature of Indian population statistics is the large number of widows. Out of a total population of 171 million females there are 26 million widows, which gives a percentage of 15. For European countries the figure is only about 9, which includes a large number of war widows, otherwise the normal figure is about 7 per cent. of the female population. Figures when analysed by ages and communities yield an even more striking result. The age composition of the 26 million widows is as under :—

Ages.			Number of widows.
0-15	..	..	321,701
15-50	..	..	14,317,488
50 and over	..	..	11,609,279

It will thus appear that there are about three and a quarter lakh child widows and as many as 14 million widows of reproductive ages. While examining the sex-ratio we saw that there was a shortage of 11 million females to males in the total population. This disparity in the sex-ratio is considerably aggravated by the withdrawal of a substantial proportion of widows—practically all the Hindu widows and a fair proportion of Muslim widows also—from all chance of re-entering the married state.

Of the three lakhs of child widows, 253,000 are Hindu and 59,000 are Muslim ; or, in the proportion of $4\frac{1}{2} : 1$, whereas the general proportion of the Hindu to the Muslim population is $3 : 1$. This is only to be expected considering that child marriage is more common

among Hindus than among Muslims. The effect on the growth of the population is even more than the proportion of $4\frac{1}{2}$: 1 would seem to indicate. For while practically all the Muslim child widows in the ordinary course have a fair prospect of remarriage, very few of the Hindu child widows would be permitted to remarry.

In certain parts of India things are very much worse. For instance, in Kathiawar, out of every thousand girls below the age of 15, as many as 581 are widows, most of them with no prospect whatever of remarriage. No less than ten per cent. of these girl widows are babes under the age of 5.

In the reproductive ages the number of Hindu widows is 10,860,355 while the Muslim figure is 2,560,624. The proportion is slightly smaller, nearer 4 : 1 than $4\frac{1}{2}$: 1, but still it is bigger than the proportion of their respective populations. In England and Wales, according to the 1921 Census figures—the latest available—there were only 4 per cent. widows among women at the reproductive ages (20-45). In India the corresponding figure is 16.

The Mysore Census Report for 1931 has some very pertinent remarks on the subject, which apply with great force to Hindu society all over India :—

“ There has been no appreciable change in the attitude of society in the State to widow remarriage during the decade. Reform in this matter is made difficult not merely by the attitude of orthodox society but by the outlook in life of the widows themselves who are brought up in that society. Without doubt widows in the communities which prohibit widow remarriage would be unwilling in most cases to marry again. Particularly, if they have any children they would consider a suggestion that they should do so as an insult. If the reform has any chance at all it is in the case of virgin widows. But here also the outlook

on life is so moulded that only a small number would think of marrying and a much smaller number agree to risk the opprobrium attendant on such marriages. If a woman should wish to remarry it would be considered as a sign of weakness and a love of the pleasures of married life. Even in the case of men remarrying rather late in life, public opinion while unable to prevent marriage is fairly harsh. It is incomparably more so in the case of the widowed girl. This is almost the only occasion when the idea of marriage being a sacrament has any play. Young men are unwilling to marry a widow when they can easily find suitable unmarried brides. The call for reform has not yet been so heard as to fill youth with a sense of pity for the widow. The case in the meanwhile has been made harder than ever by the fact that it is difficult enough to find suitable bridegrooms for girls ordinarily. If the reformer urges that here is a grown up woman living without a husband, orthodoxy is able to say that if she should be given a young man there is a young man less for the unmarried and that in either case one grown up girl has to be without a husband.* In fact the strongest argument in favour of widow remarriage is not based on the hardship of a widow having to go single but the hardness of a rule that denies to one sex the liberty of another."

Though Muslims have no such religious prohibition, their attitude to widow remarriage is also tinged by Hindu feeling. Many of them follow the advice of the Persian poet Sadi 'ZANE BEWA MAKUN AGARCHE HOOR AST', which means 'do not marry a widow however beautiful she may be.'

Some cynics even look upon the prohibition of widow remarriage in India as one of the few positive checks to the growth of population which should not be light-heartedly done away with. Checks are undoubtedly necessary, but they should be based on rational

* This would seem strange in view of the shortage of girls, as shown by the sex-ratio figures.

grounds and should not be opposed to the clear dictates of justice and humanity.

There is, however, some consolation in the fact that the number of widows as a whole is steadily decreasing. The figures are given below :—

Widows per 1,000 females.

1891	..	..	176
1901	..	..	180 (famine year)
1911	..	..	173
1921	..	..	175 (influenza epidemic).
1931	..	..	155

The Sarda Act will help, but, as stated by Dr. Hutton, 'reform in the direction of widow remarriage of much more intensity than has been waged hitherto would seem to be indicated' (pages 228-9, All-India Census Report for 1931).

FIGURES FOR THE HINDU POPULATION.

The Hindus are the worst sufferers from the evil effects of early marriages. Their total number is 239,195,000 and they constitute 68 per cent. of the total population. Of the Hindu population of all ages, 48 per cent. of the males and 50 per cent. of the females (against 47 per cent. males and 49 per cent. of females in the general population) are married, and 46 per cent. of the males and only 32 per cent. of the females are unmarried. Of the female unmarried population the age composition is as given below :—

Total female unmarried Hindu population	..	..	..	..	..	38,391,969
Ages 0-15	..	..	..	..	..	36,235,079
Ages 15-50	..	..	..	..	..	2,084,405
Ages 50 and over	..	..	..	..	..	72,485

In other words, 95 per cent. of the unmarried females are only children. At the reproductive ages a bare 5 per cent. remain unmarried.

Of the female married population aged 0-15 the figures for the last 50 years for Hindus and Muslims are given below :—

Community.	Married females aged 0-15 per 1,000 females of that age.					
	1881	1891	1901	1911	1921	1931
Hindu	208	193	186	184	170	199
Muslim	153	141	131	123	111	186

It will be seen that child marriage is more prevalent among Hindus than among Muslims. The above are all-India figures. It would be tedious to examine the position by provinces ; suffice it to say that while the figures given above are representative in character they fail to give an idea of the extreme prevalence of marriage in certain parts of the country, *e.g.* (in order of prevalence), Central Provinces and Berar, Hyderabad, United Provinces, Baroda, and Bihar and Orissa. It is surprising that child marriage should still be so common in Baroda, in spite of the fact that the Infant Marriage Prevention Act was passed in that State as early as 1904. If Baroda experience is any guide it does not seem likely that the Sarda Act will yield quick results in British India.

FIGURES FOR THE MUSLIM POPULATION.

Among Muslims, who come next after Hindus in numerical importance—being 78 millions in number and

22 per cent. of the total population—the state of things is a little better. The proportion of the unmarried is larger and that of the married (at early ages) and widowed smaller. Of every 100 males 50 per cent. are unmarried—against 46 per cent. for Hindus—46 per cent. are married as against 48 per cent. for Hindus and 4 per cent. are widowed as against 6 per cent. for Hindus. Among females 37 per cent. are unmarried against 33 per cent. for Hindus, 50 per cent. are married as against a similar proportion for Hindus and 13 per cent. widowed as against 17 per cent. for Hindus.

The proportion of females married up to the ages of 15 for Hindus and Muslims has already been given in the preceding paragraph, where it is shown that child marriage is less common among Muslims.

In the reproductive age-period—which alone really matters in the growth of population—there are 85 per cent. married females among Muslims to only 83 per cent. among Hindus, who have a larger number of widows, 12 per cent. as against 9 per cent. for Muslims. This is a significant fact for the student of demography, as he will find therein an explanation of the relatively greater prolificness of the Muslim as compared with the Hindu population. As the Muslim population is more homogenous than the Hindu population the proportions by provinces show no sensible variation, except that in localities where Hindu feeling is very strong the Muslims have not escaped its influence, and their proportions are more or less vitiated, *e.g.*, while for the whole of India the number of Muslim married females per 1,000 at the ages 0-5 is only 35, it is 78 for the Muslim female population of those ages in Bihar and Orissa and 62 in Bengal.

THE OTHER SIDE OF THE SHIELD.

The state of feeling with regard to marriage amongst 90 per cent. of the Indian population (68 per cent. being Hindu and 22 per cent. being Muslim) has been given above. It is now desirable that some figures should also be given for communities amongst which more or less European conditions prevail. These are:—

- (i) The Buddhists of Burma,
- (ii) The population of Travancore, and
- (iii) The Parsis.

BUDDHISTS.

Child marriage is unknown in Burma. Among the Burmese the proportion of married females in the age group 7-13 is less than one per thousand. 17 or 18 is about the earliest age at which females marry in considerable numbers; males generally wait two or three years longer. Marriage is not a sacrament among the Burmese, as it is in the case of Hindus. On the other hand, according to the Buddhist point of view, celibacy is a higher state than marriage. For the population of all ages the figures for Burma (indigenous races), India (1931) and England and Wales (1921) furnish a very interesting comparison:—

Civil condition of 1,000 of each sex.

Country.	Sex.	Un-married.	Married.	Widowed.
Indigenous races in Burma (1931).	Males ..	570	382	48
	Females ..	522	372	106
India proper (1931) ..	Males ..	476	471	54
	Females ..	345	498	157
England and W a l e s (1921).	Males ..	550	414	36
	Females ..	535	383	82

It will be seen that the percentage of unmarried among the Burmese is much larger and that of married and widowed much smaller than in India proper. The Burmese figures resemble the English more than the Indian figures.

TRAVANCORE.

The bulk of the population in Travancore* are of Dravidian origin and do not believe, like the Hindus, that a woman who dies unmarried and a man who dies without a son are destined to go to hell, and with them marriage is not a religious duty. In regard to the marital condition of the people Travancore occupies a unique position as compared with the rest of India. Child marriage is not a serious problem in Travancore, as will be seen from the figures of the unmarried given in the following table :—

Number unmarried per 1,000.

	Males aged.			Females aged.		
	0-5	5-10	10-15	0-5	5-10	10-15
India	983	919	847	969	802	609
Travancore ..	1,000	999	991	1,000	992	920

There is no legislation against child marriage in Travancore, nor is there any demand or necessity for it. The Census Superintendent says that marriage

* The remarks in this paragraph apply also to British Malabar and some parts of Cochin.

becomes common from the fifteenth year among girls and from the twentieth year among boys. The largest proportions of married women are found from the age of 20 upwards and of married men from the age of 25 upwards. The civil condition of 1,000 of each sex at all ages for India and Travancore is given below :—

	Males.			Females.		
	Un-married	Married	Widow-ed.	Un-married	Married	Widow-ed.
India	479	467	54	352	493	155
Travancore ..	584	387	29	475	406	119

There is no prohibition against widow remarriage as among Hindus in other parts of India. Divorce by either party is freely allowed. Women occupy a special position owing to the prevalence of *marumakkattayam* or the system under which property descends to the children of a man's sister and not to his own.

PARSIS.

The Parsis are a small community of 1,09,329 souls, consisting of 56,366 males and 52,963 females, but specially interesting from the demographic point of view. Child marriage is very rare indeed, though the census records cases of married males and females between the ages of 0-5, 5-10 and 10-15. As in the case of Travancore,

a comparison of the civil condition of Parsis and of the population of India is very interesting :—

Proportion per 100 of each sex of all ages.

	Males.			Females.		
	Un-married	Mar-ried.	Wid-owed.	Un-married	Mar-ried.	Wid-owed.
Parsis (1931) ..	56	40	4	49	39	12
India (1931) ..	48	47	5	35	50	16
England and Wales (1921).	55	41	4	54	39	8

It will be observed that in the case of males the Parsi figures are the same as the English, and very different from the Indian figures. In the case of females also the Parsi figures do not resemble the Indian figures, and are more like the English figures, except that the proportion of unmarried is smaller and that of widows larger for Parsis than in England. It is well known that owing to the expense of marriage of girls and the high standard of living among the Parsis as a whole celibacy among men and women is increasing and marriage is put off to a very late age. This will be evident from a comparison of the civil condition of the population at the reproductive ages for Parsis and India respectively :—

Proportion per 100 of each sex of ages 15-40.

	Male.			Female.		
	Unmar-ried.	Mar-ried.	Wid-owed.	Unmar-ried.	Mar-ried.	Wid-owed.
Parsis	60	39	1	45	52	3
India	26	70	4	6	83	11

No two sets of figures could be more unlike each other. Here again the figures for Parsis are more like English than Indian figures.

AGE OF MARRIAGE AND FECUNDITY.

The reader is entitled to ask what this wearisome statement and comparison of figures signifies. How does the universality of marriage affect the growth of the population? Population, in spite of all that the Malthusians may say, is power, and if we get a healthy and vigorous population, even though it be an increasing one, there need be no cause for alarm at the extreme prevalence of marriage.

But what are the facts? The results of the fertility enquiry conducted specially in connection with the 1931 census are very illuminating on this point, *vide* the All-India table given below:—

Average size of family correlated with age of wife at marriage.

Wife married at	Number of families examined.	Number of children born alive.	Average observed.	Number of children surviving.	Average observed.
All ages ..	568,628	2,368,172	4.2	1,661,448	2.9
0-12. years ..	40,729	154,120	3.8	112,127	2.8
13-14 „ ..	191,783	809,891	4.2	552,345	2.9
15-19 „ ..	249,874	1,022,209	4.1	726,118	2.9
20-29 „ ..	75,758	328,181	4.3	232,804	3.1
30 years and over.	10,484	53,771	5.1	38,059	3.6

The above figures go to show :—

- (i) That girls married at ages below twenty give birth to a smaller number of children than girls married at ages above twenty.
- (ii) That the survival rate of children born to mothers married at ages below twenty is much less than that of children born to mothers married at ages above twenty.

The above conclusions are in accord with the findings of provincial census officers. For instance, the Census Superintendent of Baroda, Mr. S. V. Mukerji,* who is deeply interested in demographic questions, and took special pains over this enquiry, writes :—

“ If the age of marriage is changed from 13 to 14 up to 20, the rate of fertility is substantially raised. In 1921 the figures showed that if the marriage was postponed on an average by four years, the rate of fertility instead of diminishing increased by about three children per 10 families. In 1931 the size of the family rises by 10 children per 100 mothers. The raising of the age of marriage up to 20 also enhances the rate of survival from 7 to 10 per 1,000 born. The number of children surviving rises from 346 to 358 or 12 children per 100 marriages. In 1921 the data thus received gave the rate of 22 additional children (per 100 marriages) saved for the race by this means.”

The Census Report for Madras says :—

“ The number of children born is greatest where the wife was aged between 20 and 30 at marriage and least when she was 13 to 14.”

* The student of population is advised to read the reports on the census of 1931 in the Baroda and Travancore States, as they are particularly interesting and instructive.

In Assam a similar state of things is found :—

“ Only about 51 per cent. of the marriages of girls under 13 were fertile during the first four years of marriage, whereas in the case of girls married at ages 15-19 about 76 per cent. were fertile during the first four years of married life.”

Every census report tells the same tale. Our crude birth rate appears to be high, but it is really not so. In the earlier edition of this book it was stated that if we calculated the births on the number of married females of reproductive ages (which alone can be a real test of fertility) the Indian figure stood at 160 while the English figure was 196. This statement was much criticised, but in spite of the dissatisfaction expressed the figures cannot be contradicted. The 1931 census illustrates the low fecundity of Indian marriages even more forcibly. The proportion of children under 10 per 100 married females aged 15-40 for the whole of India is only 170, whereas in Burma and Travancore, where there is no early marriage and more or less European conditions prevail, it is 205 and 200 respectively. It is only 174 in Mysore, where conditions are altogether similar to Travancore, except that early marriage is widely practised. The Census Superintendent for Bihar and Orissa (1931) says :—

“ It is commonly supposed that the birth rate in this country is high because it is uncontrolled and that for this reason the average married woman in Bihar and Orissa must give birth to more children than the average married woman in, say, England and Wales. But this apparently is not so. The statement below shows that although the crude birth rate in this province is far higher than in the Western country, it is a great deal lower when based on number of married women at the reproductive ages. In spite of the extensive use of contraceptive methods in England and Wales, the women of that country

	Number of births (000's omitted).	Crude birth rate.	Births per 1,000 married women aged 15-45.
Bihar and Orissa (1930)	1,231	36	151
(1920)	1,113	32.5	159
England and Wales 1920	958	26.5	209

are apparently the more fertile. It may be conceded that the record of births in India is not absolutely complete, especially when the child is still-born. But the real reason why the birth rate is so high out here is that marriage is more universal."

The extract given above relates only to Bihar and Orissa. But what applies to Bihar applies to the whole of India. The Public Health Commissioner's Report for 1931 (recently published) gives 169.2 as the birth-rate in British India per 1,000 of the female population aged 15-40 years. (Page 20 of the Report.) This is also much lower than the 1920 figure for England and Wales. It is well known that child marriage is more common among Hindus than among Muslims. The proportion of children per 100 married females aged 15-40 is 164 for Hindus whereas it is 178 for Muslims.

It seems unnecessary to labour the point any further. Enough has been said to convince the reader that early marriage and early motherhood impair vitality and reduce fertility.

MARRIAGE AND LONGEVITY.

Malthus' mode of solving the problem of population by restraint from marriage until there is a fair prospect

of keeping a family in the habitual style of living has doubtless the merit of looking beyond the domestic circle and insisting on the responsibility of parenthood by reference to the well-being of the nation. It, however, puts too great a strain on the individual, overlooking the Pauline precept 'It is better to marry than to burn'. Not only is marriage and family life the happiest state for most individuals, but a long period of celibacy leads to nervous disorders and sexual perversions and is not seldom the cause of impotency in the man. Marriage is also generally regarded as conducive to longevity in man. The India census report of 1921 contains the following observations on the subject :—

" It is generally held that the married have a longer expectation of life than the single, and statistics collected in the United States prove this fairly conclusively for the population there dealt with. The advantage, according to these figures, is greatest in middle life, and between 40 and 50 the death-rates of married men and bachelors are 9.5 and 19.5 respectively. Between 50 and 60 the difference in the rates is slightly higher and it increases with increasing age. Some allowance has to be made for the fact that married men are to some extent 'selected lives'. It is, however, fairly certain that the regular life of the married man, the extra care and comfort which he receives and his avoidance of unnecessary risks* are all factors which tend in Western countries to lessen the chances of death."

About the month of September in the year 1932 figures were published by the Italian Government in pursuance of the campaign which is being conducted

* As an instance of married men taking less risk, I might mention that in Constantinople, according to a newspaper report, one can only obtain a motor driving license if he is over 25 years of age and is married. This is not a law to encourage matrimony, but it is the view of the Stamboul Municipal Council that the most cautious driver is the married man.

in Italy to increase the birth-rate. According to these figures, in 13 European countries the average death-rate is 27.5 per 1,000 among unmarried people, 30.5 per 1,000 among widows and widowers, and only 16.7 per 1,000 among married people.*

It is therefore without any hesitation that we may say that marriage for healthy and physically mature persons—at about the age of 24 for the male and 20 for the female in India—conduces to longevity.

WHAT IS TO BE DONE.

We have examined the position as revealed by Census statistics in regard to marriage. We find it far from satisfactory. Marriage is a healthful institution, but only for physically mature and healthy persons. How are we to ensure that only such persons enter into the married state?

The Sarda Act has eased matters considerably. There is undoubtedly cause for alarm at the fact that the proportion of child marriages at the Census of 1931 was greater than at previous Censuses, in spite of the Act. But this will not last long. The educative value of the measure is great and the force of public opinion will do the rest. There is a movement in favour of amending and even repealing the Act. In the presence of such feeling, there is some difficulty in securing its proper observance. Let us, however, hope that the Act will remain on the Statute Book, in spite of the agitation against it.

*It will thus appear that there is more substance in the proposition than would appear from the remark of the wag who when asked to marry because married people lived longer, replied "not really, it *seems* longer."

The Act, however, applies necessarily only to British India and not to Indian States. Some States like Baroda, Mysore and Kashmir gave a lead to British India in the matter. It is very necessary that the other States also should enact a similar measure within their territories. Otherwise, child marriages can be celebrated in State territory by people from British India—such cases have been reported—and the intention of the Sarda Act thereby defeated. Such a measure is equally necessary in the interests of the State subjects themselves, *e.g.*, the people of Kathiawar, where child marriage is extremely common.

The second step is the prevention of ill-assorted marriages, *i.e.*, marriages of old men with young girls, or of young boys with elderly women. Such marriages are not permitted in Baroda and Kashmir States. In British India they are not prohibited by law. From time to time cases are reported of old men marrying girls young enough to be their grand-daughters. About a month ago the papers reported that a Jat aged 85 from a village in Rohtak district solemnised his marriage with a girl of 13. The bride's father, it was said, was persuaded to give away the girl in return for thirty seers of silver. Only two days ago it was reported from Karachi that a girl of 19 was married to a boy of 9. Marriages of this kind are definitely dysgenic and should not be permitted. It is understood that in the Central Provinces legislaure a bill has been introduced for the prevention of marriages between very young girls and men above 45 years of age. What is needed is an All-India measure, in force in British India as well as the Indian States.

The third step, though not an easy one, is the prevention of marriage of persons suffering from insanity and infectious diseases, like tuberculosis, epilepsy, heart-disease, venereal disease, etc. The following advice now being broadcast daily in Germany may be very appropriately borne in mind by parents in India :—

“ In seeking a husband (for your daughter) remember that racially a man who is healthy and can help you to provide the State with a healthy stock is to be preferred to a jolly, good-natured weakling.”

Commonplace, though the above advice may seem, it is not always borne in mind.

Chapter III.

BIRTHS AND DEATHS.

THE SYSTEM OF REGISTRATION IN INDIA.

THE registration of vital statistics is established throughout British India (and some Indian States also, such as Travancore, Baroda, Mysore, Cochin, Hyderabad, etc.) except in the more remote and backward tracts. The Imperial Act which governs the registration of births and deaths is Act VI of 1886. In the Provinces there are local Acts under which various authorities have been entrusted with this duty. Roughly speaking it may be said that about three-fourths of the population of India* is subject to registration. There is no general or compulsory registration of births, deaths or marriages, and this goes far to nullify social legislation such as the Sarda Act or the Law of Consent. To this point we will revert later.

The system of collection of vital statistics differs in detail in different provinces. It is usually based on information about births and deaths recorded in the village (often by the headman of the village) and is passed on periodically to some local authority, usually the police, by whom registers are maintained. Extracts from these registers are sent to the local officer who is responsible for the records of public health, by whom they are compiled for the district. The District Public Health Officer sends them to the Director of Public

* For British India alone, the population under registration in 1931 was nearly 267 millions out of a total of 272 millions, or 98 per cent.

Health, who compiles them for the province. The Public Health Commissioner with the Government of India compiles the statistics for the whole of India.

The information includes particulars of births, including still-births and deaths, by sex and religion (not in all provinces in case of births) and the classification of the deaths under certain categories of age and disease. The records both in the villages and in the local offices are periodically checked by touring officers of various departments. In municipalities the registration of vital occurrences by the householder is usually compulsory by law and the registers are maintained by the municipal authority.

DEFECTS OF INDIAN VITAL STATISTICS.

Vital registration, with the exception of a few countries like England, lends itself to errors of omission and commission on the part of the authorities concerned. Recently a bride in Italy had an unpleasant surprise when she was told that she had no place in the world as a living person, because she had been registered as still-born by her own father. Indian statistics unfortunately go beyond a permissible margin of error. The cause of death is either not given at all or is at best very unreliable. The Madras Census Report refers to the recording of child-birth as a cause of death among men. Probably all reports are not as bad as that, but generally speaking it may be said that the record of births is normally less accurate than that of deaths, and particularly the omission of births is greater than the omission of deaths. The actual birth and death rates are therefore much higher than the recorded figures would seem to show.

This will be borne out by the fact that intercensal estimates of population based on vital statistics always show a smaller increase in numbers in every province than is actually recorded at the census count. The calculated intercensal population for 1930 is given by the Census Commissioner as 335,873,562 whereas it was actually in the neighbourhood of 350 millions. In England the Registrar-General takes legitimate pride in the fact that his intercensal estimates published in each year's Statistical Review are absolutely justified by the Census enumeration. This is due to the long-established efficiency of the procedure for the registration of births and deaths in England and to the improvements recently made in the migration records of the Board of Trade. In India, the Census Commissioner says that "taken on the whole *the defect in vital statistics is probably to be estimated at about 20 per cent,** though it is much higher at its maximum. For example in Mysore State the deficiency is put at 50 per cent or even more." Some provinces are naturally better than others. "In Madras Province the returns are accurate enough to have made it possible for the Department of Public Health to prognosticate the result of the 1931 Census with an error (on the excess side) of not more than 2 per cent. Bengal and the United Provinces, in that order, are believed to be the next most accurate in respect of their returns." Owing to the difficulty of making accurate intercensal estimates of population, the birth and death rates were up till 1932 calculated on the previous Census figures, which of course gave an erroneous idea of actual

* This would really mean that the actual birth and death-rates are about 20 per cent. higher than the recorded ones—a point which should be carefully borne in mind.

conditions, particularly for the advancing years of the decade. But now birth and death rates are, as in other progressive countries, based on estimated populations and may therefore be said to be more representative of actual facts and conditions than was the case before.*

Such a step places on the Public Health Commissioner the responsibility of bringing vital statistics up to the same standard of efficiency as in other countries. The illiteracy of the masses, however, and the absence of a statistical sense in the people generally, render the attainment of a high standard of efficiency not very easy to realise within a short time.

IMPORTANCE OF THE MATTER.

It must, however, be emphasised that accurate vital statistics are indispensable for the scientific investigation of population problems, such as the differential birth rate, fecundity versus longevity, class correlation between the rate of infant mortality and the size of the family, the connection between immature maternity and high female mortality at the reproductive ages, the comparative rates of survival among the various communities, etc. India has a contribution to make to the science of demography, and this she can do only when proper statistics regarding births, marriages and deaths are available.

In other countries the primary object of the registration of births and deaths is to provide a record of the civil condition of the individual for legal and semi-legal purposes—to prove legitimacy, succession, etc. This

* This change necessarily affects the value of previous figures for purposes of comparison, unless they are all re-cast.

consideration has not been so important in India but is bound to gain in importance as social legislation increases in volume.

For intelligent public health administration, it is essential that the local authorities should know the nature of the ailments which they have to combat. They cannot organise preventive measures if the causes of death are unknown. The loss of human life in India is terrible and any measures which might help in reducing it cannot be ignored. Accurate death returns are of great value in preventing such losses and should therefore be insisted upon.

The preparation of life tables and the determination of the average expectation of life at birth is a very important matter from the national point of view and unless accurate figures are available this cannot be done.

Reference has already been made in the beginning of the chapter to the Sarda Act which depends for its successful working on facilities for the accurate determination of the age of the party concerned. Much of the ineffectiveness of the Act is due to the fact that it is very difficult to prove in a judicial court that the party concerned is below the age prescribed by law.

SUGGESTIONS FOR IMPROVEMENT OF VITAL STATISTICS.

While it is realised that improvement is steadily being made from year to year and that apart from illiteracy and public apathy there is the great difficulty of finding funds in these days of financial stringency, the following suggestions are made for the consideration of all interested in the subject.

In the first place there should be greater uniformity of registration laws in the Provinces and an attempt should be made to deal with the subject so far as possible by Central legislation, leaving administration in the hands of the Provinces.

The birth register should contain the following particulars, to be filled in from declarations which parents and guardians should be required to make within a prescribed period :—

- (i) date of birth.
- (ii) sex.
- (iii) name of child.
- (iv) names of parents.
- (v) ages of parents.
- (vi) religion and caste of parents.
- (vii) year of marriage of parents.
- (viii) order of birth of the child.
- (ix) number of children born and surviving of the marriage.
- (x) occupation of the breadwinner.

The death register should contain the following particulars:—

- (i) name.
- (ii) sex.
- (iii) date of death.
- (iv) religion.
- (v) age.
- (vi) cause of death.

[In respect of deaths associated with pregnancy or child-birth the number of the pregnancy should be recorded.]

- (vi) marital condition.
 (viii) number of children born and surviving, in case of death of a married person.
 (ix) occupation.

It should not be understood as if no such information is at present given in the birth and death registers. For instance, in the case of the birth register, items (i) to (vi) are entered, and in the case of the death register items (i) to (v) and more often than not item (vi). The rest of the items are either not registered or not published. The question is one which can only be settled after expert investigation as to what is feasible and what is not. It is therefore proposed that it be referred to a commission of enquiry.

BIRTHS AND DEATHS.

We now come to a consideration of birth and death rates. Below are given figures* for some important countries in order of height of birth-rate:—

1. *High Birth-Rate Countries.*

Country.	Quinquennial birth-rate (1926-30).	Quinquennial death-rate (1926-30).	Annual birth-rate (1931).	Annual death-rate (1931).
Egypt	44.1	17.6	44.8	26.8
Japan	33.4	19.5	32.2	19.0
Roumania	35.2	21.2	33.3	20.8
Portugal	31.9	18.8	30.5	17.2
British India	35.7	26.0	34.3	24.9
Italy	26.8	16.0	24.9	14.8
Hungary	26.0	17.0	23.7	16.6
Spain	28.5	17.9	27.4	17.3

* Taken from the Public Health Commissioner's Report for 1931, pages 20 and 26-27.

2. Low Birth-Rate Countries.

Country.	Quinquennial birth-rate (1926-30).	Quinquennial death-rate (1926-30).	Annual birth-rate (1931).	Annual death-rate (1931).
New Zealand ..	19.7	8.6	18.4	8.3
United States of America ..	19.7	12.0	17.8	11.1
Scotland	19.9	..	19.0	13.3
France	18.2	16.7	17.4	16.3
Germany	18.4	11.8	16.0	11.2
Sweden	15.9	12.1	14.8	12.5
England* & Wales.	16.7	12.1	15.8	12.3

RELATION BETWEEN BIRTHS AND DEATHS.

It will be noticed from the above figures that in countries where the birth-rate is high the death-rate is also high, and where the birth-rate is low, the death-rate is also low. Generally speaking it may be said that birth and death rates are high in Asiatic countries and the countries of Eastern and Southern Europe, whereas both are low in Northern and Western Europe and the United States of America. This law of the correspondence of births and deaths was very clearly illustrated by Dr. C. V. Drysdale in 1912 by means of † diagrams for over twenty countries, giving figures for birth and death rates for a number of years from 1853 to 1911. These diagrams bring to notice the fact that *the death-rate falls, or is stationary or rises according as*

* For the year 1932, the birth-rate is 15.3 and the death-rate 12.0, both lower than for 1931.

† See 'Diagrams of International Vital Statistics' by C. V. Drysdale, D.Sc.—William Bell, 162, Drury Lane, London, W.C.

the birth-rate falls or is stationary or rises. It is unnecessary to repeat the figures here as they are well-known and readily available. All that we are concerned with is the examination of the above law in the light of Indian conditions.

India, as will be seen from the figures given above, has, with the exception of Egypt, the highest death-rate of all countries. As compared with England and Wales the death-rate in India is more than double. It is said that China is the only country in the world which has a higher death-rate than India. Reliable statistics of births and deaths in China are not available and hence comparison is difficult. Even so, the position of India in the scale of nations is by no means enviable. If there is any truth in the law of correspondence of births and deaths, *the Indian death-rate will be reduced only when the birth-rate is reduced and not before.*

What has happened during the last 45 years demonstrates the truth of this statement. In spite of the fact that increasing sums of money are being spent from year to year on public health and medical relief the death-rate in India has not been much reduced, *vide* figures given below :—

Year.	Death-rate.	Year.	Death-rate.
1885.. ..	26.37	1892.. ..	32.49
1886.. ..	25.51	1893.. ..	25.75
1887.. ..	22.88	1894.. ..	33.97
1888.. ..	25.92	1895.. ..	28.94
1889.. ..	28.21	1896.. ..	32.04
1890.. ..	30.15	1897.. ..	36.03
1891.. ..	28.52	1898.. ..	26.61

Year.	Death-rate.	Year.	Death-rate.
1899.. ..	29.94	1916.. ..	29.10
1900.. ..	38.60	1917.. ..	32.72
1901.. ..	29.46	1918.. ..	62.46
1902.. ..	31.49	1919.. ..	35.87
1903.. ..	34.70	1920.. ..	30.84
1904.. ..	32.86	1921.. ..	30.59
1905.. ..	35.96	1922.. ..	24.02
1906.. ..	34.73	1923.. ..	25.00
1907.. ..	37.18	1924.. ..	28.49
1908.. ..	38.21	1925.. ..	24.72
1909.. ..	30.91	1926.. ..	26.76
1910.. ..	33.20	1927.. ..	24.89
1911.. ..	32.01	1928.. ..	25.59
1912.. ..	29.71	1929.. ..	25.95
1913.. ..	28.72	1930.. ..	26.85
1914.. ..	30.00	1931.. ..	24.9
1915.. ..	29.94		

Contrast this with the reduction of the death-rate in England. In that country it stood at 22.7 for the period 1851-55. By 1885 it was reduced to 19.4. By 1919 a further reduction took place to 13.8. At the Census of 1931 it was reduced to 12.4. In 1932 it stood at 12 and for the quarter ending June 30th, 1933, it was as low as 10.8.

What has in the meantime happened to the birth-rate in England and India? In 1851-1855 the English birth-rate was 33.9 per 1,000 living at all ages—practically the same as in India to-day. Now (in 1932) it is 15.3. The Indian birth-rate has however been stationary

during the last 45 years. Let us look at the figures given below :—

Year.	Birth-rate.	Year.	Birth-rate.
1885.. ..	36.74	1909.. ..	36.65
1886.. ..	34.97	1910.. ..	39.52
1887.. ..	35.92	1911.. ..	38.58
1888.. ..	35.59	1912.. ..	38.95
1889.. ..	36.30	1913.. ..	39.37
1890.. ..	36.47	1914.. ..	39.61
1891.. ..	35.05	1915.. ..	37.82
1892.. ..	31.54	1916.. ..	37.13
1893.. ..	35.15	1917.. ..	39.33
1894.. ..	34.91	1918.. ..	35.35
1895.. ..	34.51	1919.. ..	30.24
1896.. ..	36.06	1920.. ..	32.98
1897.. ..	33.98	1921.. ..	32.20
1898.. ..	34.33	1922.. ..	31.85
1899.. ..	42.16	1923.. ..	35.06
1900.. ..	36.58	1924.. ..	34.44
1901.. ..	34.60	1925.. ..	33.65
1902.. ..	39.38	1926.. ..	34.77
1903.. ..	38.96	1927.. ..	35.27
1904.. ..	40.86	1928.. ..	36.79
1905.. ..	39.13	1929.. ..	35.47
1906.. ..	37.80	1930.. ..	35.99
1907.. ..	37.65	1931.. ..	34.3
1908.. ..	37.78		

Consequently, if we desire that the death-rate in India should be reduced, we must take the same steps as England and other Western countries have done, namely, we must reduce the birth-rate.

With a birth-rate of 34 per mille, it is hopeless to expect a reduction in the death-rate to 16 per mille, as the resulting increase of population would be far too great for the country and its resources.

Evidence in support of this view is available in the Indian provincial figures. Those provinces which have a low birth-rate have as a rule a low death-rate, and those which have a high birth-rate generally have a high death-rate.

The figures* are given below :—

Province.	1931.		1932.	
	Birth-rate.	Death-rate.	Birth-rate.	Death-rate.
Central Provinces and Berar	44.3	35.5	45.20	26.89
Delhi	42.2	23.7	44.09	24.73
Punjab	42.7	26.0	41.34	24.69
Bombay	36.1	23.8	35.90	23.04
Ajmer-Merwara	34.0	30.1	35.11	24.89
Madras	35.5	23.7	36.03	21.96
United Provinces	35.6	27.0	34.66	22.23
Bihar and Orissa	33.9	26.6	33.8	20.6
Assam	28.1	18.7	30.06	18.96
Bengal	27.8	22.3	26.6	20.5
Burma	26.5	17.4	27.75	17.30

* Figures supplied very kindly by the Public Health Commissioner. Figures for 1932 are provisional.

It will be seen that though the provinces in the above list have been arranged more or less in order of height of birth-rate, they tend to arrange themselves in order of height of death-rate also. Central Provinces stands at the top and Burma at the bottom of the list in respect of both.

Census officers do not care as a rule to analyse figures in detail, but the Madras Report for 1931 has some very useful information on this point. It brings out the fact that in the southern Tamil districts of Ramnad, Madura, Tanjore, Trichinopoly and South Arcot, the average annual birth-rate is lower than the average for the Madras Presidency. The death-rate is also lower. The figures are as under :—

—	Average annual birth-rate.	Average annual death-rate.
Ramnad	26.6	19.3
Madura	32.6	22.4
Tanjore	29.6	25.9
Trichinopoly	27.4	21.6
South Arcot	29.8	22.2
Average for the Presidency ..	34.6	23.9

Lest some should think that a reduction of the birth-rate in India would affect the survival rate it is necessary to state that this has not been the experience of Western countries and that the fall in the death-rate has generally been of the same if not greater magnitude than the fall in the birth-rate. The Actuarial Report on the Indian

Census for 1931 contains the following very interesting table of figures :—

Decreases in the death-rate and the birth-rate between 1871-80 and 1901-10 in certain states of Western Europe : points per 1,000 of the population :

Country or State.	Fall in	
	Birth-rate.	Death-rate.
Hamburg	12.2	11.5
Wurtemberg	10.3	11.3
Saxony	10.8	10.8
Bavaria	5.9	9.2
Netherlands	5.7	9.2
Baden	5.8	8.3
Prussia	5.5	8.2
Austria	4.3	8.2
Hesse	5.9	8.0
Alsace-Lorraine	5.4	7.9
Belgium	6.2	6.4
England and Wales	8.2	6.0
Denmark	2.8	5.2
Scotland	6.5	5.0
Finland	5.8	4.0
Sweden	4.7	3.4
Norway	3.6	2.8
Italy	2.3	2.6
Switzerland	3.8	2.3

We have, therefore, nothing to fear from a reduction in the birth-rate; at any rate the efficient survival rate will not be affected. On the other hand we will save the terrible waste of life now going on and will ensure a decent life and a normal length of days for the fewer

but fitter children that will be born. The average number of children born per wife in India is at present 4.2 and the survival rate is 2.9*. It would be quite enough if the average number of children per wife were reduced to 3. In terms of rates *it would mean a birth-rate of 20 and a death-rate of 16*. That the latter is not an impossible figure will be clear from the fact that in the State of Travancore in Southern India the death-rate already stands at 16. What is possible in Travancore should be possible in the rest of India. At any rate that is the ideal that I think we should work up to.

INFANT MORTALITY.

Of the high death-rate in this country there are some features intimately connected with the law of population and which, therefore, deserve consideration here. Infant mortality is one of these. Out of every 1,000 children born as many as 179** die within the first year of life. It must be acknowledged with gratitude to the Department of Public Health that progress—though slight in comparison with countries like England where in little more than 50 years it has been reduced from 149 to 60†—has been made in the reduction of infant mortality in the last 20 years, as the figure stood at 250 at the Census of 1911.

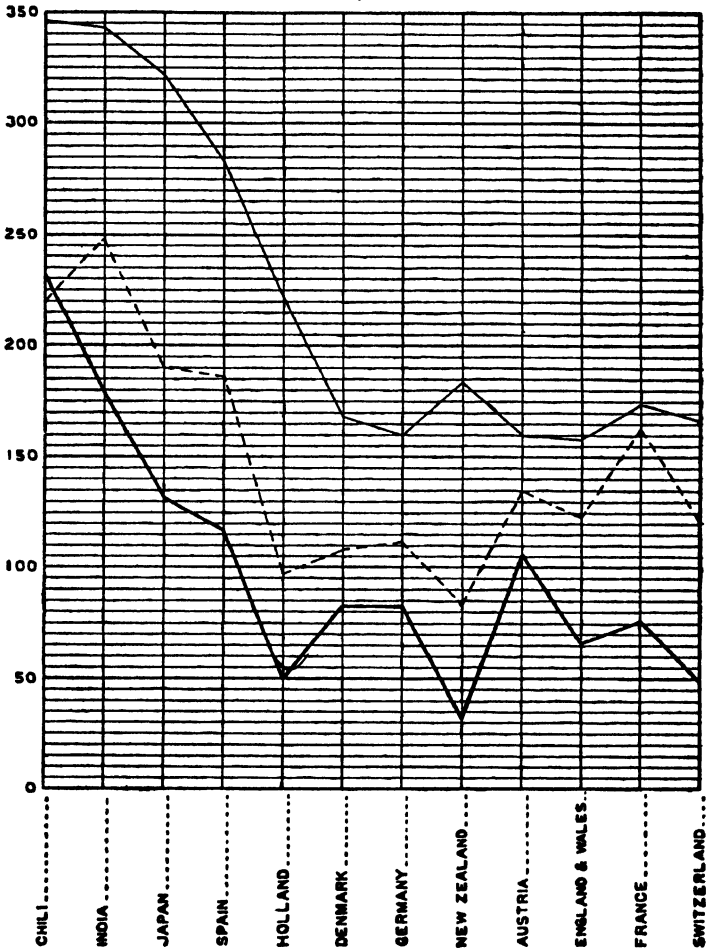
* See Dr. Hutton's Report—Page 206—Statement III (p. 38 of this book).

** We have given here the figure of the Public Health Commissioner's Report. General Sir John Megaw's figure is 232.6. His inquiry was confined to villages.

† The condition in India to-day is not dissimilar to that of Victorian England. A mother discussing her family in Margaret Dale's 'Limited Variety' (Constable, 1933) says:—"I was so sad when Jean died. It was such a shock and I wasn't used to people dying, though they used to die much more then (in Victorian days)—large families, you know, and always one had died. You could hardly call yourself a family unless you had someone dead" (p. 4).

CHART SHOWING RELATIONSHIP BETWEEN BIRTH RATES, DEATH RATES AND INFANT MORTALITY RATES (1931)

INFANT MORTALITY RATE PER MILLE ———
 BIRTH RATE PER 10,000
 DEATH RATE PER 10,000 - - - - -



Even now it must be regarded as unreasonably high. The chart* given on the preceding page will show that *infant mortality is generally high in those countries in which the birth-rate is high.* The same is true of provinces† *inter se.*

Province.	Birth-rate (1931).	Infant Mortality per 1,000 births (1931).
Central Provinces	44.3	261.2
United Provinces	35.6	189.1
Madras	35.5	186.6
Punjab	42.7	178.3
Bengal	27.8	174
Bombay	36.1	161.6

The Central Provinces have the highest infant mortality of all the provinces. The birth-rate there is also the highest. The same remarks apply to the respective positions of the United Provinces and Madras. The case of Bengal is specially unfavourable. Its high rate of infant mortality is not justified by its birth-rate and must be due to other conditions prejudicially affecting infant health.

In support of the view that *there is a close correlation between a high birth-rate and infant mortality, the*

* Reproduced by kind permission of Major-General Sir John Megaw, I.M.S. (Retd.), taken from his note dealing with certain public health aspects of village life in India.

† The figures given are from the Public Health Commissioner's Report. Sir John Megaw's figures are *Infant Mortality*—Assam 250.3; U. P. 303.06; C. P. 295.59; Madras 198.06; Bengal 189.15; Bihar and Orissa 242.52; Punjab 206.26; Bombay 214.28. It will be observed that these figures are higher than those of the Public Health Department. They relate only to a number of villages.

following figures* taken from the Public Health Commissioner's Report (1931) will be instructive :—

Race or caste.	Infant mortality per 1,000 live births.	Birth-rate 1931.
Hindus (low caste)	286	} 35.5 (U.P.)
Hindus (all other castes)	283	
Mussalmans	286	37.2 (U.P.)
Parsees	118	19.0(Bombay City).
Europeans	62	Figures not available.

The birth-rate is higher among the low caste than among the higher caste Hindus. It is higher among Muslims than among Hindus. The Parsee birth-rate is the lowest of Indian communities. The European birth-rate is of course lower. We may, therefore, safely infer that *high birth-rate and infant mortality go together and the latter cannot be reduced until the former is reduced.*

Conditions are much worse in the cities than in the smaller towns and rural areas. Figures for some important Indian cities are given below :—

City.	Infant mortality (1931).
Bombay	274
Calcutta	244
Madras	251
Rangoon	278
Lucknow	266
Lahore.. .. .	187
Nagpur	323
Delhi	202

* See page 152 of the Report.

The above figures may now be compared with those for European cities :—

City.					Infant mortality.
London	..	..	..	..	66
Berlin	..	..	..	..	82
Paris	..	..	..	..	93
Madrid	..	..	..	..	102
Budapest	..	..	..	..	114
Amsterdam	..	..	..	..	37
Oslo	..	..	..	..	23

When we consider child mortality, *i.e.*, mortality between the ages 0-5, we find that in India nearly 45,000 young lives out of 100,000 children born are lost, whereas the wastage of life in other countries is much lower :—

				Wastage of life up to age 5.
Australia (1901-10)	..	..	..	12,415
Denmark (1906-10)	..	..	..	14,771
England (1901-10)	..	..	..	20,612
France (1898-1903)	..	..	..	22,308
Germany (1901-10)	..	..	..	25,789
Holland (1900-09)	..	..	..	19,757
Italy (1901-10)	..	..	..	27,184
Japan (1898-03)	..	..	..	23,113
Norway (1901-10)	..	..	..	11,634
Sweden (1901-10)	..	..	..	13,509
United States (1901-10)	..	..	..	17,805
Switzerland (1901-10)	..	..	..	17,531

(Figures taken from Table XXXV of the Actuarial Report on the Indian Census 1931—p. 169).

There are two distinct causes of high infant mortality in India. It is no doubt true that the extremely insanitary conditions of childbirth and the appalling

ignorance prevalent on the subject swell the figure and to this extent improvement is possible and may be expected ; but what are we going to do by way of saving life when the infant has not the vitality to struggle through that critical period of its existence ? This lack of vitality is due to two factors :—

- (i) the young age of the mother, and
- (ii) the number of children born and the rapidity with which they are born.

It must be obvious that the fewer the children the more the interval between one child birth and the next. Each child would start with a fair vitality—as the mother would have had time to recover from the effects of a previous child birth—and would after birth receive more attention.

That *there is a close connection between early marriage and infant mortality in India* will be clear from the following figures (based on the 1921 Census) given in Appendix VII-C of the Report of the Age of Consent Committee, p. 335 :—

Province.	Number of married girls below 15 per 1,000 girls below 15.	Infantile mortality. Average of decade 1911-20 (excluding 1918).	
		Males.	Females.
North West Frontier Province ..	30	178	174
Madras	85	194	177
Bengal	162	214	200
United Provinces ..	177	229	219
Central Provinces ..	207	274	243

This table shows that *infant mortality increases with the increase in the number of married girls below 15.*

The same report contains remarkable evidence regarding *the poor vitality of children born of very young mothers.* For instance, the Principal of the Women's Medical College, Delhi, states :—

“ If the mother is immature, her child is of necessity below par in vigour, in power to resist disease, and in weight. The last of these three can be easily compared. The average weight at birth of babies born in Calcutta is 5 lbs. 11 oz ; here (in Delhi) it is slightly over 6 lbs ; in England it is 7 lbs.”

The Executive Health Officer for Bombay, in his analysis of the causes of infantile mortality in Bombay City for the year 1929, states that on an average for the five years 1924-28, out of an annual infantile mortality of 7,778, as many as 3,399, or 44 per cent. of the deaths, were attributable to infantile debility and malformations including premature birth.

Special efforts are being made of recent years to save the babies and while we whole-heartedly wish every success to those engaged in child welfare work, it is doubtful whether such activities alone can do real good to the country, unless supplemented by equally active propaganda in favour of a reduction of the birth rate. We invite the earnest attention of economists and public health workers to this aspect of the question.

HIGH FEMALE MORTALITY AT THE REPRODUCTIVE AGES.

A second feature of our high death rate is the high female mortality at the reproductive ages. Not only is the infantile mortality very high but the number of female deaths at the reproductive ages is quite as serious

under the operation of the same causes, namely, early marriage, insanitary surroundings at confinement, unskilful midwifery, etc. For the age period 15-40 years, female death rates are generally higher than for males, the death rate for males between 15-40 years being 12.37 per 1,000 as compared with 14.11 for females. In the table* below, the provinces are arranged in the order of female death rate for this age period.

Province.	Death rate per 1,000 (15-40 years).	
	Males.	Females.
Coorg	16.0	21.9
Delhi †	6.8	14.1
Central Provinces	11.2	13.2
Bihar and Orissa	13.9	13.5
Bengal	12.1	15.1
Assam	10.0	14.0
Punjab	10.7	13.2
Bombay	8.5	11.7
North West Frontier Province	11.3	11.9
Madras	9.5	11.1
United Provinces	10.8	12.5
Burma	8.3	8.9
British India ‡	11.0	12.8

* Taken from the Public Health Commissioner's Report for 1931, page 28.

† The figure for male mortality for Delhi seems very low, compared with 10.02 for 1930. There has been no such marked improvement in public health.

‡ The corresponding figures for 1930 were 12.37 for males and 14.11 for females.

The above figures may be contrasted with the death rate for the ages 0-10 given below :—

Number of deaths per 1,000 of the population of each sex at different ages as reported for British Districts in India for the year 1931 :—*

Age.	Death rate.	
	Male.	Female.
0-1	187.3	169.6
1-5	40.3	37.3
5-10	10.6	10.5

It will be seen that in the earlier ages (0-10) more males die than females. The only reason therefore for the higher female mortality at the reproductive ages (as compared with the male mortality at those ages) must be child-birth and the complications resulting therefrom.

Though complete statistics for maternal mortality for the whole of British India are not available—as cause of death is not correctly given (if at all) in death returns—the special investigations that have been made by experts reveal a disturbing state of affairs. Particularly is this so in urban areas, where the maternal death-rate is much higher than in rural areas. The officers of the Public Health Department of the Madras Presidency made a special survey in 1930 in 16 municipalities distributed throughout the province and their conclusion was that in the confinements investigated the maternal mortality rate was 15.4 per 1,000 births. Of these deaths, more than half were due to sepsis—a preventible

* Figures taken from the Public Health Commissioner's Report for 1931, page 438.

cause of death. Further, they concluded that the mortality was at its maximum in the earliest ages. In relation to the order of confinement, maternal mortality rate was highest in the first confinement, then it decreased, and again increased in the seventh and later confinements.

A wider and a more recent inquiry was made in 1933 by Sir John Megaw. His figures are as follows :—

Province.	Maternal mortality per 1,000 births.
Assam	26.40
United Provinces	18.00
Central Provinces	8.18
Madras	13.24
Bengal	49.16
Bihar and Orissa	26.57
Punjab	18.73
Bombay	20.09
British India (average)	24.05

His remarks on the above figures are even more striking :—

“ The maternal mortality rates are extremely high except in the Central Provinces where they are much lower than in any other province. *The rates for Bengal are almost incredibly high—nearly 50 per mille.* It is true that even higher rates have been found by Dr. Balfour in small population groups in Assam, but an average rate of nearly 50 per mille in 69 villages taken at random in Bengal seems to call for special investigation. *The rate for India as a whole is 24.05.* Even when the fullest allowance is made for errors in the survey this figure is alarming. In England great concern is expressed because the rate continues to be so high as 4.11* per 1,000. The significance of the high

* For the United States of America also the figure is about the same, and strenuous efforts are being made, as in England, to reduce it by half at least.

Indian rate can be realised from the following estimates—*no less than 100 out of every 1,000 girl wives are doomed to die in child-birth before they have ceased to have babies and about 200,000 mothers die in giving birth to children every year in India.*”

The facts disclosed above are sufficiently grave to demand expert investigation as suggested by Sir John Megaw. The Ministry of Health in England—where the mortality is one-sixth of what it is in India—appointed a Maternal Mortality Investigation Committee in 1928 which brought out its report in 1932. The recommendations made by the Committee, it is claimed, will reduce the maternal mortality in England by 50 per cent. In India the problem is much more serious and needs urgent consideration. Miss Eleanor Rathbone, M.P., whose interest in the cause of Indian women has been unflinching, made a suggestion in December 1933 to the Secretary of State for India that a Commission should be appointed to enquire into the subject and it is reported that Sir Samuel Hoare undertook to convey the suggestion to the Government of India. As there is a strong case for an enquiry, let us hope that something will be done soon.

AVERAGE EXPECTATION OF LIFE.

It has been stated in Chapter I that in countries with a high birth rate there must be a rapid succession of short-lived persons to keep up the numbers, one generation being pushed out of existence before its time to make room for the next. Conversely, in countries with a low birth rate the expectation of life would be higher. This fact is very clearly demonstrated by the figures given in the Appendix to this chapter, showing the expectation of life at birth in various countries.

It will be seen therefrom that among the European and Asiatic countries for which figures are available, *India occupies the lowest place on the list*. Also that while the average expectation of life of a male in England is 55.62 years, it is only 26.91 in India, or less than half. In the case of females the figures are 26.56 for India and 59.58 for England, or even less than half. It might be worth while mentioning here that the average age of the middle classes in England is much higher. Out of sheer curiosity, I collected figures for age given in the column under "Deaths" in the *Times* (London) for a month from 8th November 1933 to 7th December 1933. The average age for the 600 cases in question worked out to be as follows :—

Men	..	..	..	67.68 years.
Women	..	..	..	79.86 ,,
Combined (men and women)				70.73 ,,

This would perhaps not cause much surprise as it is generally accepted that the Englishman possesses greater vitality than the Indian. What is surprising however is *the infinitesimal improvement in the Indian figures as compared with the substantial improvement in the English figures*. For 1891 the English figure for male lives was 44.13 when the Indian figure was 25.54. In 1920-22* the English figure went up to 55.62, when even in 1931 the Indian figure—after having actually

* The actuarial report on the English Census of 1931 is not yet available. It seems absurd to make a forecast, but owing to the steady decline in the death rate since 1921, it would not be surprising if the average expectation of life at birth in England now is much higher than it was in 1921.

declined to 23.96 in 1901 and still further to 23.32 in 1911—was only 26.56. In other words *while the Englishman has added 11½ years to his life in 30 years the Indian has in a longer period of 40 years put on only one year.* This seems all the more significant when it is borne in mind that before 1876—when the fall in the birth rate set in—the average length of life in Western Europe was only about 35 years.

People in Western countries are, however, not satisfied even with the present high figure. They hold that the life expectation can be extended to about 70 years, which means a reduction in the death rate to 14.28, with the birth rate also at about the same figure. What a tremendous leeway is there for India to make up! As conditions are today, the life table (for males) indicates that out of 100,000 children born alive only 52,439 or a little over one-half, attain the age of majority (18) in India. The death rate in Travancore has been held up in the preceding pages as an ideal for British India. The same remarks apply to the average expectation of life at birth. This expectation is higher by several years in Travancore than anywhere else in India and stands at 43.80 for males and 44.55 for females—thus resembling more the Japanese than the Indian figures. Before India can hope to attain to the height of the English figure she might first endeavour to reach the enviable position which Travancore occupies in Eastern countries to-day.

As between the provinces, there is not much to choose. But it may be said that longevity is greater in Burma than any other province, and Bengal and the United Provinces stand at the bottom of the list.

	Average expectation of male life at birth.		
	1931.	1911.	1901.
Burma.. ..	30.61	31.48	30.29
Bihar and Orissa ..	28.88	figures	not available
Madras	28.71	25.92	26.21
Central Provinces ..	28.10	figures	not available
Punjab	28.05	21.23	23.18
Bombay	27.84	22.52	22.77
Bengal.. ..	24.91	21.47	21.57
United Provinces ..	24.56	21.21	25.30

The absence of early marriage in Burma and its extreme prevalence in Bengal and the United Provinces explains the appreciable difference of 6 years in the longevity of their respective populations.

Lest some should think that longevity is entirely a question of heredity and that a race of short lived people like the Indians cannot hope to attain the length of days enjoyed by Western nations it is enough to say that this view is not supported by experience. The Western races have attained to their present position by improvement in their social environment and by reduction of births. Long lived persons are not uncommon in India in places where the environment is

favourable. There is no reason why, with greater attention to public health activities supplemented by an appreciable decline in the birth rate, similar results should not be achieved in India.

The following extract from the June 1930 issue of the Statistical Bulletin of the New York Metropolitan Life Insurance Company (printed in the Eugenics Review for October 1930) may be of interest to the student of this subject :—

“ The differences in mortality and expectation of life in favour of persons with long lived parents are clear cut and show conclusively the effect of heredity on longevity. The gain in expectation of life from good heredity is, however, not as large as that obtained by the improvement in social and health conditions in recent years, and much less than that still attainable by such means. *From the point of view of longevity, environmental influences are still more powerful than heredity, important as that may be.*”

PUBLIC HEALTH AND MALNUTRITION.

It is only to be expected that in a population with such a high death rate and an alarmingly low expectation of life, there must be a large amount of sickness and malnutrition. Regarding sickness, the figures given in the Baroda Census Report for 1931 are very instructive. They show that while in New Zealand and England the daily average number of sick persons per 1,000 inhabitants is 19 and 30 respectively, it is as high as 84 in India. Malaria is almost universally prevalent throughout the greater part of India and it is estimated that one out of every 3.5 deaths in India is due to this cause alone. The number of sufferers from malaria is estimated by the Health Organisation of the League

of Nations at about 100 millions. Malaria debilitates where it does not kill and Colonel Chopra, I.M.S., has estimated the annual economic loss to the country due to malaria at about Rs. 33 crores.* In Bengal † the problem is particularly acute. Nutrition is, as Colonel McCarrison rightly points out in his Foreword to "Food"—a book which though written for children deserves to be read carefully by every Indian—the most pressing of all present day problems in India as "normal nutrition and health cannot be maintained on many of the diets now used by millions of the Indian people."

Sir John Megaw estimates that 39 per cent. of the population of India is well nourished, 41 per cent. poorly nourished, and 20 per cent. very badly nourished. Or, in other words, 60 per cent. of the population is suffering from malnutrition.

* The All-India Conference of Medical Research Workers passed in 1926 the following resolution :—

"This Conference believes that the average number of deaths resulting every year from preventible disease is about 5 to 6 millions, that the average number of days lost to labour by each person in India from preventible disease is not less than a fortnight to three weeks in each year, that the *percentage loss of efficiency of the average person in India from preventible malnutrition and disease is not less than 20 per cent.*, and that the *percentage of infants born in India who reach a wage-earning age is about 50 whereas it is quite possible to raise this percentage to 80 or 90.*

This Conference believes that these estimates are under-statements rather than exaggerations, but, allowing for the greatest possible margin of error, it is absolutely certain that *the wastage of life and efficiency which result from preventible disease costs India several hundreds of crores of rupees each year.* Added to this is the great suffering which affects many millions of people every year."

† The Minister of Local Self-Government for Bengal in a speech made in June 1933 said :—

"Malaria causes 3,50,000 deaths in a year and out of a total population of 50 millions, 30 millions are actually infected with malaria parasites and at least 60,000 of the 86,618 villages in the province are more or less severely affected by the disease." He also said that a sum of 3 crores would be required to free Bengal from malaria.

The figures by provinces are:—

Province.	Percentage of		
	(a) Well nourished.	(b) Poorly nourished.	(c) Very badly nourished.
Assam	53	38	9
United Provinces	40	39	21
Central Provinces	32	50	18
Madras	46	36	18
Bengal	22	47	31
Bihar and Orissa	42	40	18
Punjab	42	38	20
Bombay	45	44	11

The physical condition of the people in Bengal and Central Provinces seems to call for special investigation.

The health of school children is equally bad. The Public Health Commissioner's Report for 1930 gives the following figures:—

	Percentage.
Nutrition Good	38.70
Fair	39.61
Poor	21.98

The above may now be contrasted with English figures. According to the figures given in July 1933 by Mr. Ramsbotham, Parliamentary Secretary to the Board of Education, the cases of malnutrition requiring attention were 11.2 per thousand children in 1931 and 10.7 per thousand in 1932. In other words, *there is twenty times more malnutrition in India than in England.*

For the harmonious development of the body diet must be well-balanced, and Colonel McCarrison's

researches show that while the diets of the Sikh, the Pathan and the Mahratta are of high biological value, the Bengali, the Kanarese and the Madrasi diets are definitely of low biological value. Regarding the Bengali diet, attention is invited to the following remarks of Dr. Bentley, who was for many years the Director of Public Health in Bengal :—

“ The present peasantry in Bengal are in a very large proportion taking to a dietary on which even rats could not live for more than five weeks. Their vitality is now so undermined by inadequate diet that they cannot stand the infection of foul diseases.”

The defects of Indian diets generally are—

- (i) deficiency of suitable proteins—which leads to stunted growth, lack of stamina, moral and physical, rapid advance of old age and short life. This deficiency is more noticeable in the Hindu than in the Muslim diet generally—the martial classes being an exception ;
- (ii) deficiency of vitamins—which is one of the causes of high infantile mortality ; and
- (iii) excess of carbohydrates—which leads to intestinal troubles, diabetes, obesity, etc.

How the deficiency of proteins can be remedied is very difficult to say, with the population growing at its present rate. For, according to an estimate made in September 1933 by Rao Bahadur B. Vishwa Nath, Government Agricultural Chemist, there is a shortage of 500,000 tons of nitrogen in the country and the present supply is sufficient only for two-thirds of the population. Be this as it may, the facts given above at least go to show that there is a strong *prima facie* case for expert

investigation and without much delay. It is understood that His Highness the Maharaja Gaekwar of Baroda* has appointed a committee to collect recipes of different kinds of food eaten by different sects and examine their composition, food value, the work involved in their preparation and the various ingredients used in order to rectify defects in their food value. The report of this committee when ready should be of great assistance to British India as well in pointing out the right lines on which the problem should be tackled.

To effect a change in the diet of a people of such conservative habits as we have in India is a most difficult task, but at any rate it is first necessary to know what the defects are and how a well-balanced diet, which may be within the means of the people in the various provinces, can be made available. For this alone, expert investigation is necessary.

THE CASE FOR A COMMISSION OF INVESTIGATION.

The problem unfolded before us so far may now be briefly summarized :—

- (i) Vital statistics in India are far from perfect and need urgent improvement for a really accurate indication of the demographic condition of the population.
- (ii) The death rate in India is still very high :
far higher than in most civilised countries of the world, Eastern or Western.

* His Highness lays great stress on the virtues of soya been. He thinks it contains all the protein that a human being requires

- (iii) Infant mortality is also very high: it seems to be really much higher than the recorded figures would indicate.
- (iv) Maternal mortality, particularly in Bengal and Assam, is so bad as to call for urgent investigation.
- (v) The average expectation of life at birth is about half of what it might be, and shows no sign of improvement.
- (vi) Not only is the average expectation of life at birth very low, but the life that people lead is one of low vitality. The health of the people is unsatisfactory and their nutrition is very poor.

In order that a problem of this magnitude may be properly dealt with, it is necessary that the public should be presented with an authoritative and comprehensive survey of the position. After this survey has been completed, it would be possible to make recommendations for bringing about an improvement.

For both these tasks a commission should be appointed, composed of men and women, British and Indian, with special knowledge of medical relief, public health, education, economics, industry, agriculture and sciology.

The terms of reference would have to be drafted with care so as to keep the Commission from going off the rails and to ensure that it would be able to complete its work within a reasonable time. Commissions, official and non-official, have been appointed in other countries where the population problem is not half so grave as in India.

APPENDIX.

Figures showing the expectation of life at birth in various countries, from *Aperçu de la Démographie des Divers Pays du Monde*, publiée par L'office Permanent de l'Institut International de Statistique, 1931 (La Haye, 1932, W. P. Van Stockman et Fils, éditeurs) :—

Country and dates of calculation.		Expectation of life at birth.	
		Males.	Females.
GERMANY.—	1891-1900 ..	40.56	43.97
	1901-1910 ..	44.82	48.33
	1910-1911 ..	47.41	50.68
	1924-1926 ..	55.97	58.82
AUSTRIA.—	1895-1900 ..	36.78	38.97
	1901-1905 ..	39.14	41.05
	1906-1910 ..	40.69	42.88
FRANCE.—	1898-1903 ..	45.74	49.13
	1908-1913 ..	48.50	52.42
	1920-1923 ..	52.19	55.87
ENGLAND AND WALES.—	1891-1900 ..	44.13	47.77
	1901-1910 ..	48.53	52.38
	1910-1912 ..	51.50	55.35
	1920-1922 ..	55.62	59.58
SCOTLAND.—	1891-1900 ..	44.68	47.44
	1911 ..	50.10	53.18
	1921 ..	53.08	56.35
NORTH IRELAND.—	1925-1927 ..	55.42	56.11

Country and dates of calculation.		Expectation of life at birth.	
		Males.	Females.
ITALY.—			
	1899-1902 ..	42.85	43.15
	1901-1910 ..	44.24	44.83
	1910-1912 ..	46.97	47.79
	1921-1922 ..	49.25	50.75
SWITZERLAND.—			
	1889-1900 ..	45.70	48.50
	1901-1910 ..	49.25	52.15
	1920-1921 ..	54.48	57.50
SPAIN.—			
	1908-1923 ..	42.28	42.28
HOLLAND.—			
	1890-1899 ..	46.20	49.00
	1900-1909 ..	51.00	53.40
	1910-1920 ..	55.10	57.10
BELGIUM.—			
	1881-1890 ..	43.59	46.63
	1891-1900 ..	45.35	48.85
NORWAY.—			
	1891'2-1900'1 ..	50.41	54.14
	1901-1910 ..	54.82	57.70
	1911-1920 ..	55.62	58.71
SWEDEN.—			
	1891-1900 ..	50.94	53.63
	1901-1910 ..	54.53	56.98
	1911-1920 ..	55.60	58.38
	1921-1925 ..	60.72	62.95
RUSSIA (European).—			
	1896-1897 ..	31.43	33.46
	1926-1927 ..	41.93	46.73
POLAND.—			
	1927 ..	45.90	

Country and dates of calculation.	Expectation of life at birth.	
	Males.	Females.
FINLAND.—		
1901-1910 ..	45.33	48.10
1911-1920 ..	43.41	49.12
ASIA.		
SIBERIA.—		
1926-1927 ..	39.18	43.20
JAPAN.—		
1921-1925 ..	42.06	43.20

INDIA.

Male Lives :—

Age.	Expectation of life for Census year.				
	1881.	1891.	1901.	1911.	1931.*
0	23.67	24.59	23.63	22.59	26.91
10	34.00	35.46	34.73	33.36	36.38
20	28.55	29.24	28.59	27.46	29.57
30	23.80	23.66	22.90	22.45	23.60
40	18.90	18.75	17.91	18.01	18.60
50	13.93	14.28	13.59	13.97	14.31
60	9.25	10.12	9.53	10.00	10.25
70	5.44	6.48	5.80	6.19	6.35
80	2.87	3.65	3.07	3.06	3.13
90	1.00	1.69	1.23	1.15	1.12

* For the Census of 1921 no life table was prepared.

Female Lives :—

Age.	Expectation of life for Census year.				
	1881.	1891.	1901.	1911.	1931.
0	25.58	25.54	23.96	23.31	26.56
10	33.42	34.40	33.86	33.74	33.61
20	28.44	29.28	28.64	27.96	27.08
30	24.48	24.69	23.82	22.99	22.30
40	20.03	20.20	19.12	18.49	18.23
50	14.96	15.59	14.50	14.28	14.65
60	9.79	10.87	10.02	10.11	10.81
70	5.63	6.80	5.98	6.22	6.74
80	2.88	3.76	3.12	3.06	3.25
90	.91	1.75	1.64	1.10	1.18

TRAVANCORE.

Expectation of Life in years :—

Age.	CENSUS 1931.	
	Males.	Femlaes.
0	43.80	44.55
10	45.97	44.78
20	37.51	36.56
30	29.49	29.49
40	22.32	22.74
50	16.05	17.01
60	10.72	11.59

BRITISH PROVINCES.

Expectation of Life at Birth for each Census :—

Province.	CENSUS.			
	1931.		1911.	
	Males.	Females.	Males.	Females.
Bengal.. ..	24.91	24.80	21.47	21.58
Bombay	27.84	26.37	22.52	22.86
Burma.. ..	30.61	31.00	31.48	32.61
Madras	28.71	30.04	25.92	27.65
Punjab	28.05	26.57	21.23	No figures available.
United Provinces ..	24.56	25.09	21.21	21.50
Bihar and Orissa ..	28.88	26.90	No figures	available.
Central Provinces ..	28.10	28.21	No figures	available.

Note.—Figures for British India in the tables given above are taken from the Actuarial Report on the Indian Census for 1931. Figures for Travancore are taken from the Travancore State Census Report for 1931.

Chapter IV.

DIFFERENTIAL FERTILITY.

THE DECLINE OF THE BIRTH-RATE IN WESTERN COUNTRIES AND ITS CAUSES.

THE steady decline in the birth-rate in Western countries and its uneven distribution as between various classes and occupations within the same country has given rise to numerous theories and views as to its underlying causes. Regarding the facts themselves there is no dispute. The birth-rate is undoubtedly falling and the decrease is much more marked in the upper and middle classes than among the poor, and much more marked in certain occupations—*e.g.* clergymen, teachers, and doctors—than in others—*e.g.* coal-miners, agricultural labourers and farmers. Even among manual workers, it has been observed that the birth-rate returned by the upper working class is much below that of the lower. As to why this should be, whether it is due to genetic differences in fertility or to conscious control of births, there is no unanimity of opinion. Biologists are unable to throw any light on the matter, as they confess to abysmal ignorance of the physiology—the how, why and when—of human reproduction. They say that there is no experimental evidence to show that higher living causes a change in the reproduction cells, in other organs or hormone glands which would be likely to produce such results. There are obvious difficulties in studying the question experimentally, but a study of the glands of internal secretion of persons of different social grades would be a fruitful enquiry in this direction. Sociologists also are not all

of one mind. Some hold that the major portion of the reduction of the birth-rate (to the extent of as much as 70 per cent.) is due to voluntary restriction. Others are of the opinion that this is not so; that the real explanation is to be found in a natural decline in the fertility of the classes in question, and that the reproductive power of Western peoples has declined, though it may be for the time being.

Those who believe that artificial restraint of fertility is the main cause of the decline in the birth-rate put forward the following considerations :—

- (i) The decline began since 1876, with the publication of the Knowlton pamphlet and the Bradlaugh-Besant trial.
- (ii) The marriage rate* presents no conspicuous fall comparable with that of the birth-rate. Nor is postponement of marriage† an explanation.
- (iii) The census figures show that the decline is spreading gradually throughout society, from above downwards, which, it is well-known, is the direction in which the dissemination of knowledge of contraceptive methods would

* For instance, the marriage rates for England and Wales for the Census years named are as follows :—

Per 1,000 of the population.			
1901.	1911.	1921.	1931.
7.9	7.6	8.9	7.8

† The average age of spinster brides in England and Wales in 1896 was 25.14, in 1920 it was 24.54 and to-day it is nearly 26.

spread. The better classes come to know and use such methods first, and then the knowledge spreads downwards.

- (iv) Occupied mothers show exceptionally low fertility.

Those who hold that the main cause of the fall in the birth-rate is an actual evolutionary change in the human animal itself, due to the conditions of civilization, cite the following arguments in support of their view :—

- (i) Certain direct information was obtained by the Birth-Rate Commission in England about 1916, which showed that the average number of children in 'unlimited' families was 2.5, in 'limited' families as a whole 2.6, in families limited by artificial means (as distinct from abstinence) 2.5. There is thus no apparent difference between 'limited' and 'unlimited' families.
- (ii) It is a well-known fact that worry, nervous strain and neurasthenia reduce sex activity, and the present age seems to be becoming a neurasthenic age. Intensity of social life carried beyond a certain point, not only requires but may even compel a reduction in the birth-rate.
- (iii) There is a high proportion of infertile unions among intellectual and scientific men and college women who disavow attempts at family limitation. Similarly there is a progressive increase in the percentage of childless unions in all social classes, especially since 1850.

Between these two conflicting schools of thought it is not easy to steer a middle course. The present writer is not called upon to indicate his views here, as he is chiefly concerned with the Indian problem, where conscious control is more or less absent. But the point is of great interest to India and if biologists can give a definite opinion it must receive careful consideration in the formulation of a population policy for this country. For instance, if it can be definitely proved that high living leads to infertility, or per contra that artificial limitation of conception leads to sterility, one's views would naturally have to be revised. Till then we must continue to make use of the best information available on the point.

FERTILITY ENQUIRIES IN INDIA.

It is not long since census officers began collecting and analysing statistics relating to the fertility of women in India. For some time it was thought that such an enquiry was outside the scope of a census, but when the demographic value of the census was realised it was urged that in the special conditions of Indian social and family life a fertility enquiry would be attended with considerable difficulty. The habitual reticence of the Indian regarding the female portion of his household, even where he does not entirely seclude them, would make any investigation into the more intimate aspects of family life full of obstacles if not of danger to the public peace, and would in any case be misconstrued. In spite of all these difficulties Mr. J. T. Marten, for the first time, in connection with the Census of 1911 attempted to obtain some statistics in the Central Provinces bearing on the size and sex constitution of the average family and the

fertility of married life. When Mr. Marten was appointed Census Commissioner for India in 1921 he carried out his idea on a larger scale and as a result of his efforts similar enquiries were made in connection with the 1921 Census in the following provinces : Bengal, Bihar and Orissa, the Central Provinces and the Punjab, and in the States of Baroda and Travancore. The results were very interesting.

For the 1931 Census, due to the special interest taken in the subject by Dr. Hutton, the enquiry was extended over all provinces (excepting the United Provinces, where the local Government decided that no such enquiries could be made) and most of the Indian States. The results arrived at are even more interesting and it is a hopeful feature that no special difficulty was experienced in obtaining returns. We may, therefore, venture to suggest that for the 1941 Census this enquiry should be conducted on an even more ambitious scale* and should include (as far as it is possible to do so) a detailed investigation into the biological and adventitious causes of the differential rates of growth of the various communities in India, regarding which at present the data available are very scanty and the theories broadcast so numerous.

FERTILITY OF ANIMISTS OR THE PRIMITIVE TRIBES.

The most prolific races in India are the aboriginal tribes which go in Census reports by the name of Animists. They have by far the largest proportion of children of

*An idea of what is needed will be gathered from the paper read by Dr. Stevenson before the Royal Statistical Society on the fertility enquiry of various social classes in England and Wales, printed in the Journal of the Society for May 1920.

any of the communities in India. The figures for the 1931 Census are reproduced below * :—

Proportion of children under 10 to 100 married females aged 15-40.

All religions	..	..	170
Hindu	..	..	164
Muslim	..	..	178
Sikh	..	..	192
Tribal (or Animist)	..	..	196

Mr. O'Malley, Census Superintendent for Bihar and Orissa in 1911, found that wherever a large aboriginal element was present the growth of the population was very rapid as compared with other tracts where that element was absent. In the Chhota Nagpur Plateau, for instance, this element is strongest, and while the rates of increase in 1911 in the three other divisions of the Province of Bihar and Orissa, *viz.* North Bihar, South Bihar and Orissa were 1.9, 0.7, and 0.9 respectively, the Chhota Nagpur figure was as high as 14 per cent. That this was not a

*The results of the 1911 and 1921 Censuses are also the same.

Proportion of male children aged 0-5 per 1,000 of the population concerned :—

—	1911.	1921.
Hindus	129	117
Muslims	140	128
Tribal .. .	164	136

temporary phase will be evident from the rates of increase recorded during the censuses of 1921 and 1931.

Province.	Division	Rate of variation 1911-1921 (+increase —decrease)	Rate of variation 1921-1931 (+increase —decrease.)
Bihar and Orissa.	Bihar	—1.6 per cent.	+10 per cent.
	Orissa	—3.2 per cent.	+7 per cent.
	Chhota Nagpur ..	+ 8 per cent.	+17.5 per cent.

The same is true of the Central Provinces.

Wherever the aborigines form the greater part of the population, fecundity is great.

GREATER FERTILITY OF MUSLIMS THAN HINDUS.

A second factor in the growth of the Indian population is the relatively greater fertility of the followers of Islam as compared with the Hindus. The variations per cent in each community for the decennial periods from 1881 to 1931 are as follows :—

Variations per cent (Increase + Decrease —)

	1881-1891.	1891-1901.	1901-1911.	1911-1921.	1921-1931.	1881-1931.
Hindu	+10.1	—0.3	+5.0	—0.4	+10.4	+26.8
Muslim	+14.3	+8.9	+6.7	+5.1	+13.0	+55.0

It will be observed from the above figures that at each census for the last 50 years the Muslim population has been increasing much faster than the Hindu popula-

tion and that the total increase of Muslims is more than double that of the Hindus. As a result of this differential fertility Hindus now form 68.2 per cent. of the total population whereas in 1881 their proportion was 74.3 per cent. In other words, their relative position has deteriorated by 6.1 per cent in 50 years. In the case of Muslims, on the other hand, the position has improved by 2.5 per cent, for their proportion was 19.7 per cent in 1881 and is now 22.2

In the section dealing with fertility of animists, figures have been given which make the position quite clear. The Muslims have a larger proportion of children than Hindus. This is due to a larger birth-rate. Figures, so far as available, are given below :—

Province.	Birth-rate.			
	Hindus.		Muslims.	
	1931.	1932.	1931.	1932.
Madras	35.6	35.9	36.7	37.3
U. P.	35.5	34.5	37.2	36.3
N. W. F. P. ..	27.9	27.6	31.0	29.0
Delhi	42.6	44.7	43.4	44.9
Burma	14.2	15.0	25.1	24.5

[Figures supplied very kindly by the Public Health Commissioner.]

The reason for this differential fertility is of great interest to the student of population, particularly when it is borne in mind that conversions from Hinduism to Islam are not on a considerable scale, that the foreign element among the Muslims is very small, and that the physical conditions under which both the communities live are similar. At the same time, this differential rate of growth has gone on for the last 50 years and cannot be

purely accidental. Census reports give various reasons for this disparity in the respective rates of increase. Some of them are:—(1) the comparative absence of child-marriage among Muslims; (2) their smaller death rate; (3) the absence of restrictions on widow remarriage; (4) more nutritious diet; etc. There is no doubt that there is less child-marriage among Muslims than among Hindus and it has been shown in the chapter on marriage that early marriage—*i.e.* marriage at immature ages—prejudicially affects fertility. So this factor must be admitted as one of the causes.

It is also true that the death-rate among Muslims is lower than among Hindus, which points to a comparative superiority in physique. The figures, as very kindly supplied by the Public Health Commissioner, are given below.

Death-rates per 1,000 of population :—

Province.	1930.		1931.		1932.	
	Hindus.	Muslims.	Hindus.	Muslims.	Hindus.	Muslims.
Delhi ..	35.5	31.1	29.3	23.8	26.5	22.5
Bengal ..	22.3	22.3	21.8	22.3	not available.	
Bihar and Orissa ..	30.4	26.9	27.9	20.4	17.6	21.1
Assam ..	19.8	22.7	16.8	18.7	19.1	17.2
U. P. ..	27.2	29.0	27.2	26.5	22.2	22.9
Punjab ..	28.6	30.3	27.5	25.4	not available.	
N. W. F. P.	17.8	22.1	14.4	20.7	15.8	20.4
C. P. ..	35.3	36.0	33.7	31.4	25.1	22.7
Madras ..	25.6	25.4	24.1	22.1	22.2	20.6
Bombay ..	32.0	22.0	26.5	15.8	25.1	17.3
Burma ..	18.4	19.3	15.2	16.8	16.1	16.9
Total ..	27.6	25.1	26.1	22.7	not available.	

It is well-known that there is no restriction on widow remarriage among Muslims, whereas Hinduism (except among the lowest castes) prohibits remarriage of widows. The following is the proportion of widows aged 15-40 per 1,000 females of those ages among Hindus and Muslims respectively :—

<i>Year</i>			<i>Hindus</i>	<i>Muslims</i>
1891	..	..	123	103
1901	..	..	137	98
1911	..	..	124	94
1921	..	..	138	99
1931	..	..	124	91

It will appear from the above figures that Muslims have all along had a smaller proportion of widows at the reproductive ages than Hindus and to-day their proportion of widows is 30 per cent less.

As regards the suggestion that the Muslim diet is more nutritious than the Hindu diet, there are naturally no data in the Census Report. It is true that Muslims are not vegetarian as many Hindus are, and that a diet which includes more proteins* (as a meat diet would) will lead to greater sex vigour than a purely vegetarian diet. But, on the other hand, Muslims are comparatively poorer, and consequently it is difficult to support the presumption that as a community they eat more nutritious—or, in other words, more expensive—food.

FERTILITY OF PARSIS.

It is interesting in a study of differential fertility to examine the figures for the Parsi community, which

* [See the remarks under 'Malnutrition' in the chapter on 'Births and Deaths.']

though small in numbers represents features more akin to European than to Indian populations. Out of a total of 109,321 persons in 1931, the children aged 0-5 were 9,335 or 8.2 per cent of the whole Parsi population. The corresponding proportion for Hindus, Muslims and Tribal communities are 15.06, 15.7 and 16.8 respectively. In a total number of 12,142 married Parsi females of the reproductive ages (15-40) the number of children under 10 is 19,404, which gives a proportion of 159 children per 100 married females of those ages. The corresponding figures for the Hindu, Muslim, Sikh and Tribal communities respectively are 164, 178, 192 and 196. It will thus be quite clear that Parsis have the smallest number of children, as compared with other communities.

Through the courtesy of the Executive Health Officer of the Bombay Municipality, I am in a position to give the following figures for the birth and death rates of Parsis living in the City of Bombay—57,765 in 1931—which, when compared with the general birth and death-rates for India as a whole, will be found interesting :—

Year.	Parsi birth-rate.	General birth-rate (India)	Parsi death-rate.	General death-rate (India.)
1921	22.93	32.20	30.97	30.59
1922	24.10	31.85	27.96	24.02
1923	24.82	35.06	23.97	25.00
1924	24.25	34.44	22.35	28.49
1925	24.53	33.65	20.86	24.72
1926	22.41	34.77	19.24	26.76
1927	22.5	35.27	17.2	24.89
1928	23.1	36.79	16.1	25.59
1929	21.7	35.47	17.4	25.95
1930	21.7	35.99	16.4	26.85
1931	19.0	34.3	15.2	24.9

It will be observed that there is nothing in common between the Parsi and the Indian figures, and that the former resemble European figures for birth and death rates much more closely.

FERTILITY ACCORDING TO OCCUPATION.

The size of families according to occupation of husband as given in the 1931 census report is as follows :—

<i>Occupation.</i>	<i>Average per family.</i>
Production of raw materials ..	4.4
Preparation and supply of material substances	4.2
Public administration and liberal arts	4.0
Law, medicine and instruction ..	3.7

The Baroda Census Report for 1931 contains even more striking figures. The proportion of children of both sexes per hundred persons aged 14 to 43 is as follows :—

<i>Castes</i>	<i>Persons aged 14-43</i>
CLASS 1	
<i>Advanced Group.</i>	
Brahman.. .. .	64
Lewa-Patidar	69
Luhana	83
Maratha Kshatrya	58
Prabhu	83
Sutar	72
Vania	67

<i>Castes.—</i>	<i>Persons aged 14-43.</i>
CLASS II.—	
<i>Intermediate.—</i>	
1. Military and Dominant.—	
Rajput	66
2. Agriculturists.—	
Kadwa	78
Anjana	66
Baria	71
3. Artisan Group.—	
Darji	76
Kumbhar	79
Luhar	76
Mochi	76
4. Labouring Group.—	
Talabda	76
Patanwadia	76
Vankar	81
CLASS III.—	
<i>Illiterate.—</i>	
Bhangi	81
Bharwar	70
Bhil	87
Gamit	85
Talavia	87
Thakarda	85
Vaghri	92

The above figures confirm the results obtained in Western countries that occupations connected with manual labour are more fertile than intellectual occupations and that the greater the degree of skill and intellect required in an occupation the smaller is the size of the family.

RELATION OF LITERACY AND FERTILITY.

Experience of other countries shows that there is a high correlation between illiteracy and fertility. This result is also confirmed by Indian experience. The literacy of the following communities is given below :—

Literacy per 1,000 aged 5 and over.

Literacy per 1,000 aged 5 and over.	Order in regard to literacy.	Order in regard to fertility.
Parsis 791	1	4
Hindus 84	2	3
Muslims.. .. 64	3	2
Tribal 7	4	1

It will be seen from the above figures that communities which have a high degree of literacy have a low degree of fertility and *vice versa*, and that the order in which a particular community stands in relation to fertility is in inverse relation to the position which it occupies as regards literacy, *i.e.*, if it is high in one it is low in the other.

ANALYSIS OF THE ABOVE FIGURES.

We have in the preceding paragraphs analysed the figures for the differential rate of growth of the following communities :—

- (1) Animists,
- (2) Muslims,

- (3) Hindus,
- (4) Parsis, and also
- (5) Fertility in relation to occupation, and
- (6) Correlation between illiteracy and fertility.

Despite other causes that may be at work in bringing about the rates of growth that prevail, it will be obvious that there is a common thread running through the figures in each case, and that *fertility is in inverse ratio to standard of living and intellectual development*. We see in them an illustration of Adam Smith's dictum that poverty is favourable to generation. Communities and occupations which are concerned with intellectual pursuits and have a relatively high standard of living show a smaller rate of fertility than occupations connected with manual labour and communities whose standard of living is relatively low or whose outlook on life is more material and physical than intellectual and spiritual. The well-to-do have many interests in life and more than one outlet for their nervous energy; but the poor have very few. Sex life for the poor means much more than it does for the well-to-do. As Herbert Spencer says:—"Organisms multiply in inverse ratio to the dignity and worth of individual life," or, in other words, in all living things the powers of reproduction are in inverse ratio to those of individual preservation. Thus in the humblest plants and animals there is an enormous number of seeds and eggs, while in the higher there are but few. In the elephant and man the reproductive powers are the smallest because they have the greatest power of self-preservation. Herbert Spencer gives an *a priori* proof of his argument thus:—

"Every generative product is a deduction from parental life, and to diminish life is to diminish the ability to preserve

life. The portion thrown off is organised matter, vital force has been expended in the organisation of it, which vital force, had no such portion been thrown off, would have been available for the preservation of the parent. Neither of these forces, therefore, can increase except at the expense of the other ; in other words, individuation and reproduction are antagonistic."

So far as Parsis and Animists are concerned there is no difficulty in applying the above formula. The low fertility of the Parsis is directly related to their high standard of living and their sophisticated outlook on life. Similarly, among aboriginal tribes the dignity and worth of life is at its lowest, and that is the reason for their great prolificness. In applying the same formula to Muslims relatively to Hindus, one does so with great reluctance and extreme diffidence. The contribution which Muslims have made to intellectual progress in this country is by no means negligible, but there is no disparagement of the community as a whole in the statement that their economic and intellectual development is not on the same level as that of Hindus* and as a consequence their fecundity is so much greater.

FECUNDITY VERSUS LONGEVITY.

Our high birth-rate is, as has been stated above, an indication of the primitive state of our society, and an evidence of civilization of an unsophisticated type. It is no sign of the exuberance of vital force. Let us remember Spencer's dictum :—" Every generative product is a *deduction* from parental life." We have seen above that the Animist population is the most fertile in

* See figures relating to literacy in the section " Relation of literacy to fertility."

this country. It will therefore be interesting to note that the proportion of persons aged 60 and over is lower among them than other communities. Below are given some figures for the last three censuses in support of the above proposition :—

Census Year.	Total number of persons of all ages.	Number of persons aged 60 and over.	Number per 10,000 persons of persons aged 60 and over.	Order in respect of fertility.	Order in respect of longevity
1911.					
Animist (Tribal) ..	10,217,544	425,193	416	1	4
Muslim ..	65,841,928	3,269,893	498	2	3
Hindu ..	217,421,878	11,425,901	526	3	2
Parsi	100,096	6,488	649	4	1
1921.					
Animist (Tribal) ..	9,773,659	421,064	430	1	4
Muslim ..	67,982,694	3,375,414	496	2	3
Hindu ..	216,237,797	11,684,544	540	3	2
Parsi	101,778	7,345	721	4	1
1931.					
Animist (Tribal) .	7,611,803	263,054	345	1	4
Muslim ..	76,344,231	2,824,768	357	2	3
Hindu ..	238,598,653	9,826,418	411	3	2
Parsi	109,329	7,687	704	4	1

The above figures need no explanation and bring out the point very clearly in relation to all the four communities. We may now proceed to examine the position regarding Animists in somewhat more detail. Let us take the province of Bihar and Orissa and look at the figures of the Chhota Nagpur Plateau, where the Animist population is more concentrated than elsewhere. The figures of age distribution in the four natural divisions of the province are given below :—

	Number per mille aged		
	0-15	15-50	50 and over
North Bihar	400	501	99
South Bihar	390	499	111
Orissa	351	542	107
Chhota Nagpur Plateau	424	494	82

It will be observed that in the Chhota Nagpur Plateau, the proportion of children is the highest, while the proportion of old men is the lowest—due entirely to the preponderance of the Animist population in this area. The same is the case with the aboriginal population in the Central Provinces in regard to which the Census Superintendent writes :—

“ What is specially brought out (by the Census figures of age) is the fertility of the aborigines following tribal religions and the comparative brevity of their lives.”

The Census Superintendent for Bihar and Orissa has given a very useful table comparing the figures of that province with other countries, which is reproduced below :—

Age period.	Number per mille in each period.				Percentage on column 2 of		
	Bihar and Orissa.	Japan.	England and Wales.	France.	Col. 3.	Col. 4.	Col. 5.
1	2	3	4	5	6	7	8
0-10.. ..	286	254	181	148	88.8	63.3	51.7
10-20.. ..	200	212	190	162	106.0	95.0	81.0
20-30.. ..	176	150	161	164	89.8	91.5	93.2
30-40.. ..	144	120	146	139	83.3	101.4	96.5
40-50.. ..	97	105	132	133	108.2	136.1	137.1
50-60.. ..	57	74	96	114	129.8	168.4	200.0
60 and over ..	40	77	94	140	192.5	235.0	350.0

It will be seen from the above table that while the proportion of children in Bihar is higher than in Japan, England and Wales, and France, the proportion of old people is the lowest and that France, which stands at the bottom of the list in relation to the proportion of children, stands at the top of the list in relation to the proportion of old persons.

The Census Report of Travancore also bears out the same view. The advanced castes which have generally a smaller proportion of children have a higher proportion of old persons.

Number of persons in Travancore over 43 per 100 aged 14-43.

CASTE.	MALES.	FEMALES.
<i>Advanced Castes.</i>		
Brahmin (Relaryala)	52	52
Brahmin others	46	45
Veltala	41	42
Nayar	37	38
Kushnanvaka	37	37
<i>Backward Classes.</i>		
Saliyan	38	36
Vaniyan	37	35
Virasaivan	36	34
Chetti	34	37
Kammalan	34	32
<i>Depressed Classes.</i>		
Valan	40	33
Yadavan	37	44
Palayan	37	31
Kinavan	35	30
Arayan	33	29
Ilavan	32	33
Parayan	32	27
Pilan	18	12

The same is the position in Bihar and Orissa :—

“ Among the higher castes such as Brahmans and Rajputs the number of children is relatively low, and there is a much larger proportion of elderly people. The position is reversed with the castes at the other end of the social scale, *e.g.*, Chamars and Musahars. Goalas, Koiris and the like come midway between the two extremes.” (Bihar and Orissa Census Report, 1931.)

The following from the Punjab Census Report of 1911 is true to this day :—

“ The higher or affluent castes have a fairly large proportion of old people while the labouring classes engaged in occupations noxious to health have a comparatively smaller number of persons over 40 years old. The castes with fewest old persons, the labouring classes for instance, have the largest proportion of children. On the other hand, the castes with an abundance of old people have a comparatively smaller number of children.”

Regarding the Parsis, who have the lowest proportion of children, figures have already been given above, from which it will appear that their longevity is the greatest of all the communities in India. But the following remarks from the Bombay City Census Report for 1931 should be read with interest :—

“ While in the population of the City as a whole there is one Parsi in every 21 persons, *there is in the population over 65 years one Parsi to every two or three.*”

The report further goes on to say that “the longevity of the Zoroastrian is an undoubted fact.”

The figures given above will also bring out the fact that while Muslims show a larger fertility they have a smaller longevity, and that the Hindus who have a smaller fertility have a larger longevity.

We may therefore take it as established that *fecundity is at the sacrifice of longevity, and that communities desirous of attaining longevity should as a preliminary measure reduce their birth-rate.*

Chapter V.

BIRTH-CONTROL.*

REASONS FOR REDUCTION OF BIRTHS.

THE reader who has followed the position as unfolded in Chapters III and IV will have seen that a reduction in the birth-rate in India is necessary on the following grounds :—

- (i) the general death-rate will be reduced only when the birth-rate is reduced and not before ;
- (ii) high birth-rate and infant mortality go together and the latter will not be reduced until the former is reduced ;
- (iii) no rise in the present low standard of living of the people is possible unless there is a reduction in the number of mouths to be fed ;
- (iv) fecundity is at the sacrifice of longevity and in consequence of our high birth-rate our average expectation of life at birth is only half of what it might be.

Such being the case for a diminution of births, the question that next has to be answered is how should

* The term ' birth-control ' is used simply because it has obtained general currency, but it is not a very exact and may even be a misleading one. It is not the same thing as birth prevention, which may include prevention after conception has taken place and pregnancy has commenced. We are not using ' birth-control ' in this sense at all. The term is intended to refer only to control of conception, or prevention of the meeting of a live spermatozoon with an ovum. Any such attempt is perfectly lawful, but once conception has taken place, any attempt to interfere with the course of nature is contrary to law.

births be reduced. It is sometimes suggested that such a reduction will be automatically brought about by a rise in the standard of living, without any attempt at 'artificial' restriction of births. But this does not solve the difficulty—at best it is what is called putting the cart before the horse. How can the economic status and standard of living of the vast majority of people be raised as long as the population, especially among the poor classes, increases so rapidly? Some persons* who do not wish to face the facts get out of the difficulty by saying that population has a tendency to adjust itself and that we need not really worry about it. This habit of mind is only to be expected in a country where the high death-rate has produced callousness to human suffering and diminished the respect and reverence with which human life is regarded in civilised societies.

There is no foundation for any such expectation. As Mr. Marten says in his Census Report for 1921 :—

“ Still less is it true, as is often asserted in Sanitary reports and elsewhere, that the temporary variations in the economic circumstances of the people form the principal factor in determining the variations of the birth or death-rate; though where, as in cases of great famine or scarcity, the available supply of food falls below the minimum subsistence limit, the economic factor becomes necessarily dominant. The annual fluctuations of the birth and death-rate are therefore probably much more dependent on the intensity of the onslaught of the principal diseases, due to conditions of climate and environment, than to any supposed variation in the resisting power to them of the people owing to economic circumstances.”

* One regrets to have to state that in this category some economists are also included.

We should not, therefore, be led to believe that things will adjust themselves : here, as in other fields of human activity, things worth while have to be achieved ; they do not just happen.

RECOGNITION OF THE NECESSITY OF BIRTH-CONTROL.

Recognition of the necessity of birth-control in India has been somewhat slow. Official reports in the past contented themselves with recording the fact that the population was increasing at an alarming rate and that in many places the saturation point had been reached. Beyond this they would not go. Public health workers, official and non-official, in the course of their daily fight with ill-health and insanitary conditions, had it brought home to them that, unless the births were reduced, any substantial success in their efforts would only mean the widening of the difference between the birth-rate and the death-rate and a corresponding rise in the rate of increase of the population. In other words, the more successful they were the more they would aggravate the problem.

The phenomenal increase of population during the decade 1921-1931 burst the bonds of official reticence on the subject and for the first time we find a welcome change of attitude. The official publication 'India in 1931' anticipated the recommendations made in Dr. Hutton's Report that "in view of the present rate of increase, efforts to reduce the rate of infantile mortality should be preceded by precautions to reduce the birth-rate, and that if the luxury of 'baby-weeks' be permitted

they should at least be accompanied by instruction in birth-control." The Mysore Census Report (1931) says that the population in Mysore increasing at the present rate will soon reach a level at which the means of subsistence will be quite insufficient and puts forth a plea that the people should realise the need for conscious control of births. A similar warning is contained in the Travancore Census Report, as in Travancore population is fast outstripping the means of subsistence.

PROGRESS ALREADY MADE.

Birth-control is no longer a matter for academic discussion, as it was in 1916 when the first edition of this book was published. Nor are persons inclined to regard the subject with contempt, as once they did, in the mistaken belief that if the poverty of India were ascribable to increase of population, the ground would be cut from under their feet in ascribing it to political causes. Nobody said then, nor does anybody say now that birth-control will remedy all the political and economic ills of the country. The poverty of India is due to manifold causes and the increase of population is only one of them. The reduction of births will not, therefore, by itself be sufficient. Effort in other directions will be simultaneously necessary.

It is a happy sign of the times that, as in other countries, women have come forward and advocated birth-control. With the exception of one or two places, resolutions in support of birth-control have been passed at district, provincial and all-India women's conferences. We quote below, as a typical instance, the resolution

passed at the Lucknow session of the All-India Women's Conference held in January 1933*:

" This conference feels that on account of the low physique of women, high infant mortality and increasing poverty of the country, men and women should be instructed in methods of birth-control in recognised clinics. It calls upon all municipalities and local bodies to open such centres and invites the special help of the medical authorities towards the solution of this important problem."

The subject has been discussed in the bigger municipalities, e.g. Bombay and Karachi, and has evoked the support of influential papers like *The Times of India* and *The Statesman*, and even a scientific journal like *The Indian Medical Gazette*. Southern India (and particularly Madras) has made great progress in this respect. There is in Madras a Neo-Malthusian Society, which includes among its members some highly honoured names in Indian public life. The Senate of the Madras University accepted in 1932 the proposal to give ' a course of instruction in birth-control to all final year students in both B.A. Pass and Honours classes in every college within the jurisdiction of the University.' The Madras Legislative Council discussed the subject on no less than three occasions, and in October 1933 the Government of Madras † announced their decision to establish birth-control

* A similar resolution was passed by the Women's Emancipation Movement in India and the All-India Women's Conference held in Calcutta in December 1933.

† Quite the cleverest thing I have seen on the subject was a cartoon by Shunker in *The Hindustan Times*. It represents the Madras Government as a bewildered man in search of funds (for birth-control clinics) but this bewilderment and anxiety soon changes into relief and satisfaction when he finds an army of unemployed youths from other provinces and countries (to which Madras migrate in large numbers) marching with joyous steps towards him with purses in their hands as a contribution to the solution of a difficulty felt by both parties.

clinics in the Presidency. It is well-known that in the progressive State of Mysore birth-control clinics in the four principal hospitals have been in existence since 1930.

OBJECTIONS TO BIRTH-CONTROL.

There are several objections urged against artificial control of conception, and it is perhaps as well to notice them here. Some of them apply to birth-control generally and others to birth-control in India particularly. We will consider them in these two categories.

ARGUMENTS AGAINST BIRTH-CONTROL IN GENERAL.

- (i) Any such course being unnatural must be both wrong and harmful.

This is the fundamentalist view. By way of reply it seems sufficient to say that civilization in every phase is a process of subduing nature and not of obeying it ; that it is the part of the wise man to divert the course of Nature into salutary and beneficent channels rather than to leave it alone and suffer the consequences. Again, it is at best too much to presume that the loss to humanity by the prevention of births will be greater than the loss by the destruction of life which is going on before our eyes through the operation of the principle of Natural Selection.

Regarding artificial limitation being harmful it may be freely admitted that some methods

undoubtedly are, but not all. It is, for instance, said that the use of contraceptives leads to sterility. Dr. Raymond Pearl recently found after examining 2,000 cases that the rate of fertility in women using contraceptives was higher, not lower, than that found in women who made no attempt at birth-control. No *one* method is suited for *all* cases; no *one* method is the best in every circumstance. *The method to adopt in any individual case must be a matter for the decision of medical men and persons in charge of birth-control clinics.* No harmful results would follow from the adoption of an approved and suitable method.

- (ii) Any such scheme must give an impetus to promiscuity and immoral living.

The experience of countries where contraceptives are largely used gives no warrant for such an expectation. There is no proof that there is more immorality (as apart from freedom) now than before. To say that it leads to immorality among the unmarried means that the morality and chastity of women is based on fear alone. There is also no proof that there is more immorality in small than in large families. Those who want to lead an immoral life usually succeed in getting what they want: it is only the ignorant and the poorer classes that suffer by lack of facilities for acquiring knowledge of contraception. There is nothing good in

this world that cannot be turned to evil purpose. The same is true of contraception. But this is no reason for withholding its use for legitimate purposes.*

- (iii) It is conceivable that in the course of antenatal destruction we might lose a Newton or a Faraday.

This is just an apprehension and therefore difficult to deal with. The circumstances favourable or unfavourable to the birth of a genius are not known. There are several theories none of which fits every case. The most common is that elderly parents have a higher proportion of clever children than youthful ones. Mr. A. F. Dalton in a paper read at the British Association said that he had found that in the case of parents over 45 years of age the proportion of children who obtained eminence was twice as great as the normal; in the case of parents over 60 ten times as great, and in the case of parents over 70 fifty times as great. It may be of interest to note that Mahatma Gandhi was born when his father was over 45, and that he was the youngest of a family of six brothers and sisters. Another theory is that great men usually come from large families. Mr. W. T. Gun made a special study of the

* Die-hards are fond of using this argument to frighten unenlightened people. They used it against female education and also against the prevention of child-marriage in India, but failed. So will they fail in using it against birth-control.

subject and the results of his enquiry show that out of 192 eminent individuals whose cases he examined, 59 belonged to families with over 7 children, which might be called large families ; 65 to families of 5 to 7 children, which might be called medium families ; and 68 to families with under 5 children which might be called small families (*vide* Eugenics Review for January 1931, pages 253-262). The reader may interpret these figures as he pleases. To my mind, birth-control will not make matters worse : it might make them better. Children who die have no chance of showing their genius. Under a system of family limitation, such deaths will be much fewer. A great deal of waste of human life will be prevented. In addition, with improved environment and better nutrition when families are small, there is every reason to hope that children will be fitter and will be able to give a better account of themselves than when they are born in unrestricted families.

- (iv) Birth-control is dysgenic rather than eugenic in its effect.

It is true that the knowledge of contraception is more widely spread among the upper and middle than among the lower classes of society. The tendency of birth-control therefore has been to reduce the number born in the highly educated and more successful families rather than in the less prosperous ones. As this means

that population is replenished to a larger degree from inferior stocks, the effect on the race is injurious.*

To counteract this tendency, the activities of 'birth-controllers' in Western countries are nowadays more and more directed to areas where the poorer classes live. Considerable success has already attended these efforts. The superior stocks are at the same time being exhorted to have larger families. Thus there is a dual campaign, both for and against birth-control.

(v) The ideal contraceptive has not yet been found.

It is necessary to examine this argument a little closely. What people expect an 'ideal' contraceptive to be is one which would be absolutely reliable and fool-proof, would cause no inconvenience or loss of pleasure to either sex, would not interfere in any manner with the spontaneity of the sexual act, would be harmless both to the couple practising it and to children they may wish to have later, would be cheap and easy to use, requiring little care and not necessitating any previous lesson from an uninterested person, medical or otherwise. This demand is like that of a child who asks his doctor to prescribe something which would be sweet to the taste, would not interfere with his ordinary food and daily routine, and would cure him at once. In this sense there is no ideal contraceptive, as there is no ideal medicine. In the present state of knowledge, while it is true that barring sterilisation there is no absolutely foolproof

* Dr. C. C. Hurst, at a meeting of the British Association in Leicester, stated that recent statistics showed that in England, the United States, France, Holland and other advanced countries, owing to the rapidly decreasing birth rate of the more intelligent families the intelligence index of the population was declining rapidly.

method, there are undoubtedly methods which, intelligently used, decidedly limit and in certain cases almost eliminate the risk of conception. Scientists* are at the same time engaged in discovering better and more trustworthy methods of birth-control, and, as Lord Horder said at the annual conference of the Royal Sanitary Institute at Brighton in 1932, while it by no means followed that they would find a method entirely and always reliable it was highly probable that they would get near enough for our purposes.

ARGUMENTS AGAINST BIRTH-CONTROL SPECIALLY
APPLICABLE TO INDIA, IN ADDITION TO THOSE
MENTIONED ABOVE.

(a) It is opposed to the religious beliefs and sentiments of the Indian people.

This is an argument which is often met with but is not easy to deal with, for different persons hold different views regarding what constitutes religion, and one naturally does not want to get involved in a religious controversy.*

So far as the Hindus are concerned, there is no religious text that can be cited against birth-control. India has been the home of sexual science and ancient texts describe numerous devices (some of them rather

* See the annual reports of the International Medical Group for the Investigation of Contraception, published under the auspices of the Birth-Control Investigation Committee, 26, Eccleston Street, London, S.W. 1.

† Nobody has ever suggested the application of compulsion. Mexico is probably the only state where they have a system of State enforced birth-control. All that the advocates of birth-control ask for is that facilities should be given by the State to those who desire to acquire this knowledge. *Those who regard birth-control as opposed to their religious beliefs need not do so.*

crude) for preventing conception. All that Hinduism enjoins is one son for the performance of religious ceremonies, and we are advocating a normal family of three children. The Hindu State of Mysore, with a devout and orthodox ruler at its head, could not have given official recognition to birth-control without giving this aspect of the matter very careful consideration. In regard to intimate matters people do not usually speak their mind and in such cases practice is, more often than not, in advance of precept. Girls in India are generally married before they are 18 and before they reach 45 they have 27 years within which to go on producing children. Even allowing a very liberal space of 3 years between one child-birth and the next, we should on an average have families of 9 children among healthy persons. But such large families are very uncommon. Some kind of birth-control must obviously be generally practised.

In relation to the followers of Islam, attention is invited to the view expressed by Major J. M. Shah, I.M.S., at a recent debate at the Rotary Club, Bombay. He did not think that Islam would be against anything which was for the good of the community as a whole. That excessive child-bearing is bad is the view of the great Muslim poet Zauq, the poet-laureate at the court of the last King of Delhi. He says :—

*' torà kamarè shàkh ko kasrat ne samar kī
duniyā men garān bariye aulād ghāzab hai.'*

It means—Excess of fruit breaks the back of the branch (of a tree). Excessive child-bearing is a terrible evil in the world.

(b) Birth-control is beyond the pockets and much beyond the intelligence of the vast masses of the Indian people.

This is a valid objection. Some inexpensive method or methods specially suitable for India will have to be devised and in any case advice and assistance in matters of birth-control will have to be provided free of charge for poor people. That is where the necessity of official clinics comes in. Non-official agencies will neither be able to provide the funds nor will they command the confidence of the rural population. Rural uplift workers could be of immense help in this direction.

(c) Production is ahead of population and consequently birth-control is unnecessary.

This is an economic argument, which will be dealt with in Chapter VII. Without committing ourselves to any view for or against this proposition, we may say at once that this is not the consideration on which the justification for birth-control is based. We consider birth-control an important factor—supplemented of course by public health activities—in reducing the terribly high death-rate in India, and improving the health and vitality of the people, irrespective of the index number for production. The aim is the reduction of mortality by one-half and this, it is held, cannot be achieved unless there are fewer births.

· THE CASE FOR BIRTH CONTROL.

Having dealt with the objections, it is now necessary to state the main case for birth-control. It has been said in a previous chapter that marriage is a biological

necessity for a human being and that marriage must take place at a mature age. Every healthy human being has in him (or her) the capacity to produce a much bigger family than his means can permit. The earning capacity does not, in the case of the average human being, increase in proportion to the number of children he can produce. Some kind of planning or regulation is clearly indicated. In the absence of such planning, there is a thinning of numbers by disease, malnutrition and decline in vitality. This is specially applicable to India where the average income is already very low and every accession to the family means less bread for each mouth that has to be fed.

If the need for regulation of births be admitted, there is no alternative to contraceptive methods. For it would be placing too much strain on human nature to ask young married couples to practise abstention. Not only would such restraint on their part be impracticable, but, if practised for any length of time, it would destroy their health and would lead to irregularities in sex relations, perversions and eccentricities.

Then there is the case of the married woman suffering from tuberculosis or heart disease or nephritis, for whom pregnancy is fraught with danger to life.

Persons suffering from infectious diseases, epilepsy, inebriacy or mental deficiency must also practice birth-control—if married, as is too often the case in India, where practically everybody gets married—as compulsory sterilisation like what is being done by Nazis in Germany is entirely out of the question.

Chapter VI.

MIGRATION.

WE now take up the investigation of the second factor influencing the growth of population, namely, migration. As there is practically no immigration in this country, under the operation of economic (as apart from political) causes, with which alone we are concerned in this study, the result of this movement is a diminution of numbers or in other words a slackening of the pressure of population on the means of subsistence. It is often urged that there is no practical necessity for a diminution of numbers, as the population of a congested tract has merely to move to adjacent parts where the land is crying for labour, or to go outside the country to places where they would be able to make a handsome living. But is this really true? Is migration from one province to another or emigration outside India capable of affording the relief that is needed?

IS EMIGRATION A PERMANENT SOLUTION FOR OVER-POPULATION.

Before we discuss the Indian question, some remarks on the general question of emigration as an outlet for a country's surplus population will not be out of place. A comprehensive estimate is given in the World Economic Survey for 1931-32, from which we quote the following remarks :—

“ The freer movement of peoples, which resulted from the disturbance of traditional economic organisation as the new industrial technique spread from country to country in the nineteenth century, found its most effective and dramatic expression in the great trans-Atlantic migrations of European

peoples. This movement of the European peoples was, however, declining even before the war. The capacity of the receiving countries was being taxed, assistance was not granted so freely, and the immigrant found it gradually more difficult to establish himself in his adopted land. For a variety of reasons the post-war decade has witnessed a further sharp contraction of these migratory movements. Legislative restrictions were super-imposed on economic difficulties and *in the years of depression since 1929, the migration has dwindled almost to nothing.* Even in these new areas of migration, therefore, *the restrictions on freedom of movement tend to multiply, especially in years of crisis.* In the older areas, this tendency is much more pronounced." (Pages 15-18.)

Most of the countries which registered a balance of emigrants before the war have now a balance of returning immigrants, and countries that were once the great fields for emigrants are now exporting population. In 1931, the United States—which in ordinary years received annually about 700,000 immigrants from Europe—admitted only 43,000 immigrant aliens, and 89,000 aliens left the country. The change of the position of Great Britain in the matter is even more striking. Her large overseas empire in average years affords a natural outlet for a great portion of her surplus population, but the position is now reversed.* For the first time in modern history (apart from the war years) Britain had an inward balance in 1931 and 1932. The annual average of the net outward movement of British subjects from the British Isles to places out of Europe was about 1,93,000 in the ten years 1904-1913, and 1,12,000 in the years 1921-30. In 1931 there was an inward balance of 37,000,

* The reader who wishes to study the subject in detail should read the paper on "Migration from and to the United Kingdom" by Messrs. H. Leek and T. Priday, published in the *Journal of the Royal Statistical Society*, Part II, 1933.

while for 1932 this increased to 50,000. Various schemes of Empire migration are mooted from time to time, but it does not seem likely that they will succeed so long as the acute depression of agriculture in the Dominions lasts. The present trend of thought among the nations of the world is in the direction of self-sufficiency in the matter of both goods and population, and emigration, once regarded as a solution for over-population, is now a factor of no importance, and is useless as an escape from regulating the population of any country. As Mr. A. S. Mowat pointed out in a recent article in *The Listener*, 'the world's population is distributed among a number of compartments like those in an egg-box, each ruled over by a National government and each presenting lofty or even impassable barriers to neighbouring populations. Some compartments are full; some are empty; but man is either forbidden altogether to enter the adjoining compartment, or can only do so upon conditions which are intended to isolate him more or less completely from his former friends and associates.'

For an adequate appreciation of the Indian problem, we must consider the general problem of the mobility of labour, the scope for development outside the recognised congested areas within the country, and the conditions attending any movement on a considerable scale outside India. Of these three questions, the second involves a consideration of the larger and more important practical question of the pressure of population on the means of subsistence, which will be taken up in the next chapter. To avoid overlapping, only those features of the general question which affect the possibility of emigration will be considered in this chapter.

IMMOBILITY OF THE INDIAN
POPULATION.

The stay-at-homeness of the people of this country is the theme of every census report. In 1901 only 9.27 per cent. of the whole population were enumerated outside the district of birth. In 1911 this proportion fell to 8.7 per cent. Even of these, two-thirds were born in a contiguous district and the movement, perhaps, from one village to another contiguous one which happened to lie in another district had no connection with the pressure of economic causes. For the census of 1931 the figures are much the same. Of the total population of India enumerated by birth-place, 350½ million odd, less than one million were living elsewhere. The general immobility of the population is ascribed to two causes, one social and the other economic. The social cause is to be found in the caste system. The operation of this factor will be readily understood so far as the Hindus are concerned, but it does not affect Muslims and Sikhs. The economic cause is the dependence on one calling, namely, agriculture. As agriculturists all over the world have a conservative outlook and as particularly in India agricultural development is somewhat slow, there is no inducement to the people to leave their homes. To these two causes Dr. Hutton adds a third. He supports the view of Mr. Jacob, Census Superintendent for the Punjab in 1921, that the smaller the unit of population the larger the proportion of persons born elsewhere, and *vice versa*. Accordingly he is of the opinion that India, containing as it does nearly one-fifth of the world's inhabitants, must be expected to show proportionately low figures of migration.

GENERAL AND SPECIAL CAUSES.

The above is a very imperfect presentation of an important matter. For this stay-at-homeness there are other general and special causes. Man, as Adam Smith has told us, 'is of all sorts of luggage the most difficult to be transported.' The force of early associations makes him very unhappy in strange surroundings*—not the Indian only but even the advanced Westerner—and as he has not much money with him he finds no amusement that can replace the happy evenings he spent in the midst of his family. Should illness or misfortune befall him in the home of his adoption, as likely as not, he might find himself a broken man. And, what is more important, the change in his social position is not such that he can find a recompense therein for what he has left behind him at home. The conception of the economic man on which the science of economics is based is hardly ever fully realised in practical life. We have still to meet the man who is not moved by sentiment, who has no domestic attachment, to whom differences of race, religion, speech, environment or political condition are of no account and who puts all these aside at the remotest semblance of monetary advantage. These are the initial difficulties which confront the Indian as they do his more advanced European confrere when the dire necessity of breaking old ties presents itself to both. By themselves, perhaps, they would not be insuperable ; for the Indian, though more stay-at-home than the European, is not altogether insensible to the influence of economic causes, provided he is convinced that the balance of advantage is on the

* Those acquainted with Urdu literature will recall the forceful couplets of the poet Anees on '*Gharib-ul-watani*'.

side of making the change. That he does not move is really due to the fact that he is not welcomed as an immigrant in any country, and that in places where his labour is needed onerous restrictions are placed on his elementary rights as a citizen, so that he recoils from the prospect of working under those conditions. That this is no sweeping generalisation will be seen as we now proceed to examine in detail the possibilities of migration (i) within India and (ii) outside India.

SCOPE FOR MIGRATION WITHIN INDIA.

The main currents of migration within the country are :—

- (i) The movement from Bihar and Orissa and the United Provinces into Bengal,
- (ii) the movement from Bihar and Orissa, Bengal and the United Provinces into Assam, and
- (iii) the movement from Madras, Bengal and the United Provinces into Burma.

MOVEMENT FROM THE UNITED PROVINCES INTO BENGAL.

The province of Bengal gains to the extent of about a million* immigrants, chiefly from the adjacent province of Bihar and Orissa and the United Provinces. The causes of the large exodus from the United Provinces and Bihar and Orissa, and the comparative stay-at-homeness of the people of Bengal can be traced to differences in economic condition. The United Provinces is an old and settled country where almost all the land

* The figures are given below and show a downward tendency :—

					Net gain to Bengal by migration
1911	..	..	..	..	1,250,000
1921	..	..	..	..	1,132,194
1931	..	..	..	..	771,936

that is available for cultivation has been taken up ; there is a large body of landless labourers, who have no occupation for several months in the year ; the holdings of the cultivators are very small ; the soil is dry and the rainfall is scanty and capricious ; and, with the exception of Cawnpore, there is no industrial town in the province. The standard of living of the people is of the lowest description, and their rate of growth is beyond the capacity of the land to support. Emigration is, therefore, an economic necessity in spite of the fact that owing to caste scruples the residents of the United Provinces have to put up with much inconvenience when they go outside. The All-India Census Report for 1901 says—" The fact seems to be that, having regard to the capacity of the soil, the United Provinces is more densely peopled than any other part of India, and a larger proportion of its inhabitants find it necessary to seek a livelihood beyond its limits." As the population now is one million* more than in 1901, these remarks apply with even greater force to-day than they did thirty years ago.

MOVEMENT FROM BIHAR AND ORISSA INTO BENGAL.

A similar state of things prevails in the Province of Bihar and Orissa. In Bihar the proportion of landless labourers in the total population is much larger than in the United Provinces. With the exception of the Tata

* The exact figures are :—

					Population of U.P.
1901	..	∴	..	..	47,312,441
1931	..	..	..	..	48,408,763

Iron and Steel Works there are no large local industries to engage them; and agriculture requires comparatively few hands during the greater part of the cold weather. The emigration from the Chhota Nagpur Plateau is interesting in several ways. The population contains a very large aboriginal element, which, as has been previously stated, is the most fertile of all the elements in the Indian population. Their movement is sometimes ascribed to the fact—rather as a matter of reproach than of felicitation—that the aboriginal has no strong tie to bind him to his home, and that as he is not handicapped by the caste restrictions and social customs of Hinduism, migration is much easier for him. The Bengal Census Report for 1911, however, shows that the truth is just the reverse, and in fact that is what one should expect *a priori*. A blind love of one's native place would be inconsistent with the spirit of adventure and enterprise characteristic of civilized nations and would therefore be met with only among backward and primitive communities. However great the love of home may be, the aboriginal has to leave it under the pressure of economic causes. The infertility of the soil, the primitive methods of cultivation, the thriftlessness of the population, and primarily the large increase in numbers—these are the factors which explain the emigration of this primitive race.

To this precarious position of the population of Bihar and Orissa and the United Provinces, Bengal presents a different picture. The soil is fertile, and the proportion of landless labourers small. The people are averse to manual labour and other occupations requiring much expenditure of physical energy. The immigrant

from the United Provinces and Bihar and Orissa has therefore the whole range of labour at his disposal. He finds enough occupation as policeman, gatekeeper, leather-worker, etc. Another important demand for labour arises from industrial concerns, such as jute, tea, coal-mining, road and railway construction, etc. But this movement of population is seldom of a permanent character ; it only arrests for a while without destroying the intensity of the population problem in the congested areas. The up-country man seldom brings his women and children with him ; he retains his old connections and sends remittances as often as he can. There is hardly any perceptible improvement in his standard of living due to the higher wages he receives ; on the other hand he stints himself as much as he can to send money home to pay off his village money-lender and redeem the mortgage on the ancestral land, to assist his aged parents and other relatives in distress, and thus earn a good name in his ' biradari ' to which he looks forward to returning after a time. His thoughts are centred in his home and what his people must be thinking of him, and he cares more for the goodwill of the people with whom his old age will be spent than for the casual remarks of strangers who do not and cannot share his deeply cherished hopes and associations.

IMMIGRATION INTO ASSAM.

The tea-gardens of Assam make heavy demands on cooly labour which cannot be met within the province. Of the 27 million acres available for cultivation, only 8*

* The figure is for the year 1929-30 and represents the gross cultivated area—See Statistical Abstract for British India from 1920-21 to 1929-30, p. 402.

million acres have been brought under the plough, and the indigenuous population is too well-off to undergo the discipline and hard work of cooly life. Labourers have therefore to be imported from a distance and are received chiefly from the Chhota Nagpur Plateau, the Sonthal Parganas and the plains districts of the United Provinces and Bengal. Bihar and Orissa, it is stated, supplies Assam with twice as many labourers as the rest of India put together, excepting of course Assam itself. Owing however to depression in the tea industry the volume of immigration into Assam is not very much on the increase. In 1921 the net gain of the province by migration was 1,140,752 souls. In 1931 it was 1,241,011, or, in other words, the absorption of immigrants was at the rate of 10,000 persons annually. The acreage under tea and the population of the tea gardens at each of the three Censuses is given below :—

—	1911	1921	1931
Acreage under tea ..	360,000	420,000	434,000
Population censused in the tea gardens ..	702,000	922,000	980,000

It will be seen that the acreage increased by 16.7 per cent. during the decade 1911-21, but for the decade 1921-31 the increase was only 3.3 per cent. Similarly while the population of the tea gardens showed a large increase of 31.3 per cent. during the decade 1911-21, the percentage of increase during 1921-31 was only 6.3. The adoption of the restriction scheme, the grant of

preference by Great Britain in favour of Indian tea, and the improvement in the conditions of recruitment of labour which has recently been effected as a result of the recommendations of the Whitley Labour Commission are all factors which may lead to an increase in immigration in the near future. But it is not likely that tea alone will absorb a very much larger surplus population from other parts of India. An attractive land colonisation policy might succeed, but until the recruitment of labour for the tea-gardens can be placed on an absolutely free basis, such a policy cannot be adopted. It would gravely prejudice the vested interests of the tea industry, for very few people would voluntarily serve as coolies if they were given an opportunity of becoming landed proprietors on easy terms. The unhealthiness of the country due to the prevalence of Kala Azar and the absence of facilities for communication also account in part for the reluctance of outsiders to settle in Assam.

IMMIGRATION INTO BURMA.

The movement from Madras, Bengal and the United Provinces to Burma takes place under conditions very much similar to those in Assam. The indigenous population will not do menial work and is willing to pay for those who will do it. Madras* supplies the major portion of the labour requirements of Burma. The rice milling industry and the oil-fields of Burma owe their

* Of the total number of 617,521 immigrants from India recorded at the 1931 Census the distribution among the three provinces named is as follows :—

Madras	297,543
Bengal	158,055
United Provinces	86,166

present-day importance and size to the Madrasi labourer. Indian immigration into Burma is important in more ways than one. In the first place it relieves the pressure in the congested Indian districts.* Secondly, it gives Burma the labour it requires for its agricultural and industrial development. Thirdly, the free and unconventional life of the Burman has a very chastening effect on the caste-ridden and fetish-loving Indian. When Pegu was annexed in 1852, the British Government found Lower Burma quite undeveloped and very sparsely inhabited. They accordingly welcomed Indian settlers on Burmese soil and gave them grants of land under very favourable terms. With the annexation of Upper Burma the same problem manifested itself, and it was the capital of the Indian money-lender that enabled the Burman of Lower Burma to venture far north and improve his position by becoming a peasant proprietor instead of remaining as a field labourer in his native place. By the close of the nineteenth century speculative purchase of land had become very common and the rate of agricultural extension was exceedingly rapid. In the meantime, however, the Government of Burma found an unsatisfactory state of things gradually establishing itself in the province. The cultivators on the assigned lands instead of being drawn from the congested Indian districts were mostly engaged locally on strictly business principles, with no thought of inducing a settlement of small cultivating owners with occupancy rights, and the grantees degenerated into indolent receivers of rent. The Indian capitalists on the other hand quickly came

* It is believed that about 300,000 Indians emigrate to Burma every year, which means that on an average the emigrant stays about 2 years in Burma and then returns home.

into possession of the land on which they had advanced money and reduced the cultivator to the position of a tenant. Such transfers were viewed with apprehension by the local government who had formed quite different expectations and accordingly the system of grants and the power of transfer to alien non-agriculturists was considerably modified. The security gone, there was a contraction of credit, a retardation of agricultural development, and consequently a block to Indian immigrants in the way of rural pursuits. The Burmans also began to recover their lost position, and by now they have occupied nearly all the fertile land that can grow rice at a profit. The Indian immigrant is now engaged mostly in urban occupations and supplies most of the manual labour and hard physical work which the well-to-do Burman peasant proprietor does not care to undertake. The prospects of Indian immigration are not very bright. The cry of 'Burma for the Burmans' is now becoming popular. Even in 1911, the Census Superintendent reported that the Burman cultivator preferred to employ Burmese labour on his field to cheaper Indian labour to which he had long been accustomed. This tendency is now gathering strength. With the heavy fall in the price of paddy due to the present economic depression, anti-Indian feeling is unfortunately growing and there have also been Indo-Burmese riots in some places. The average Burman feels that the Indian with his low standard of living is taking away the food from his mouth. The idea is therefore to eliminate Indian competition, and particularly to eliminate the *Chetti*—the Madrasi creditor—who takes away Burmese lands in lieu of unpaid debts. At present Indian immigration

into Burma is unrestricted, but if and when Burma is separated from India it is not unlikely that some kind of control may be introduced. The Secretary of State for India submitted towards the end of December 1933 a memorandum to the Parliamentary Select Committee from which it appears that he considers it necessary to arm self-governing Burma with power to regulate the entry of Indians into that country. There is already some talk of the necessity for a labour convention between India and Burma to safeguard Indian interests. We are not concerned here with hypothetical speculations as to what a separated Burma would do to Indian labour, but it seems clear that immigration into Burma offers no solution for the increasing congestion of population in India.

SCOPE FOR EMIGRATION OUTSIDE INDIA.

Having examined the possibilities of migration within the country, we take up the question of emigration to other countries. Mr. Marten, in his Census Report for 1921, states that 'India sends out a number which we are unable to estimate exactly, but which may be put down as about 1.7 millions.' Dr. Hutton says that 'there were about $2\frac{1}{2}$ million Indians resident out of India at the census (of 1931)', or just a little more than $\frac{2}{3}$ per cent. of the total population. There was an increase of one million during the decade 1921-31, and the number may to this extent be regarded as satisfactory, but it should be borne in mind that this figure includes a large number of Indians who have settled down in other countries and whose families have been born there. As regards actual emigrants during the decade 1921-31,

the figure given by the Census Commissioner is one million, which means that *about one hundred thousand persons leave the country every year*. The annual growth of population is three millions. Consequently, the relief afforded by emigration is infinitesimal. Such as it is, the prospects of its continuance on the present scale are not reassuring, as we shall presently see.

The distribution of the Indian population resident overseas is as follows :—

Indians Overseas.

British Empire 2,300,000.

Ceylon	778,170
Malaya	624,009
Mauritius	268,870
S. Africa	165,500
Trinidad, etc.	138,667
British Guiana	130,540
Fiji	75,117
Kenya	26,759
Tanganyika	23,422
Jamaica	17,599
Zanzibar	15,246
Uganda	11,613
England and Wales	7,128
British Isles (elsewhere)	2,115
Hongkong	4,745
Elsewhere	10,500

Foreign Territory 104,000.

Dutch East Indies	25,000
Dutch Guiana	35,000

Madagascar, etc.	..	..	7,500
Portuguese East Africa	..	..	5,000
U.S.A.	..	..	5,000
Persia	..	..	3,900
Iraq	..	..	2,362
Elsewhere	..	..	20,238

The two most important countries for Indian emigration at present are Ceylon and Malaya. We will consider each of these separately.

EMIGRATION TO CEYLON.

The movement to Ceylon is of very long standing and affords an outlet for the over-grown population of the Southern districts of Madras, Mysore, Travancore and Cochin. It has also been very useful to Ceylon as she would never have reached her present development but for the cheap labour the island was able to obtain from India. The chief occupation of the emigrants is on tea plantations and their number has increased from 276,788 in 1881 to 778,170 in 1931. The Madrasi is generally a willing emigrant and as he is drawn mostly from the depressed classes he has no scruples of caste or social restrictions which would make his stay in Ceylon uncomfortable. Owing however to the severe economic depression, recruitment of Indian labour for rubber estates in Ceylon was stopped in 1930 and even on tea estates the demand for labour is diminishing. The Government of Madras discourage emigration by refusing to give labourers assisted passages. There has recently been a large exodus of Indian labourers consequent on the reduced minimum wage notified by the

Government of Ceylon. To the end of September 1933 as many as 41,998 labourers availed themselves of the scheme of free repatriation and returned to India. The presence of the Indian immigrant in Ceylon is now not much liked by the Sinhalese. Early in 1933 there was a movement in Southern Ceylon for the boycott of Indian traders. House-to-house visits were organised with a view to dissuading the Sinhalese from patronising Indian traders, giving all their custom to Sinhalese traders. In December 1933 at the annual session of the All-Ceylon Youth Conference one of the resolutions passed was "that the continued presence of a large foreign immigrant population was detrimental to the economic and political welfare of Ceylon" and demanded the immediate introduction of legislation to regulate the presence of such foreigners. In the presence of such feeling, it does not seem as if Ceylon will take many more Indian immigrants in future. One sees no reason to differ from Dr. Hutton's view that 'the absorption of Indian labour in that country has nearly reached the saturation point.'

EMIGRATION TO MALAYA.

Next after Ceylon in importance for emigration from India comes Malaya. The emigrants find occupation on rubber plantations, tin mines, oil fields, and Government and public departments. Recruiting of Indian labour was stopped in August 1930 on account of the fall in tin and rubber prices and considerable restrictions have already occurred. Only such persons are now assisted to emigrate to Malaya as have left their families there. The total Indian population of 624,009 in Malaya at the 1931 Census was reduced to 517,000

at the end of 1932. The emigration to Malaya is of considerable economic value to India. According to the Census report (1931) 'land held by Indians in the Straits Settlements alone was estimated as worth Rs. 2,45,01,059; Savings Bank deposits held by Indians in Malaya amounted at the end of 1931 to the equivalent in dollars of Rs. 35,58,614, an average of Rs. 146 per depositor, while remittances by Indians from Malaya to India during 1931 came to a total of Rs. 38,83,065—an average of Rs. 69 per remittance.' In present circumstances, however, the value of Malaya as a field for Indian emigration is practically nil.

EMIGRATION TO OTHER COUNTRIES.

It seems unnecessary to consider other countries in detail. The British Dominions are practically all closed to Indian immigration. The bigger ones—*e.g.*, South Africa, where there is a resident population of nearly 1,65,500 Indians—have either stopped Indian immigration completely or impose such restrictions as amount in practice to stoppage. In South Africa where 80 per cent. of the Indian population is born in the Union, not only has Indian immigration been stopped since 1913 but strenuous efforts are being made to repatriate even the domiciled Indian community. It is understood that about 13,000 South African-born Indians have already been repatriated. If those that remain can succeed in securing satisfactory terms from the Government of South Africa and are permitted to stay on, India will have every reason to congratulate herself.

RECAPITULATION.

It will now be quite clear that emigration has no promise for the surplus population of this country. All

doors are barred against the Indian and he must find subsistence for himself within the boundaries of his own country.

On abstract grounds there is no justification for a country relying on emigration as an outlet for its surplus population. The ordinary rule of private life is that you go to another man's house only if he invites you and wants you, and not when you are neither invited nor wanted, in spite of the fact that he may have many more rooms than he needs for his own use. What holds good for individuals holds good as between one country and another. Dumping, whether of goods or of populations, is equally objectionable, and nations have every right to protect themselves against either. The truth is that in proposing remedies which transgress political boundaries one has to take account of several things besides natural justice and 'metaphysical' rights of citizenship. Every nation is and must be perfectly free to decide what the character and composition of its population should be and no country has any right to complain so long as the action taken is not contrary to international law or the recognised principles of dealing between civilized nations. Countries which allow their population to outrun the means of subsistence are a menace to world peace and should be regarded as such. Prevention is better than cure, and there is more truth in the old adage than we care to know. As Dr. Chalmers says—

“ It is not by drawing off the redundancy of the population after it is formed that we can uphold a well-conditioned state of society, but by preventing the formation of that redundancy.”

Chapter VII.

PRESSURE OF POPULATION ON THE MEANS OF SUBSISTENCE.

WE have so far been dealing with the physical aspect of the problem of population, that is, with its visible manifestation in births, deaths and migration. The investigation of its economic aspect has also some practical significance and to this we now turn.

THE OCCUPATIONAL CENSUS.

The means of subsistence, or occupations, as recorded at the census of 1931, of the population as a whole, are given below :—

Occupation.	Total maintained (in lakhs.)	Percentage of total population.
Exploitation of Animals and Vegetation	2,348	67.0
Exploitation of Minerals	5	.1
Industry	342	9.7
Transport	53	1.5
Trade	188	5.4
Public Force	17	.5
Public Administration	28	.8
Professions and liberal arts	59	1.7
Miscellaneous (Persons living on their income, Domestic Service, Insufficiently described or Unproductive Occupations)	466	13.3

The proportion supported by 'Exploitation of Animals and Vegetation'—which refers chiefly to

agriculture and agricultural pursuits—is smaller than at the 1921 census, at which the percentage was 72.4. Dr. Hutton thinks that the decrease is ‘apparent rather than real,’ and that the change is due to the number* of females, 572 per 10,000, who have returned their occupation as domestic service. It would, therefore, be more correct to say that 72 per cent. of the population of India is supported by agriculture and about 10 per cent. by industry. When therefore we have examined the present position and future possibilities with regard to agriculture and industry, we will have covered 82 per cent. or practically the whole of the population. We will accordingly confine our examination to these two occupations only.

AGRICULTURE.

The proportion of the population dependent on agriculture is very large and has been steadily on the increase. The proportion was 61 per cent. in the year 1891. It rose to 66 per cent. in 1901, and to 72 per cent. in 1921. In 1931 it was stationary at this figure. The acreage† per head of population of British

* At the 1921 Census the proportion supported by ‘Domestic Service’ was 173 per 10,000. At the 1931 census this proportion was returned as 708. As there could not have been such a large increase in the number of domestic servants, the Census Commissioner thinks that many females who are supported by agriculture have been wrongly returned as domestic servants.

† That these figures do not exaggerate the pressure on land will be clear from the following quotation from Sir Thomas Holderness’ “Peoples and Problems of India” :—

“We shall not be far wrong if we assume that there is less than one acre of cultivated land per head of total population, and not more than an acre and a quarter per head for that portion of the population which is directly supported by agriculture” (Page 139).

India supported by agriculture from 1901 to 1931 is given in the following table :—

Census Year.	Population supported by agriculture.	Acreage cultivated (Net)	Acreage per head of population supported by Agriculture.
1901 ..	155,476,788	199,708,422	1.28
1911 ..	173,695,022	215,981,603	1.24
1921 ..	183,700,000	212,259,506	1.15
1931 ..	190,000,000	228,160,853	1.20

The acreage cultivated in 1921 was abnormally low, being less than for 1911, in spite of a larger number supported. Otherwise, the trend of the figures for acreage per head of agricultural population is steadily downward.*

The same results are obtained by a comparison of the total population of British India with the area under food crops, *vide* figures given below :—

Census Year.	Total population (British India).	Area under food crops.	Acreage under food crops per head of total population.
1911 ..	243,797,647	204,103,413	0.82
1921 ..	246,856,191	215,000,000	0.87
1931 ..	271,526,933	213,846,000	0.79

Sir Daniel Hall has calculated that in Western countries two to two-and-a half acres of land under

* The Central Banking Enquiry Committee (1931) state in their report that 'many authorities, among whom Mr. Darling may be mentioned, consider that this extent of an average holding (*i.e.*, a little over an acre per head of the agricultural population) is inadequate to maintain an agricultural family in ordinary comfort in the conditions which exist in India at the present day' (Page 40).

cultivation are required to provide food per head of population. In India a little over three-quarters of an acre does this duty.

In a lecture delivered in Coimbatore about September 1933, Rao Bahadur B. Vishwanath, Government Agricultural Chemist, averred that owing to the fact that there was a shortage of roughly five lakhs of tons of nitrogen in the country, India was at present producing food supply for only two-thirds of the population. He arrived at this conclusion in the following manner. One person of the population would require 9.66 lbs. of nitrogen as food and so a ton of nitrogen would feed 230 persons. That is, one cultivated acre of India would give enough food for one person. On this basis there must be for British India alone 272 million acres under cultivation, whereas we have actually only 228 millions, or there is a shortage of 50 million acres. The malnutrition that we see around us will thus be better understood.

Sir Thomas Holderness thought that according to Indian ideas and a traditional standard of very thrifty and frugal living, five acres of good irrigated land would support a family of two adults and three children comfortably, but when we got down to the man who held less than five acres of land, and that of poor quality and not irrigated, then there was want and a hard struggle for existence. In the Report of the Royal Commission on Agriculture (1928) the number of cultivated acres per cultivator is given as follows :—

Bombay	..	..	..	..	12.2
Punjab	..	..	..	..	9.2
Central Provinces and Berar				..	8.5

Burma	..	..	..	..	5.6
Madras	..	..	..	..	4.9
Bengal	..	..	..	..	3.1
Bihar and Orissa	..	..	..	..	3.1
Assam	..	..	..	..	3.0
United Provinces	..	..	..	..	2.5

(page 133).

The first four provinces contain a total population of 76 millions, and the remaining five have a population of 192 millions. Or, in other words, 28 per cent. of the population may be said to possess economic holdings whereas the remaining 72 per cent. is in possession of holdings which are definitely uneconomic.

As regards possibilities of extension of cultivation, we can form a rough and ready idea by comparing the cultivated with the cultivable area. The term 'cultivable' area, as used in agricultural statistics, represents the sum of the net area sown, the culturable waste and current fallows. The term 'culturable waste' includes such areas as groves not classed in the areas sown, and also areas under bamboos and thatching grass when not forming part of forest areas. The gross cultivated area* of British India in 1930-31 was 278,732,854 acres. The total cultivable area was 432,749,580 acres. This means that 64.4 per cent. of the cultivable area was under the plough.

In the figure for the cultivable area there is included under 'culturable waste other than fallow' a large

* Figures taken from the Statistical Abstract of British India for the period 1921-22 to 1930-31 (the latest available).

acreage of 154,017,000: As the Royal Commission on Agriculture very rightly point out,* 'it is certain' that much of this area 'could in no conceivable circumstances be brought under tillage.' With this qualification in mind let us examine the figures for 1930-31 for each province :—

Province.	Cultivated area (gross.)	Cultivable area.	Percentage of 2 to 3.
1	2	3	4
1. Madras	44,548,839	57,467,950	77.5
2. Bombay	43,127,962	49,913,952	86.4
3. Bengal	29,033,989	35,005,417	82.9
4. United Provinces ..	38,137,963	48,785,165	78.1
5. Punjab	30,674,561	45,500,867	67.4
6. Burma	21,817,883	81,606,754	26.7
7. Bihar and Orissa ..	30,824,691	37,715,997	81.7
8. Central Provinces and Berar	28,712,893	42,873,645	66.9
9. Assam	7,929,094	26,875,821	29.5

It will appear that, with the exception of Assam and Burma, practically the whole of the cultivable area is under cultivation in the older provinces and that the possibility of a large extension of cultivation is negligible.

As regards Assam and Burma, the latter may now be left out of account as it is practically certain that Burma will be separated from India under the new constitution. In Assam there is undoubtedly

* See para. 526, page 605 of their Report.

some land awaiting settlers, but, as has been pointed out in the chapter on migration, there are no bright prospects of colonisation in that province at present.

FALL IN PRICES OF PRIMARY PRODUCTS.

We have all along been considering acreage irrespective of values. When, however, we consider the average income of the agriculturist, the results are even more depressing. According to the estimate made in 1931 by the Indian Central Banking Enquiry Committee, the total gross value of the annual agricultural produce works out at about* Rs. 1,200 crores on the basis of the 1928 price levels. On this basis and taking into consideration the probable income from certain subsidiary occupations estimated at 20 per cent. of the agricultural income, the average income of an agriculturist in British India does not work out at a higher figure than about Rs. 42, or a little over £3 a year. In view of this the Committee are of opinion that 'the general poverty of the agricultural classes is a matter which is beyond dispute.'

The Committee made it quite clear that in working out the above figure they had ignored the fall in prices since 1928. This is a factor which has now assumed grave proportions and can no longer be ignored. The

* Though India is admittedly a much poorer country than the United States of America, it is worth while noting that in the U. S. A. for a population of 35 millions supported by agriculture, the total annual agricultural production is on an average valued at Rs. 3,000 crores, while in British India an agricultural population of 190 millions is supported on a production of Rs. 1,200 crores, now very much reduced owing to the fall in prices.

variations in wholesale prices of staple articles in India will be seen at a glance from the table given below* :—

Monthly average.	Index number for British India.
1913	100
1928	145
1929	141
1930	117
1931	96
1932	91
1933 January	88
February	86
March	83
April	84
May	87
June	89
July	91
August	89
September	88

Taking rice, wheat, jute and cotton separately, the position up to June 1933 was as follows† :—

	Index number for June 1933 (July 1914=100).
Rice	65
Wheat	86
Cotton	87
Jute	45

* See the Economist Trade Supplement dated 25th November 1933.

† See Review of Trade of India in 1932-33, page 8.

As a result of this severe fall in prices, the value of agricultural produce has fallen very low. The latest available figures* are given below :—

Value of total production of the principal crops considered in each province in 1928-29 and 1931-32 :—

Province.	1928-29 Value (in lakhs of rupees).	1931-32 Value (in lakhs of rupees).	Change in value (in lakhs of rupees).	Percentage decrease from 1928-29.
Madras	1,80,78	1,01,25	—79,53	—44.0
Bombay	1,20,52	66,56	—53,96	—44.8
Bengal.. ..	2,32,59	1,06,71	—1,25,88	—54.1
United Provinces ..	1,40,52	92,21	—48,31	—34.4
Punjab	76,78	37,49	—39,29	—51.2
Burma.. ..	63,38	29,20	—34,18	—53.9
Bihar and Orissa ..	1,35,17	71,05	—64,12	—47.4
Central Provinces ..	68,77	32,42	—36,35	—52.8
Total ..	10,18,51	5,36,89	—4,81,62	—47.3

This was for 1931-32, when the index number stood at 96. For 1932-33 the index number would be about 91 and for 1933-34 it would be in the neighbourhood of 88. So, the value of agricultural produce in the provinces mentioned above would not on present day prices exceed 500 crores. The percentage decrease would accordingly not be less than 50. A decrease of purchasing power of 500 crores of rupees for nearly

* See Review of Trade of India in 1932-33, page 10, Table I.

190 million people is a very serious matter. The immensity of the hardship caused to the agricultural population—in fact to the entire rural population, which is 90 per cent. of the total—can be realised when we remember that while the income of the peasant has been reduced to less than half, his cash commitments by way of rent—taking into account the remissions that have been granted—cess, interest, repayment of loans, etc., have not diminished in anything like the same proportion. For the time being at any rate, agriculture has ceased to be a paying occupation in India. This statement can best be illustrated by citing the case of Bengal where the average annual income of the agriculturist is only Rs. 84, while his average expenditure, without any provision for payment of interest on his debts, not to speak of repayment of capital, is estimated at precisely the same figure, which points to a condition of insolvency. (See Mr. Nalini Ranjan Sarkar's 'Problems of Agricultural Indebtedness'—page 8.) As Lord Linlithgow, who presided over the Royal Commission on Agriculture, says :—

'To a very great extent, the cultivator in India labours not for profit nor for a net return, but for subsistence. The crowding of the people on the land, the lack of alternative means of securing a living, the difficulty of finding any avenue of escape, and the early age at which a man is burdened with dependents, combine to force the cultivator to grow food wherever he can and on whatever terms he can.' (The Indian Peasant—page 25.)

IRRIGATION.

It is often said that the development of agriculture on a large scale is largely a question of irrigation. It is quite true that in the daily life of the vast majority of the population prosperity and happiness depend on

whether or not the soil is well watered. Irrigation serves two purposes : one is to improve the soil on areas which would otherwise be desert ; the other is to remove the gambling element in the rainfall and ensure the land a regular supply of moisture. We have therefore to examine this point of view and see what part irrigation can play in mitigating the pressure of population on the land. The Irrigation Commission of 1901-03 in their report state that out of a total rainfall of 125 billion cubic feet only 51 billion cubic feet is available for surface flow of which only 6.75 *billion cubic feet is utilised in irrigation. Or, in other words, 59 per cent. of the total rainfall in this country is absorbed in sustaining plant life, in maintaining moisture in the soil and in replenishing the subsoil water supply, or is lost by evaporation, 6 per cent. is used in artificial irrigation, while the balance of 35 per cent. is carried away by the rivers. That is to say, 87 per cent. of the total surface flow passes to waste in the sea.

The Commission comment on these figures as follows :—

“ By those who have no knowledge, or only an incomplete knowledge of local conditions, it may be thought that a large part of the great volume of water, amounting to more than 44 billion cubic feet which now passes uselessly to the sea, might have been utilised, or could be utilised in the near future for an enormous extension of irrigation. We are far from considering that irrigation in India has reached its ultimate limit but we are convinced that there are many parts of India where the utmost use of every available means of irrigation will fail to afford complete protection against failure of the rainfall.”

* This figure may be larger now owing to the construction of new canals since that date.

The limitations on the development of irrigation are of manifold character ; they arise from the extent and distribution of the rainfall, the conformation of the surface of the country, the character of the soil, and, last but not least, from the limited financial resources at the disposal of the Government.

In places where the rainfall is assured and well distributed, irrigation is not in demand and does not pay, *e.g.*, in Eastern Bengal, Assam and Lower Burma. In places where the rainfall is precarious, storage works are generally required which throw a burden on the State, over and above the cost of constructing canals and distributaries. Moreover, their construction involves the submergence of large cultivable areas and there is considerable wastage by evaporation and percolation.

The flat surface of the alluvial plains of Northern India is more favourable for the construction of canals than the broken and rugged surface of Western and Southern India. For the construction of tanks, however, the position is reversed, and for a similar reason the construction of storage works (without which water cannot now be made available in dry areas) is not possible. For wells the flat surface has a decided superiority over hilly tracts and this is one of the reasons why well-irrigation is more common in Northern India than elsewhere. The black cotton soil of the Deccan is generally more retentive of moisture and does not stand in need of irrigation so much ; moreover there is a very large area of barren and uncultivable waste which even with irrigation can never be made to yield crops that will pay. All these difficulties are more or less outside

human control but perhaps with a lavish scale of expenditure their intensity could be abated. For the construction of "productive" works the field is extremely limited. Some of the new schemes like the Sutlej Valley Project* and the Sukkur Barrage which when begun were estimated to bring in large net returns are not showing any profit and it is not known when they will begin to pay. Of the bigger provinces, only three† (Punjab, Madras and Burma) show a profit to the State on the financial results of their major works. Bombay, Bengal, United Provinces, Bihar and Orissa and the Central Provinces show losses. The progress made in irrigation in British India during the last two decades is given in the table below :

Year. 1	Area irrigated (in acres.) 2	Total sown area (in acres.) 3	Percentage of (2) to (3).
1910-11 ..	40,895,474	223,064,601	18.4
1920-21 ..	40,000,000	212,259,000	23.1
1930-31 ..	49,697,000	229,115,000	21.4

The above figures will show that the percentages of irrigated to total sown area has practically remained constant throughout this period at about 20 per cent., in spite of the large irrigation schemes carried out during the last 20 years. The population on the other hand has increased by 12 per cent. The proportion of the

* The Sutlej Valley Project, it was estimated in 1928, would show a profit of 12.06 per cent. on the capital outlay in 1931-32, whereas it showed a loss of 2.47 per cent. Since its inauguration in 1926-27, it has been showing losses every year.

† See the Finance and Revenue Account of the Government of India for the year 1931-32, Account No. 32, pages 191-2.

irrigated to the total sown area in each province, as it stood in 1930-31, is stated below :—

	Proportion of irrigated to total sown area.		
Punjab	56 per cent.
United Provinces	29 ..
Madras	27 ..
Bihar and Orissa	21 ..
Bombay	13 ..
Assam	10 ..
Burma	8 ..
Bengal	7 ..
Central Provinces and Berar			4 ..

With the exception of the Punjab, the United Provinces and Madras, irrigation is not a serious factor to be taken into account so far as mitigating the pressure on the land is concerned. Irrigation in certain districts of the North West Dry Area in the Punjab has undoubtedly worked wonders, but the rate of progress achieved in that area cannot be taken to indicate the future possibilities of irrigation in India. Even in the Punjab, canal irrigation has not proved an unmixed blessing. The raising of the subsoil water level, or water-logging, as it is called, has made several areas altogether uncultivable. The spread of alkali on the land deposited with the water from the canals is proving deleterious to its fertility. And, lastly, canal irrigation has proved injurious to the health of the surrounding locality by bringing malaria in its train.

Reference is frequently made to the importance of the Sukkur Barrage which will provide a perennial supply of water to an area of about 1,850,000 acres at

present inadequately served by inundation canals, and will also irrigate a further 3,625,000 acres. The Sutlej Valley Scheme, the Cauvery Mettur Scheme, the Sardar Canal Scheme and the Damodar Canal Scheme are also of value in giving relief. But the success of some of the new schemes is not yet established, and even when they do prove successful, the gross production of the new areas will not provide even for one-third of the annual growth of the population.

Considering therefore all that has been said above, it would appear that *the increase in the agricultural population is reaching the saturation point and extensions and improvements in agriculture, including canal irrigation, afford no prospect of relief for the large annual addition to the population that is now taking place.*

INDUSTRY.

Whenever it is pointed out that the population in India is increasing at an enormous rate the remedy suggested is greater industrialisation of the country. Nobody would ever dream of suggesting for a moment that industrialisation is not desirable. The dependence of the country to such a large degree on agriculture is a serious evil in itself and diversity of occupation is badly needed. We should do everything that is possible to extend existing industries and to promote new ones. But industrial development also has its limits and it by no means follows that it would be capable of absorbing the annual growth of population now taking place at the rate of three millions a year.

Past experience holds out no hope of such a rapid development as one would desire. The total population

supported by industry at the Censuses of 1901, 1911, 1921 and 1931 is given below :—

Year.			Population supported by Industry.	Percentage to total.
1901	..	..	45,719,922	15.5
1911	..	..	35,012,558	11.1
1921	..	..	33,167,018	10.3
1931	..	..	34,200,000	9.7

It will be seen that industry is to-day supporting a much smaller number than it did in 1901. Not only this but the percentage to the total population supported by industry is steadily decreasing from census to census. The main reason for this is to be found in the displacement of man by the machine as industry develops on modern lines. The bulk of the population supported by industry as recorded at the last census is engaged in unorganised industries. Organised industries do not employ more than 5 million persons or 1.5 per cent. of the total population. In 1921 such industries supplied occupation to only 1 per cent of the people. The daily average number of hands employed by establishments in British India to which the Factories Act applies was 1,266,395 in 1921 and 1,553,169 in 1931. To-day it will be, if anything, less, not greater, owing to depression in practically every large industry.

As regards the future, there is no desire on our part to indulge in hypothetical speculations or to indicate the possibilities of development in each and every industry. But there are some industries which are frequently mentioned in connection with the population question and even though the material available in

regard to them is incomplete and not always reliable some facts relating to the point under consideration are given below for what they are worth. The industries in question are :—

- | | |
|------------|--------------------|
| (1) Cotton | (6) Iron and steel |
| (2) Jute | (7) Oil |
| (3) Tea | (8) Paper |
| (4) Coal | (9) Cement |
| (5) Sugar | (10) Matches |

Of these, jute, tea and coal, though employing a large number of persons, do not need consideration. There are practically no imports of these articles and these industries are already being worked to the utmost of their capacity, to meet home demand and in respect of jute and tea a large portion of the produce is exported abroad. Production cannot be increased until demand increases. The remaining industries are briefly considered below.

THE COTTON TEXTILE INDUSTRY.

The total number of actual workers, *i.e.*, earners plus working dependents, returned at the census of 1931 as engaged in the cotton industry is given below:—

	Workers.
Cotton ginning, cleaning and pressing	257,205
Cotton spinning, sizing and weaving	2,883,573
Total ..	3,140,778

The number given above includes those dependent on hand spinning and hand weaving. The number employed in factories was only 492,284.

With the employment which it at present affords to the people the cotton industry is able to meet 72 per cent. or three-fourths of the demand for cloth in India, and only one-fourth is imported. If we presume that the industry will expand in the next few years to such an extent as to meet the whole of the country's requirements in respect of cloth it cannot employ at the outside more than $\frac{1}{3} \times 492,284$ or 164,094 persons, in addition to those it employs at present.

THE SUGAR INDUSTRY.

The total annual consumption of sugar in India is between 5 and 6 million tons. Prior to the war India manufactured about $2\frac{1}{2}$ million tons and imported the rest. In 1932-33 her home production went up to 4,727,000 tons. The imports of sugar in pre-war years came next after imports of cotton goods and were valued at over Rs. 14 crores. In 1932-33 these imports were valued at a little over Rs. 4 crores. The Indian industry is capable of now supplying the entire requirements of the country and it is not likely, owing to the overstocking of the world markets at present, that India will be able to export sugar to any considerable extent. The industry will therefore not be able to support many more persons than it already does.

The total number of makers of sugar, molasses and gur returned at the census of 1931 was 40,049, of which the average daily number engaged in factories subject to the Indian Factories Act of 1930 was 15,203. In 1930-31 the production of sugar in India was 3,250,000 tons, whereas in 1933-34 it is estimated to be 5,000,000 tons. On the same rate of employment the number

engaged in the industry now could not be more than 62,500. As production has reached the limit of home consumption, no further employment in the industry can be hoped for.

THE IRON AND STEEL INDUSTRY.

The total imports of iron and steel into India in 1932-33 were valued at Rs. 530 lakhs. So far as pig iron is concerned, the imports are very small. India exports pig iron to other countries and the manufacture of pig iron has received some stimulus under the Ottawa Trade Agreement between Great Britain and India. In regard to manufactured iron and steel, the Tata Iron and Steel Company and two or three other companies are supplying a portion of the demand, but it must be admitted that as compared with Western countries India's *per capita* production of steel is insignificant. On the other hand the annual consumption of iron and steel in India is only about $1\frac{1}{2}$ million tons, which is also a very low figure. The imports of manufactured iron and steel in 1932-33 were very low, and amounted to 326,000 tons only—the remaining portion of the demand must have been supplied in the country. The Tata Iron and Steel Company has succeeded in creating within 25 years a fine industrial town (Jamshedpur) of over 80,000 inhabitants. According to the Census of 1931 the total number of persons employed in Iron and Steel smelting and Steel rolling mills was 30,484. The reader can form his own estimate as to the further relief which the industry can afford to the surplus population of India.

THE OIL INDUSTRY.

The imports of mineral oils in India amount annually to about 200 million gallons. The annual production of petroleum in the country is slightly in excess of 300 million gallons, of which over 250 million gallons is produced in Burma. The combined production of the Punjab and Assam is a little over 50 million gallons. In view of the impending separation of Burma from India the development of this industry cannot be regarded as falling within the resources of India.

THE PAPER INDUSTRY.

The total value of paper and pasteboard imported into India in 1932-33 was Rs. 286 lakhs. The value of the paper now made in India is about Rs. 150 lakhs per annum, which shows that about double the quantity produced at home is imported from abroad. The consumption per head of the population is very small as compared with Western countries. There is severe trade depression at present and the existing mills are not producing the maximum output of which they are capable. The total number of persons employed in the production of paper (including paper pulp) at the census of 1931 was about 7,000. It is the opinion of those best qualified to judge that even when trading conditions improve it will be several years before the demand increases sufficiently to justify new mills or the extension of existing ones.

THE CEMENT INDUSTRY.

This industry has made considerable progress during the last 15 years. In 1920 India produced about

90,000 tons of cement. In 1932 she produced 582,182 tons. The imports of cement in 1932-33 amounted to 83,000 tons. The Indian factories are capable of producing one million tons, but there is not so much demand for cement at present. On present production, the industry employs between 20 to 25 thousand workmen. As only one-sixth of the present demand is met from imports, the utmost further relief that it can give would be 3 to 4 thousand extra workers.

THE MATCH INDUSTRY.

The average daily number of persons shown in the census returns as employed in match factories in 1931 was 17,137. The imports of matches in 1932-33 were valued at Rs. 52,000 only. India is now producing practically all the matches she requires. Some idea of the development that has taken place may be obtained from the fact that in 1922-23 the customs revenue realised from the import duty on matches was Rs. 1,53,62,315 while in 1931-32 the amount so realised was only Rs. 1,08,130, or less than one-hundredth of the previous amount. The capacity of the industry to employ a large number of additional men may now be regarded as *nil*.

SMALL INDUSTRIES.

It is unnecessary for our purposes to consider small industries, such as soap-making, pottery, hosiery, boot and shoe making, etc. Under the protection afforded by our high revenue tariff several such industries have in recent years come into existence and are doing fairly well. The relief, however, which such industries can

give is at best local and not very substantial. They are unable as a rule to compete with the products of large scale factories and their production is consequently limited to areas beyond the reach of imported products.

Summarising briefly we may say that—

- (i) *Industrialisation is most desirable and should be pursued with as much vigour as possible ;*
- (ii) *though there is scope for employment of our surplus population in large scale industries, such scope is comparatively very limited ;*
- (iii) *small industries afford local relief and tend to be displaced by large scale industries, which employ a smaller number per unit of production than industries worked by man-power. For this reason, the percentage of the total population supported by industry is diminishing at each census, thereby aggravating (instead of affording relief to) the pressure on land.*

THE POSITION IN THE PROVINCES.

We have so far been examining the all-India position with regard to pressure of population on means of subsistence, and were it not for the fact that conditions are not the same in all provinces we should not have considered it necessary to go into provincial details. We will now pass in rapid review* the position as it prevails in the major provinces† of India.

* The figures throughout this section refer to British territory only, as complete figures for Indian States are not always available.

† Out of the nine major provinces, the position in seven only will be reviewed. Assam and Burma present special features, which have been already brought under review in dealing with the all-India position in this chapter and in the chapter on migration.

MADRAS.

Madras, with a population of 46,740,107 and a density of 329 to the square mile, is very heterogeneous in composition. The figure for the whole province is a theoretical abstraction and does not convey any idea of the wide variations in local conditions ranging from 89 per square mile in the Agency Division to 471 per square mile on the west coast. During the last 40 years its population has increased by 31.1 per cent. which gives a decennial average of 7.7. The only natural divisions which are sparsely populated are Agency (89) and Deccan (145). Of the former it is observed that it will ever remain in its present condition, as the soil is not capable of adaptation to the needs of an appreciably greater population, while its seasons of unhealthiness render colonisation unlikely. The Deccan is a bare and rugged area which owes even its present density to the doggedness of the people, who, with practically no irrigation to support them when the monsoon fails, and a rainfall the lowest in the Presidency, manage to eke out a hand to mouth existence.

Even as early as 1881* the opinion was expressed that the Presidency had reached the limit of cultivation. At the census of 1921, when the population was 42,318,985, Colonel (now Major-General) A. J. Russell, then Director of Public Health, Madras, expressed the opinion that the population was very close to its saturation point. During the decade 1921-31, while the population increased by $4\frac{1}{2}$ millions, *i.e.*, by 10.4 per cent., the net area under cultivation increased from 33,012,244 acres in 1921-22

* See Madras Census Report for 1881.

to 34,224,124 acres in 1930-31, or by about one million acres, *i.e.*, by 3 per cent. The Provincial Census Superintendent for 1931 reports that possibilities of agriculture on present methods have more or less reached a maximum, and the Presidency can no longer feed itself.

An investigation into the economic condition of the agriculturists in certain districts of the Presidency was made by a committee appointed by the Madras Government with the concurrence of the provincial legislature and their report was published in 1931. Some of their conclusions which will be found to apply to other parts of India also are reproduced below :—

- (i) While population has increased, extension of cultivation has not kept pace with it ;
- (ii) Fragmentation of holdings has increased and the average area of holdings has gone down ;
- (iii) The indebtedness of the agricultural population is heavy, hampers cultivation and reduces incomes ;
- (iv) The margins available for the maintenance of the cultivator's family, after paying the assessments, are either inadequate or *nil* ;
- (v) In most rural parts the value of the agricultural produce is insufficient, after meeting the demands of the Government revenue, for the maintenance of the agriculturists. (Pages 98-99 of the report.)

Emigration is increasing and, as the Census Superintendent says, an increasing resort to emigration

is usually a sign of increasing pressure upon subsistence and a preliminary or first resort before positive deceleration of natural increase appears. Ceylon, Malaya, and Burma are full of Madrasi immigrants, but the most pronounced increase has been to Bombay, where the number of Madrasis has quadrupled from 44,039 in 1921 to 1,79,457 in 1931. Owing to the absence of mineral wealth and specially of coal and iron the establishment of large industries of the modern type is not feasible. Madras is the only province where the Government has seriously entertained the question of birth-control and prominent publicists like the Right Honourable Srinivasa Sastri have openly recognised the necessity of a lower birth-rate and a slower increase in population.

BIHAR AND ORISSA.

The province of Bihar and Orissa is in a very unfavourable position. The people are improvident and resourceless, the soil is infertile, there is not much scope for canal irrigation, and there are no large industries* (excepting the Manbhum and Singbhum coal fields and the Tata Iron and Steel Industry) to draw off the surplus population from agriculture, which supports 80 per cent of the people of the province. Bihar and Orissa has an area of 83,054 square miles and a population of 37,677,576 souls, which gives a density of 454 to the square mile. As in the case of Madras the mean density gives little indication of its great variation which is as high as 1073 in the Muzaffarpur district (when calculated on the cultivable area) and as low as 43 in the feudatory state of Rairakhol. For Bihar proper the density reaches

* The population supported by industry was only 7.7 per cent. in 1931, which is lower than the all-India figure of 9.7.

the high figure of 642 per square mile. During the 50 years from 1881 to 1931, the population has increased by 21.6 per cent. Practically the whole of the cultivable area is under cultivation; the percentage of cultivated to cultivable area being 81.5 in 1920-21 and 81.7 in 1930-31. Whereas in 1920-21 the population per 100 acres of sown area was 139, it rose to 154 in 1930-31, which gives an indication of the increasing pressure on land. The Provincial Census Superintendent for 1931 observes as follows :—

“ In the course of the last 10 years the population has been increasing at a rate almost, if not quite, unprecedented,* and at the same time there has been a definite improvement in the standard of living.

Has the productivity of the soil in Bihar and Orissa increased appreciably since 1921? The answer to this question must be in the negative. There may have been a few acres of waste land or jungle reclaimed here and there and brought under cultivation, but this has not been done on such a scale as to add materially to the natural resources of the province. Indeed, according to the official returns of the Agricultural Department, *the proportion of the total area under cultivation in 1931 was slightly smaller than in 1921*. Nor can it be asserted that the yield per acre of the soil has been increased to any great extent by new and improved methods of exploitation. Is there any indication, then, of the development of fresh resources, apart altogether from agricultural produce, which would help to support the surplus population? Practically none.”

Sir Edward Gait, who was Census Commissioner for India in 1911 and later rose to be Lieutenant-Governor of Bihar and Orissa, said at a meeting of the Royal Society of Arts in London on June 3, 1932, that the agricultural population of Bihar and Orissa had already passed the

* Although the birth-rate has fallen during the decade 1921-31 from 41 to 36.5 per mille, the survival rate has more than doubled.

saturation point. He added that in this province there were areas in which large numbers of agricultural holdings were too small to support the number of people who were dependent on them, and one or two members of each family had therefore to go away for a large part of the year to work in the coal mines or in the jute mills or other industrial occupations in order to remit money to their homes, to eke out the agricultural income of the family. In his opinion, it was this tendency to multiply up to the limit, this great pressure of the population on the soil, which, more than anything else, accounted for the poverty that prevailed in many parts of India.

Bihar and Orissa stands first among the provinces in the matter of emigration. In 1921 it sent out 1,955,036 persons to find a livelihood elsewhere. On account of the economic depression, the numbers diminished in 1931 to 1,758,130, but still they are the largest of any province. The emigrants largely go to Assam and Bengal, and were it not for this tendency to emigrate in large numbers, it would be extremely difficult for the means of subsistence to keep pace with the great fecundity of the people of the province and particularly of the aboriginal element to be found in the Chhota Nagpur Plateau.

THE UNITED PROVINCES OF AGRA AND OUDH.

The United Provinces have a population of 48,408,763 persons and a density of 456 to the square mile. During the period of 50 years from 1881 to 1931, the population has increased by 10.6 per cent, of which increase the greater part occurred during the last decade,

i.e. 1921-31. In spite of the fact that there was an increase of 30 lakhs in the population since 1921, there was no increase in the area under cultivation. The exact figures are given below :—

Gross area cultivated in :—

1921	..	..	38,594,883 acres.
1931	..	..	38,137,963 acres.

(Figures taken from the Agricultural Statistics of India for the years 1920-21 and 1930-31 respectively).

As will have been seen already, the size of average holding is only 2.5 acres, and is the smallest in India. 71.8 per cent of the cultivable area, or practically the whole of it, is under cultivation. Mr. Blunt says in his Census Report for 1911, page 18 :—

“ The figures of cultivable area are somewhat misleading. The cultivable area is the sum of the cultivable waste, old and new fallows, and the cultivated area. But more or less all over the province the cultivable waste includes a large percentage of land which is really barren : either because though it could be cultivated it could never be cultivated at a profit, or, because it is required for other uses subsidiary to agriculture. It includes, for instance, threshing floors, well-runs, and village paths. It was calculated at the Rae Bareilly Settlement that the amount of so-called cultivable waste which was really cultivable was 3 per cent of the whole area instead of 18.5 per cent as returned. This fact very seriously affects the proportions of cultivated to cultivable and cultivable to total.”

What is true of Rai Bareilly is true of other districts in the United Provinces, as well as of districts in other

parts of India. Of the 48 districts in the province, there are :—

- (i) 10 districts with 80 to 90 per cent of the cultivable area under cultivation ;
- (ii) 23 districts with 70 to 80 per cent of the cultivable area under cultivation ;
- (iii) 7 districts with 60 to 70 per cent of the cultivable area under cultivation, and only
- (iv) 8 districts with cultivated area below 60 per cent of the cultivable area. These districts are to be found in the Himalaya West, the Central India Plateau and the East Satpuras. They are areas of very low density, being covered by hills, forests or rocky wastes. They have always been sparsely populated, and will continue so to remain.

The Indo-Gangetic Plain is a tract of very high density in which the limit of population which can be supported has been reached. The soil is very fertile and one-third of the gross cultivated area is irrigated and thus immune from drought. Being the cradle of civilisation from time immemorial, it contains a large number of towns whose population is not, like the rural population, entirely dependent on agriculture. There is not in this tract much cultivable land that is not under the plough. Economic conditions in the United Provinces are very similar to those in Bihar and Orissa. 11 per cent of the population is supported by

industry. There are no large modern industries* with the exception of a few mills in Cawnpore and some sugar factories started within the last two or three years. 75 per cent of the population is dependent on agriculture. As the soil is unable to support increasing numbers, there is a large flow of emigrants from the province. The total amounted to 1,557,451 in 1931, as against 1,399,794 in 1921. The United Provinces come next after Bihar and Orissa in order of net loss by emigration.

BENGAL.

With a density of 646 to the square mile and a population of 50,114,002, Bengal is the ninth of the provinces in area and first in respect of population. During 1881-1931 the population has increased by 37.9 per cent. The Provincial Census Superintendent for 1931 is of the opinion that Bengal could support at the present standard of living nearly double its present population. Let us therefore examine the facts closely. First, as regards agriculture which supports 70 per cent of the population, while there were 186 persons per 100 acres of sown area in 1920-21, there were as many as 214 persons in 1930-31, which† shows that the population is increasing faster than the area under cultivation. As compared with other provinces, Bengal supports the highest number of persons per 100 acres of sown area, *vide* figures given below (for the year 1930-31).

* The Census Superintendent, 1931, remarks as follows :—

“ Industry is, however, still relatively of very little account, in this province.

† Figures taken from the Agricultural Statistics for India for 1920-21 and 1930-31 respectively.

Province.	Population per 100 acres of sown area.
Bengal	214
Bihar and Orissa	154
Assam	144
Madras	137
United Provinces	136
Punjab	88
Burma	81
Bombay	67
Central Provinces and Berar	61

Even in 1921, when the pressure on cultivation was not so great as now, Mr. Thompson, the Provincial Census Superintendent, was of opinion that there were far too many people on the land. For a cultivated area of 24,496,800 acres (according to the Agricultural Statistics for 1919-20) the number of actual workers in cultivation, ordinary cultivators, farm servants, field labourers and growers of special products was 11,060,692. This gives a figure of 2.215 acres per worker. In England and Wales (according to the Census of 1911) Mr. Thompson says there are 21 acres per worker, or 10 times as much as in Bengal. In the Argentine and the Western States of America, the number of acres per worker is greater even than in England. And in the Union of South Africa there are, according to Mr. Thompson, 83 acres cultivated per whole-time worker. The cultivation of less than $2\frac{1}{2}$ acres of land cannot employ more than a comparatively small number of days in the year, and for most of the year the agriculturist has little or nothing to do. This, he says, is the root

cause of the poverty of the average worker in agriculture in Bengal, that he has not nearly as much work to do as will fill his time. If there were fewer men on the land there would naturally be more work.

The value of the agricultural produce of the province has fallen in even greater proportion than the area under cultivation. In 1928-29, the estimate of the value of the principal crops in Bengal was Rs. 232 crores*. In 1931-32 it was only Rs. 107 crores, which means that there was a loss of 125 crores or 54 per cent, which is the largest decrease in agricultural income of any of the provinces of India. For the province as a whole, 82.9 per cent of the cultivable area is cultivated. There are 27 districts in the province, in 8 of which the percentage of cultivated to cultivable area exceeds 80, 10 have a percentage between 60 and 80, and the remaining nine have slightly smaller percentages. This does not show as if there was much room for expansion of cultivation.

We have already stated that the agriculturist in Bengal is at present in a state of insolvency, his average annual income being Rs. 84 and his average annual expenditure also being Rs. 84, which leaves him nothing for the repayment of interest, not to speak of the capital of his debt, which amounts to Rs. 31 per head.

Industry finds employment for 1,281,808 persons in addition to 114,878 who pursue the occupations included in it as a subsidiary means of livelihood. There has been a decrease of 392,217 workers from the figures of 1921.

* See Review of the Trade of India, in 1932-33, page 12,

Though definite figures are not available, we may form some idea of the growing pressure on the means of subsistence from the fact that while for the whole of India non-working dependents form 56 per cent of the total population and 44 per cent are workers, in Bengal non-working dependents form 71 per cent of the population and only 29 per cent are workers. This is the highest percentage of non-working dependents to be found in any part of India. At the Census of 1921, the percentage of workers in Bengal was 35, which shows the deterioration that has taken place in the position during 10 years.

It will, therefore, be clear that there is no justification for the optimism of the Provincial Census Superintendent and that the economic condition of Bengal is by no means such as to permit of any increase—much less doubling—in the population without a fall in the standard of living of the people, which is already not very high.

PUNJAB.

The Punjab has a total population of 23,580,852 persons and a density of 238 to the square mile. During the period 1881-1931, its population has increased by 39.2 per cent. Irrigation has worked wonders in developing production and population in certain parts of the Province. As an instance might be mentioned the Lyallpur district which had in 1891 a density of 15 per square mile and has now 368. The birth-rate (41.34 per 1000 in 1932) is the third highest in India, and the climate is generally favourable to increase of population. The

figures for cultivated area and population respectively at each of the last 3 censuses are given below :—

Year.	Total cultivated area (acres)	Total number of holdings.	Total population.	Acreage per head of population.	No. of acres per holding.
7	2	3	4	5	6
1910-11	28,483,489	3,248,775	19,578,573	1.45	8.76
1920-21	29,336,444	3,411,195	20,685,478	1.42	8.60
1930-31	30,674,561	3,759,183	23,580,852	1.30	8.01

It will be observed from the above table that the acreage of land cultivated per head of population as well as the average size of the holding are steadily diminishing from census to census.

For the whole of the province, 67.4 per cent of the cultivable area is cultivated. Of the 46 districts, 13 have a percentage of cultivated to cultivable of 80 and over, 14 between 70 and 80, and 4 between 60 and 70. Only 15 districts have a percentage below 60 of cultivated to cultivable area. Or, in other words, in 31 districts out of 46 practically the whole of the cultivable land is under the plough.

The burden of rural indebtedness per agriculturist is much higher in the Punjab than in any other province, as the following figures will show :—

Province.	Total indebtedness.	Average indebtedness per agriculturist.
	Crores	Rs.
Punjab	135	92
Madras	150	50
Bombay	81	49
United Provinces ..	124	36
Bengal	100	31
Bihar and Orissa ..	155	31
Assam	22	31
Central Provinces ..	36	30

To relieve the pressure on the land, no assistance has been afforded by industry. If anything, the opposite has been the case. The proportion of the population engaged in industry was 20 per cent in 1921 and only 17 per cent in 1931.

The Punjab Provincial Banking Enquiry Committee (1930) was of the opinion that production was increasing at a slower pace than population. This conclusion is confirmed by the Punjab Government in their observations on the Annual Report of the Director of Agriculture, Punjab, for the year 1932-33, quoted below :—

“ It is not fully realised that although the production of most crops has increased during the past 10 years, the increase in production has not kept pace with the increase in population. While it is not, of course, possible to give an accurate estimate, when the factors are so uncertain, the following table gives a comparative estimate of the average production per year in maunds, and the average production per head per year in maunds for various crops during the two periods 1910-11 to 1919-20 and 1920-21 to 1929-30 respectively.

Crops.	Average production per year in maunds during		Production per head in maunds during	
	1910-11 to 1919-20.	1920-21 to 1929-30	1910-11 to 1919-20.	1920-21 to 1929-30.
Wheat	80,876,638	82,168,650	4.1	3.9
Gram	25,423,024	26,121,032	1.29	1.26
Maize	11,318,124	9,941,644	0.57	0.48
Rice (unhusked) ..	10,741,632	12,188,752	0.54	0.58
Barley	8,984,543	7,158,684	0.45	0.34
Gur	8,461,125	8,938,926	0.43	0.43
Bajra	8,156,170	8,823,332	0.41	0.42
Rabi oil-seeds ..	4,549,524	4,841,880	0.23	0.23
Jowar	3,311,420	3,141,380	0.16	0.15
Cotton	5,118,174	8,145,702	0.24	0.39

These figures show how population has outpaced agricultural production." (Punjab Government Ministry of Agriculture, No. 276-D dated 29th January 1934.)

BOMBAY.

The Presidency of Bombay (including Sind and Aden) has a population of 21,930,601 persons and a density of 177 to the square mile. During the period 1921-31 the population increased by 13.3 per cent which, in the words of the Provincial Census Superintendent, is 'temporarily an embarrassment, since it means inevitably greater pressure on the chief source of wealth, the products of Agriculture.' The percentage of gross cultivated to cultivable area, which is the highest of any province, has been rising steadily, as the following figures* show :—

Year.	Cultivated area (gross) in acres.	Cultivable area in acres.	Percentage of cultivated to cultivable.
1901-11	42,064,677	49,179,283	85.5
1920-21	42,636,082	49,720,614	85.7
1930-31	43,127,962	49,913,952	86.4

The above figures show that there is altogether about 68 lakh acres available for cultivation. Practically the whole of this area is to be found in Sind. In the Bombay province proper there is not much scope for extension of cultivation.

The increase in the area under cultivation has also not kept pace with the increase in population.

* Figures taken from the Agricultural Statistics of British India for 1910-11, 1920-21, and 1930-31 respectively.

In 1920-21, Bombay had a population of 60 persons per 100 acres of sown area. In 1930-31, there were 67 persons, instead of 60.

Irrigation plays an insignificant part in this presidency, only 13 per cent of the total sown area in 1930-31 being irrigated. Particular reference must, however, be made to the Sukkur Barrage, which is designed, as already stated, to provide canal irrigation for about $5\frac{1}{2}$ million acres in Sind. Its cost is estimated at about Rs. 20 crores. At one time it was thought that it would utterly change the face of Sind and convert it into land overflowing with corn. Opinion is not so dogmatic now regarding its success, and if prices of agricultural produce remain where they are, it is doubtful whether it will attract many colonists from congested areas in other provinces.

In 1921, the population supported by agriculture was 63 per cent. In 1931 it was 66 per cent. Industry has not afforded any relief, for whereas it supported 13 per cent of the population in 1921, the percentage dropped to 12 in 1931. The Census Superintendent is of opinion that this decline is due to the world-wide depression which has been ever since in operation.

Cotton is the main industry of the Presidency but this, along with agriculture, is in the throes of a severe depression. In spite of a high tariff, several mills have recently been closed or placed in liquidation and at the time of writing it was reported that 60,000 mill workers out of a total of 1,45,000 in Bombay City were idle.

CENTRAL PROVINCES AND BERAR.

This province, which has the highest birth-rate (45.2 per 1,000 in 1932) of the major provinces, has a population of 15,507,723 persons and a density of 155 to the square mile. Its population has been steadily increasing from census to census, with the exception of a slight set-back in 1901 and another in 1921.

The province is mainly agricultural and has few important towns. Of the total cultivable area 67 per cent is under cultivation. This has been the percentage at each of the censuses of 1911, 1921 and 1931. There are 37 districts in all, out of which 9 have a percentage of cultivated to cultivable area of 80 and over ; 8 have a percentage between 60 and 80 and the remaining 20 have lower percentages. The Provincial Banking Enquiry Committee, in their very interesting report published in 1930, have given the following figures as typical of the provincial average for a village :—

Area of village	1,163 acres
Total population of a village	354 persons
(1) Landlords and rent-paying cultivators ..	186 ..
(2) Farm labourers and agricultural servants	104 ..
(3) Others	64 ..

The total number of rent-paying cultivators is 1,316,525 and the total area held by them is 27,812,392 acres or 21.15 acres per cultivator, of which 16½ acres are normally under crop. As the normal family is presumed to be of 5 persons, this gives an average of

3.3 acres under crop per head of the population supported by cultivation.

Industry is of comparatively minor importance in this province. Against a total number of 7,395,618 workers under the head 'Cultivation' there were only 735,645 workers, or just one-tenth, under the head 'Industry.'

The Provincial Census Superintendent says 'It can definitely be stated that there is no acute pressure of population in any part of the Central Provinces such as exists in some other parts of the world. But as the population increases the problem is obviously liable to develop.' There seems no reason to differ from this view.

RECAPITULATION.

The review of the position in the provinces will have made clear the fact that with the exception of the Central Provinces (and of Assam and Burma, whose position has not been reviewed in detail, but dealt with generally in preceding pages) the others, namely, Bengal, Bombay, the Punjab, Madras, Bihar and Orissa and the United Provinces, all suffer from increases of population unrelieved by a proportionate extension of the area under cultivation or anything like a similar extension of employment under 'Industry'—the two main occupations which cover practically the entire population.

GROWTH OF UNEMPLOYMENT.

A point which frequently crops up in connection with the population question is that of unemployment. It is generally believed that if unemployment increases

it is a sign that population is increasing faster than the available means of subsistence. If we put the reverse proposition it will perhaps command ready assent. Where there is no unemployment (as is reported of France) there can be no question of over-population.

It would have been interesting to study this question for India. We are sometimes told that in India there are at least 40 million unemployed. But all this is guesswork, as no figures of rural, industrial and middle class unemployment have ever been collected. An attempt was made to collect figures of unemployment among the educated classes in connection with the census of 1931, but it met with no response in any province and the returns received were so unreliable that the attempt had to be abandoned.

It is interesting to study the mentality which led to this result, as whenever a similar attempt is made again, it will have to be reckoned with. The remarks of the Census Commissioner are very illuminating :—

“ The reasons given for the failure of the return were various. In Burma the educated but unemployed are largely Indians and mostly to be found in Rangoon. The reason given for their failure to make the return was that they feared use would be made of it to repatriate to India those who were without employment. In Bengal the reason alleged was a fear on the part of the unemployed *bhadralok* that all that was wanted was a list of them for the police as political suspects, while another rumour accused the Government of trying to win over the unemployed from the Congress party by false hopes of employment. In Madras the attitude of the recipient of the unemployment schedule was described as ‘You will not give me employment, why should I fill up your schedule?’ and it seems likely that this feeling, together with a dislike of admitting failure to have

found employment and general apathy towards the census is to be taken as the most common cause of the schedule's failure " (page 338 of the Report).

Regarding unemployment in agriculture, no attempt has ever been made to estimate it, but it is very well known that there is seasonal under-employment in every individual case. The average cultivator is fully occupied for about 150 days only in a year, which means that for the remainder—the major part—of the year he is not earning anything.

There is indirect evidence to show that unemployment is on the whole increasing. *The ratio of workers to non-working dependents is steadily diminishing from census to census, vide figures given below :—*

Year	Ratio of workers to non-working dependents.		
1911 47 : 53
1921 46 : 54
1931 44 : 56

The trend of the figures is unmistakable and they are capable of only one interpretation, namely, that *population seems to be increasing at such a rate that the burden of the earners is becoming more and more heavy throughout the country as a whole.*

Chapter VIII.

RETROSPECT.

THE whole of the ground of the problem under consideration having been covered, a retrospect may here be permitted. What is the problem before us and how it might be solved ?

(1) Ever since 1901 the proportion of women to men in the general population has been steadily falling. Though there is an initial shortage of women at birth, the main cause of the disparity in the sex ratio is the heavy mortality among females throughout the reproductive period and is clearly attributable to early marriage, immature maternity and excessive child-birth. Among the undesirable consequences of this severe shortage of females in the country may be mentioned the following :—

- (i) Traffic in girls.
- (ii) Lowering of the age of marriage of girls.
- (iii) Disparity of age between husband and wife.
- (iv) Irregularity in sexual relations and promotion of venereal infection.

(2) Marriage of girls takes place at a very early age and cohabitation begins at an immature period of life.

(3) Of the total female unmarried population, 91 per cent is below the age of 15. The Sarda Act has not helped matters, but on the other hand has aggravated the situation, for the time being at any rate. The proportion of married males and females aged 0-15 at the last census was the highest ever recorded during the last thirty years.

(4) The average weight of a baby at birth in India is much smaller than in England.

(5) The fecundity of girls married at ages below 20 is smaller than of girls married at ages above 20.

(6) The survival rate of children born to mothers married at ages below 20 is much less than that of children born to mothers married at ages above 20.

(7) The death-rate in India is the highest of all civilised countries in the world. If the experience of other countries is any guide, the Indian death-rate will be reduced only when the birth-rate is reduced, not before.

(8) Infant mortality in India is much higher than it need be. A great deal of this mortality is due to poor vitality of children born of very young mothers. In view of the close correlation between infant mortality and a high birth-rate, it is not to be expected that infant mortality in India will be reduced appreciably until our high birth-rate is reduced.

(9) Maternal mortality is very high in India: six times as great as it is in England. The figure for Bengal seems particularly alarming.

(10) Fecundity is at the sacrifice of longevity. Those communities which have a high birth-rate have a smaller proportion of old persons as compared with communities which have a lower birth-rate.

(11) India occupies the lowest place on the list of civilised countries with regard to average expectation of life at birth. While substantial improvement has taken place in western countries in this respect, there are no signs of any real improvement in India.

(12) The amount of malnutrition in India is 20 times greater than in England. It is partly due to poverty and partly to defective diet.

(13) Owing to severity of sickness in the country, the economic loss in production per head of population is very great.

(14) No rise in the present standard of living is possible unless there is a reduction in the number of mouths to be fed.

(15) Migration holds out no prospect of relief for the surplus population of India, as all doors are barred against the Indian wherever he goes.

(16) The system of registration, collection and presentation of vital statistics is far from efficient and complete and needs urgent consideration.

(17) Whereas the population is increasing at a fairly fast rate, there is no corresponding increase in the area under cultivation. The acreage per head of population supported by agriculture as well as the acreage under food crops per head of total population are steadily falling from census to census.

(18) Three-fourths of the agricultural population is in possession of holdings which may be said to be un-economic.

(19) The possibility of a large extension of cultivation in most of the provinces is negligible, as practically the whole of the cultivable area is already under cultivation.

(20) While irrigation has worked wonders in certain parts of the country, the same rate of growth cannot

be expected in the future. Notwithstanding new canal schemes in recent years, the area under irrigation has practically remained constant.

(21) The severe fall in the prices of agricultural produce has, for the present at any rate, made agriculture an unprofitable business in India. Unless prices rise by at least 50 per cent., of which there is no immediate prospect, the economic structure will be unable to resist the stresses and strains to which it is being subjected.

(22) The economic condition of Bengal, and particularly the extraordinarily large proportion of the dependent population in that province, needs urgent consideration.

(23) Industry to-day is supporting a much smaller number of people than it did in 1901. Not only this, but the percentage of the total population supported by industry is steadily diminishing from census to census.

(24) While industrialisation of the country is most desirable and should be vigorously pursued, the scope for employment of our surplus population in the industries which we know is, comparatively to the annual growth of the population, very limited.

(25) Though complete and reliable statistics of unemployment in the country are not available, the proportion of workers to non-working dependents is steadily diminishing from census to census, which in a way goes to show that unemployment is on the increase.

Such is the main outline of the problem before us. In suggesting remedies, one feels great diffidence

and hesitation. The main purpose of the book is to present a problem and not to suggest remedies. It is felt that the suggestion of remedies is the task of those engaged in the practical conduct of affairs. As a humble contribution towards the discussion of what the writer conceives to be a most urgent problem, such rough ideas as have occurred to him from time to time have been indicated in the previous pages and are briefly summarised below :—

- (i) The main problem is the reduction of the death-rate which is terribly high. It has been pointed out in the preceding pages that though public health activities will do a great deal, they cannot work wonders until our present high birth-rate is reduced. The lines along which reduction in the birth-rate should proceed will be best deduced from experience both in western countries and in India—particularly in Mysore and Madras where birth-control clinics are actually in operation. The method of birth-control to adopt in any individual case must be a matter for the decision of medical men and persons in charge of birth-control clinics. No one method is suited for all cases ; no one method is the best in every circumstance.
- (ii) The ideal to be borne in mind in regard to the reduction of the birth-rate and the death-rate for India as a whole is a birth-rate of 20 and a death-rate of 16.

- (iii) For putting our vital statistics on a proper footing, for analysing the causes of ill-health of the population, for suggesting remedies for malnutrition and for a general survey of the problem, there is the need for a Commission of Investigation, composed of officials and non-officials, men and women, British and Indian.
- (iv) There is need for a strenuous campaign in favour of widow re-marriage.
- (v) The Sarda Act does not go far enough, as the minimum ages for marriage of boys and girls respectively are too low. Even so, it is not in force in all the Indian States and it seems desirable that the co-operation of the ruling Princes should be invited for the enactment of such legislation within their territories.
- (vi) Ill-assorted marriages, *i.e.* marriages where there is great disparity of age between the husband and the wife, should be made illegal.
- (vii) Marriages of persons suffering from insanity, tuberculosis, epilepsy and infectious diseases should be prevented.

The above does not by any means pretend to be an exhaustive list of suggestions and the author feels certain that those who give thought to the question will be able to add to this list and improve upon what he has presented for their consideration.

