

CENSUS OF INDIA, 1941



VOLUME XXV

TRAVANCORE

PART I—REPORT

BY

A. NARAYANAN TAMPI, B. A. (Oxon), Barrister-at-Law,
Census Commissioner, Travancore.

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PREFACE

The Synoptic Essay has taken the place of the compartmental Reports of the past decades.

In the words of Mr. M. W. W. M. Yeatts, the Census Commissioner for India, "the essay should be an essay; a kind of theme picture, the theme being the life of the State as an organic whole. It must be the product of a mind which has digested all the outstanding features of the State's decade history and experience and presents the results of such digestion in a single, uniform product. It means that the view is single and individual but at the same time comprehensive."

The omnibus character of the Census Report has often detracted from its readability, particularly for those who are anxious to get a comprehensive view of a State or Province. As years roll on, every topic of human interest is progressively brought under the discerning eye of the specialist, followed by the devastating criticism of the expert. To cater to the exacting demands of this small, though powerful, group is beyond the capacity of the Census Commissioner who, even if he is a specialist, cannot in the course of a couple of years, evolve into an omniscient personage. At any rate, the expectations of the 99 percent. of the educated laymen, who are anxious to steer clear of the mysterious expert and the superficial chronicler, must be given reasonable satisfaction. The Synoptic Essay, it is hoped, would satisfy the intellectual craving of those people who expect to read in this Census barometer the record of the country's progress in the last decade.

Boiling down the several details collected during the Census operations into a connected whole, without resorting to the simpler device of presenting them piecemeal under separate chapters, was no easy task. My office staff, wedded to the compartmental system of 1931, found it difficult to adjust themselves to the change in the form of presentation of the results of the data collected during the Census operations. It was with no small difficulty, therefore, that the marginal tables were extracted and notes prepared on relevant data for use in the elaboration of the different topics in the Essay.

In the present Census attention was focussed on certain fundamental aspects of the day to day life of the people of the State in general. The evolution of the caste system, a peep into the past regarding the nature and origin of the various customs and ceremonies prevalent among the different castes or sects, or an anthropological or ethnological survey of the small tribal element in the population could not therefore find a place in the present scheme. The Census Commissioner for India has also expressed the view that the Census has done all it could really produce in the direction of caste study. Tendencies and developments are more in place in a Synoptic Essay than 'wearisome screeds' on caste question. There is also the chance of one missing the wood for the trees if one tries to cover too much technical ground within the short compass of a Synoptic Essay. The topics which demand a technical treatment like Fertility, Vital Statistics and Sampling have been dealt with separately in the Appendices.

A careful perusal of the enumeration card of 1941 will convince any one that emphasis has been placed, and that rightly, on the occupational trends of the people, to find out how they live. The details about age, sex and civil condition lead on to the means of

livelihood. The important question of density and its incidence forms the preface to the problem of pressure of population and unemployment and here again age-composition and civil condition throw light on the whole problem. The questions of religion, language, and literacy are not viewed in isolation; they are integrated with the cultural evolution of the people as a whole to ascertain how they live the higher life. The questions regarding married women embodied in the enumeration card have given the right lead in focussing public attention on a topic of vital importance to society, for in a highly literate country like Travancore, it would be possible to get correct data from the large number of literate mothers who could easily be convinced of the importance and usefulness of this enquiry.

A word now about the general scheme. The Introduction is intended to give a bird's eye view of the State, setting out the most outstanding facts regarding its historical evolution, geographical compactness and its progress in the economic, social and political spheres down the centuries. It also gives a foretaste of the lines on which the scheme is worked out. While unity and continuity are kept up, the division into General, Occupational and Cultural, gives the view-points in the main theme, the unfolding of it being done through individual topics such as movement of population, age, sex, civil condition, means of livelihood, religion, language, literacy, etc. These three categories should not be looked upon as "bound within uncrossable frontiers". The unity of the whole piece is emphasised by the Census Commissioner when he says that one has to think of the concluding sentence before beginning to write. The maps and diagrams have been reduced to the absolute minimum as there is just the possibility of missing the point by too many illustrations. The main consideration in preparing and including them has been to stress important points or clear genuine difficulties which otherwise would have involved lengthy verbal description. The maps in particular and the diagrams have also been so carefully designed as to prove useful not merely to the general reader but to those specially engaged in the field of education.

There is sufficient scope for repetition in a Census Report, if only one is inclined that way as the marginal tables, diagrams and even maps lend themselves to elaboration in words, to the wearisome annoyance of the impatient reader who, like the intelligent pupil, cannot tolerate repetition. This boredom has been carefully avoided as may be clear from the rather elaborate table of contents rendered necessary in the absence of separate chapters and marginal headings, which may hinder the even flow of a continuous narrative. While the Table of Contents specifies the topic of each paragraph and the relation of each to the main theme through the various sub-topics, reference to individual facts is facilitated by the detailed Index at the end.

The Report is published in four parts, Part I containing the Report proper and the Appendices, Part II the Imperial Tables and Part III the State Tables, Part IV being the Administrative Volume. To effect a saving in expenditure and to facilitate ready reference and verification, Parts I and II are bound together.

Census was considered a 'gigantic undertaking' even by the talented Census Commissioner for Travancore in 1875 and the Census Commissioner for India has characterised the Census of 1941 as the "most difficult of all India's Censuses". The work was therefore one of no small magnitude and particularly for me, it was like changing horses midstream, as I had to take over from my predecessor five months after he was appointed as Census Commissioner or, to be more exact, nine months after, if his part-time work is also taken into

account. I had also to be constantly on the move even after the Population Census was over, for inspecting the field work connected with the Economic Survey at a stage when my predecessors in the past were poring over voluminous literature in the shape of reports, treatises, or other useful publications on population and allied problems. Add to this, the change in the method of Census reporting elaborated above made me doubt the possibility of publishing this work before the date corresponding to that on which the 1931 Report was ready for publication. Circumstances have now compelled me to publish it three months earlier as it is wanted urgently for official purposes.

This was the first occasion on which an educational officer was selected for the responsible post of Census Commissioner. Though to the large Census staff already working in the various centres I was a *novus homo*, I experienced little difficulty in rallying round me the veterans in the subordinate service of the Revenue and Public Health Departments. The silent and devoted service of nearly 6,000 of my colleagues in the Department of Education was of considerable help to me in clearing many an obstacle in the Census track and covering the last lap of the final count with confidence and satisfaction. It has given me no small encouragement that my appeal to the public elaborating the importance of the Census and soliciting their co-operation had its desired effect in their intelligent response in furnishing the requisite details with dependable accuracy. The non-simultaneous enumeration which was a new feature of the 1941 Census made it possible to dispense with the services of a large number of inexperienced enumerators for the final counting and thus avoid the possibility of double-enumeration. The results of the final count were announced on 3rd March 1941. The Sorting and Compilation work took nearly eight months. For the former a staff consisting of 250 Sorters, 10 Compilers, 30 Supervisors (one for each taluq), 3 Divisional Superintendents for the three Revenue Divisions, 3 Record Keepers, (one for each Division) and one Accountant, was appointed and placed under the immediate control of the Chief Superintendent. A bifurcation was effected this time by putting the Manager and Statistical Superintendent entirely in charge of statistical work and entrusting the control and supervision of the large staff to the Chief Superintendent. This had the desired effect of ensuring accuracy and thoroughness in sorting and compilation. For the Compilation work the Chief Superintendent who was also Head Compiler was assisted by the 3 Divisional Superintendents as Divisional Compilers, 3 Record Keepers and 30 Compilers (one for each taluq), the Statistical Superintendent being left free to give directions in the work of compilation and check the figures from time to time.

The several Imperial and Subsidiary Tables were completed according to schedule and submitted to the Census Commissioner for India for approval as soon as they were ready. Imperial Table VIII (Means of Livelihood), the most complicated of them, was completed on 24th January 1942 and received the approval of the Census Commissioner on 24th February.

The inspection of the field work connected with the Economic Survey and of the work regarding Fragmentation of Holdings along with the organisation of the Tabulation Sections of these two and the Population Census kept me fully occupied for over six months from 1st March 1941. The Census Commissioner for India was expected to visit Travancore by about the middle of August and I was looking forward to having a full discussion with him on the Imperial Tables and the scope of the Essay thereby making up for my not getting the advantage of attending the Census Conference at Delhi in February 1940. It was a disappointment to me, as it was to him, that he had to cancel the proposed

tour to the South for unavoidable reasons. I could start the necessary reading for preparing the draft of my Report only by about the second week of September 1941. I first took up the Cultural Section for which the necessary data were then available. After preparing a working draft of the Introductory and Cultural sections, I had the opportunity of meeting the Census Commissioner for India at Delhi in the 2nd week of February last. I am deeply grateful to him for the detailed comments and helpful suggestions he gave me after going through my drafts and for his kind assurance of all possible assistance.

On my return I started working up the General section and took up the Occupational section last. The months of July, August and September 1942 kept me fully occupied with a complete revision of the draft already prepared, to give it proper shape and synthetic unity. From the middle of July onwards, the report was sent to the Press, section by section, the remaining part of the limited time available being utilised in the preparation of the Appendices. As each section reached the machine-proof stage, a copy was sent to the Census Commissioner for India for prior comment and approval.

It has been my earnest endeavour to reduce the Census expenditure to the absolute minimum. A proportionate addition to the expenditure incurred in 1931 warranted by the population increase in 1941 was not budgeted for. The Census of 1931 cost Government Rs. 1,39,800 *i. e.*, Rs. 50,341 more than the 1921 Census excluding, in both cases, the cost of printing. The results of the Economic Enquiry were published as an Appendix in 1931. This time, however, the report on Economic Survey is being published separately, as along with the Tables, it is expected to cover nearly 200 pages. The total cost of the Census of 1941 (excluding printing, but including the Economic Survey and the Fragmentation of Holdings) comes to Rs. 1,36,021 which is Rs. 3,779 less than the corresponding expenditure incurred in 1931. The cost per mille therefore works out to Rs. 22-6 as. in 1941 as against Rs. 27 7 as. in 1931.

I consider it my primary duty to express my deep indebtedness to the Government of His Highness the Maharaja for the confidence placed in me and for the generous support extended to me throughout my work and I am profoundly grateful to Dewan Sachivottama Sir C. P. Ramaswami Aiyar for the kindness and consideration he has shown and for the helpful directions he has given to me during the successive stages of the Census operations.

The Census Commissioners have always had to conduct the field work with the aid of the subordinate staff of other Departments. The active co-operation of the Heads of Departments is an essential pre-requisite for the success of the Census operations and the accuracy of the returns. I am happy to be able to record the fact that my brother officers and their subordinates heartily co-operated with me but for which it would not have been possible for me to work the complicated Census machinery without hitch or hindrance. My sincere thanks are due to Mr. M. Govinda Pillai from whom I took over the Census Commissionership in September 1940, for the preliminary work he had done in connection with the Census before he went on leave preparatory to retirement. Dr. U. Sivaraman Nair of the Mathematics Department of the Travancore University, who was appointed as Statistical Adviser for the Economic Survey, was of considerable help to me in the Population Census also, particularly in analysing the age-composition of the population and literacy figures. I am thankful to him for his valuable help. I am happy to acknowledge the ungrudging services of the Municipal Presidents, Tahsildars and the Divisional Forest Officers who had to shoulder the heavy responsibility imposed upon them as Charge Superintendents in addition to their normally heavy work. I feel very thankful

to the Managers of the various Estates—particularly to the General Manager of the K.D.H.P. Company—and their staffs for their hearty co-operation in Census work during its several stages till the final enumeration.

The strength of my office staff fluctuated with the quantity of work left over after each stage, drastic reduction being effected towards the close. Mr. G. R. Pillai was the Personal Assistant when I took charge. I wish to place on record my appreciation of the hard and willing work done by him, particularly during the first six months, when I had to be constantly on the move. Mr. K. J. Leenose, who was appointed my Personal Assistant in July 1942, ably assisted me during the strenuous three months preceding the publication of this Report. I wish to place on record my high appreciation of his thorough and efficient work. I am sincerely grateful to him for the ungrudging assistance he has rendered. I wish to record my sincere appreciation of the hard and taxing work of calculation continuously carried on throughout the period by Mr. N. Parameswaran Pillai as Manager and Statistical Superintendent. The Chief Superintendent and Head Compiler, Mr. K. S. Rama Aiyer, with his characteristic thoroughness executed the work entrusted to him to my entire satisfaction. It stands to his lasting credit that the elaborate Imperial Tables have been systematically and methodically prepared with meticulous accuracy in regard to the innumerable details. Mr. S. Thandaveswara Aiyer with his experience in the 1931 Census was also helpful in expediting the work. Mr. N. Chandrasekharan who was Divisional Superintendent and Divisional Compiler deserves my sincere appreciation for the work which he did so ably and well. I wish to place on record my high appreciation of the loyal and efficient services of my Stenographer Mr. G. Sivasankara Pillai, whose varied experience in the State Manual Office made it possible for me to put him on to different items of work demanding trust and confidence. I had the advantage of getting as Draftsman Mr. P. Ramakrishna Pillai, whose intelligent understanding of my requirements combined with his artistic taste and technical skill enabled him to bring out the maps and charts to my entire satisfaction. Mr. P. Muthukrishna Pillai who was one of the Typists was also working as a Machinist in my office. I sincerely appreciate his marvellous speed and high technical talent. The other members of the staff working at the Population Census did the work allotted to them satisfactorily. Mr. M. T. Joseph and Mr. S. Varadarajan Nair were put in charge of the special Enquiries and did their work creditably.

During none of the past seven Censuses had so many hundreds of pages of Tables alone to be printed as in the present Census. The Imperial Tables, State Tables, and those connected with the Economic Survey and Fragmentation of Holdings together constituted no less than 1,500 pages. The printing of these along with the Reports proper, in accordance with the rather exacting requirements of the new scheme of presentation, is certainly a stupendous task. If to this is added nearly 8 million enumeration cards and several thousands of forms for the different purposes during the different stages, not to mention the Census Code, the whole work assumes gigantic proportions. The fact that most of all this printing had to be done on short notice speaks highly of the sense of duty and efficiency of the Government Press staff. My warmest thanks and sincere gratitude are due to Mr. P. E. Mathew, the Superintendent of the Government Press, who has met the varied and exacting demands of this Department, particularly during the last three months, with the utmost patience, characteristic courtesy and unflinching promptness. The Maps were lithographed in the Trivandrum Art Printing Works and I am happy to testify to their neat and careful execution.

Trivandrum,
29th September 1942.

A. NARAYANAN TAMPI,
Census Commissioner.

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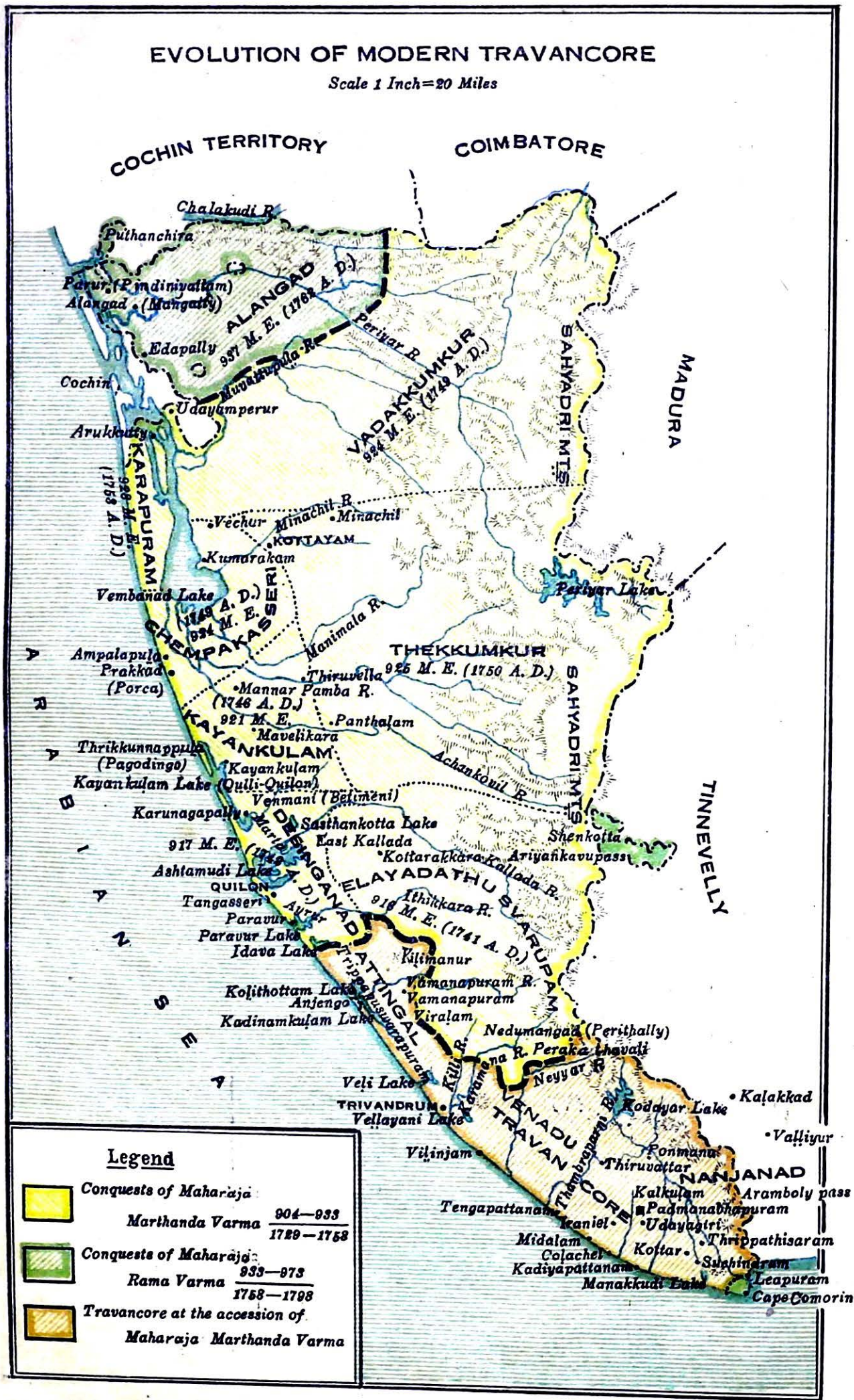
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CORRIGENDA

Page	Paragraph	Line	For	Read
17	57	9	For percentage	Read proportion
26	91	1	„ in the densities of taluks	„ in density in the taluks
42	148	18	„ than the	„ than that of the
44	154	9	„ wible	„ while
46	160	38	„ alternately	„ alternately
54	176	4	„ that the masculinity	„ that masculinity
67	214	11	„ if the government	„ if Government
72	226	10	„ of the	„ for the
79	240	33	„ dependant	„ dependent
84	254	17	„ it	„ its
88	262	20	„ the male workers	„ the proportion of male workers
89	263	26	„ come	„ comes
108	315	19	„ have	„ have
116	341	30	„ ween	„ wean
129	390	7	„ unumber	„ number
142	438	8	„ Buddhist	„ Buddhists
„	442	3	„ indentify	„ identify
163	527	1	„ propörtion	„ proportions
177	14	16	„ Ilava	„ Ilavas
188	23	23	„ number	„ numbers
206	2	5	„ in growth of the	„ in the growth of
207	7	25	„ nivolving	„ involving
„	9	21	„ birds	„ bird's
218 (Part II)	2	1	„ 84'6	„ 84'7
„	„	2	„ 14'6	„ 14'4
„	„	„	„ 0'8	„ 0'9
„	„	5	„ 0'2	„ 0'8

EVOLUTION OF MODERN TRAVANCORE

Scale 1 Inch=20 Miles



APPENDIX I.

FERTILITY ENQUIRY.

Fertility Enquiries were conducted in Travancore in 1921 and 1931. In 1921 the Enquiry was limited both in range as well as scope as it was confined only to a few aspects of the question in municipal towns. In 1931 it was carried out on a more elaborate scale, a special schedule having been drawn up for the purpose and the Enquiry extended to rural areas also. The schedules were distributed among the municipal staff in the municipal towns and the school masters in rural areas. The latter in their turn distributed the schedules among the grown-up boys and girls to have them filled up at their houses in consultation with their parents. The items of information collected included such points as caste, age of mother, occupation and age of father, duration of married life, number and sex of the children born and surviving and their ages.

2. In 1941 the Census Commissioner for India, with the idea of awakening public consciousness of the importance of fertility studies proposed that two questions on fertility *viz.*, the age at birth of first child and the number of children born and surviving should be asked of *each and every* married woman. This time the Enquiry was therefore extended to cover all the married females. Three further points regarding (1) the sexes of children born and surviving, (2) the duration of marriage and (3) the sex of the first child were also added to the Fertility Enquiry of this State. The difficulty of getting information on the effective duration of marriage has been recognised everywhere and presumably it was to avoid this that the Census Commissioner for India included the question regarding the age at birth of the first child, to which no one would resent to give an answer. It is evident that the age at birth of first child combined with the present age of the woman would itself indicate approximately the effective

3. For a comparative study at the present Census, homogeneous social units with a population of 50,000 and above were selected. The following groups were therefore brought under tabulation *viz.* Non-Malayala Brahman, Ilava, Kammala, Kurava, Nadar, Nayar, Paraya, Pulaya, Vellala, Muslim and Syrian Christian. Within the limited time allowed for tabulation it was not possible to extract all the requisite data to study the various aspects of the question. But in combination with the results of the Vital Statistics Enquiry conducted in selected areas, the fertility data could throw much light on the population problems of Travancore. The main tables prepared on fertility are given along with the subsidiary tables under Imperial Table VII.

4. The total number of slips pertaining to married women brought under tabulation was 873,397. The following table shows the age distribution of the married women and the number and percentage of those in each age-group who have actually given birth to children.

Age-group.	Total number of married women.	Number having children.	Percentage.
Less than 15	3,878	110	2'99
15—20	79,068	29,808	37'66
20—25	152,030	123,711	81'37
25—30	153,887	143,194	93'05
30—35	121,806	116,212	95'39
35—40	114,768	109,314	95'18
40—45	79,655	76,068	95'50
45 and above	169,015	166,596	98'56
Total.	873,397	761,538	87'51

It is observed that 98'6 per cent. of the married women in the 45 and above group have given birth to children and that 1'4 per cent. are sterile. In 1931 the corresponding proportions were the same.

5. Fertility will vary for different age-groups of married women. Before considering the number of children born to married women in each

age-group, fertility in general of the various communities may be compared. In the following table eleven communities are arranged in the order of their general fertility.

Community.	Average children born per married woman.
Kammala	3·88
Ilava	3·84
Syrian Christian	3·79
Muslim	3·71
Nadar	3·64
Nayar	3·63
Vellala	3·43
Pulaya	3·43
Paraya	3·23
Kurava	3·13
Brahman	3·13

It is noted that the Kammalas, Ilavas, Syrian Christians and Muslims have on the average a larger number of children born to them than the others, the Brahmans coming last in the list. The Kuravas who are included under Tribes show a low fertility and so also the Pulayas and the Parayas. The Vellalas and Nayars form the middle group. The general average is observed to be 3·69 children per woman. The corresponding average for 1931 was 4·10 but in comparing the two averages it is to be remembered that the 1931 Enquiry was mainly confined to the mothers of school children and hence a comparatively large proportion of the younger mothers whose children had not reached the school-going age might have been omitted. In making comparisons with the figures obtained for 1931 in other respects also this fact has to be kept in view.

6. A real comparison of the fertility of the various communities can be made only if we consider the number of children born to women of 45 and above, since these in all cases would have lived through their fertile periods. The following table which shows the number of children born to women of completed fertility age-groups reveals that the order of sequence has slightly varied but the inference that the Kammalas, Ilavas, Syrian Christians and Muslims have high fertility and that the Brahmans and Kuravas have low fertility still holds good. The figures for 1931 are obtainable only for certain

of the communities. These are given within brackets for purposes of comparison.

Number of children born per married woman 45 or above.

Community.	Average No. of children.	
	1941.	1931.
Kammala	7·12	
Syrian Christian	7·02	(7·0)
Muslim	6·99	(6·2)
Ilava	6·82	(6·7)
Nadar	6·51	
Nayar	6·30	(6·3)
Pulaya	6·28	
Paraya	5·92	
Brahman	5·89	(5·8)
Vellala	5·88	
Kurava	5·50	
General average	6·65	(6·5)

7. The following table gives the number of children born on the average per married woman of each age-group. Naturally the women of the higher age-groups have a larger number of children than the women of the lower age-groups.

Age-group.	Average No. of children.	
	1941.	1931.
Less than 15	0·03	(0·04)
15—20	0·45	(0·49)
20—25	1·52	(1·51)
25—30	2·70	(2·87)
30—35	3·76	(4·35)
35—40	4·75	(5·35)
40—45	5·25	(5·90)
45 and above	6·65	(6·50)

On a comparison with the figures obtained in 1931, it is observed that there is a close similarity between the two sets except for the age-groups 30-35 and 35-40. The high average in these two groups in 1931 can be explained by the fact that the mothers of school-going children have fallen in these groups in comparatively high proportions while the mothers without school-going children must have been excluded.

8. Incidentally it may be observed that from the average number of children born to married women of each age-group, one can get some idea of the specific birth-rates for various age-groups. Thus women between 15 and 20 or who are on the average 17·5 years old have 45 children born to each *i. e.* 450 per 1,000. Similarly those who are between 20 and 25 or on the average

22.5 years old have 1,520 children per 1,000. Thus the number of children born in passing through the period of five years from 17.5 to 22.5 will be 1,520—450 *i. e.* 1,070 or 214 per year. From the Vital Statistics Enquiry the specific birth-rate for 15-20 has been observed to be 230 per 1,000 married women. Similarly for the other age-groups the results obtained may be stated below.

Fertility Enquiry.		Vital Statistics Enquiry.	
Age-group.	Approximate estimated specific birth-rates.	Age-group.	Observed specific birth-rates.
17.5—22.5	214	15—20	230
22.5—27.5	236	20—25	247
27.5—32.5	210	25—30	222
32.5—37.5	198	30—35	187
37.5—42.5	100	35—40	141

9. In order to study the real effect of the age at birth of first child on the number of children born or surviving, it is essential, that the women concerned should have lived through the whole fertile period. Hence it is necessary to take into account only those who have lived through the child-bearing period *i. e.* those who have passed 45, the age at which fertility generally ceases. Before comparing the number of children born the proportion per cent. of the married women of 45 and above in each community who have given birth to the first child before attaining 20 and 25 may be examined with the aid of the following table.

Community.	Percentage of married women of 45 and above who have given birth to the first child before attaining the age of.	
	20	25
Brahman	70.6	92.6
Ilava	50.1	90.8
Kammala	54.6	91.6
Kurava	40.0	85.8
Nadar	37.7	86.0
Nayar	52.2	90.5
Paraya	42.3	87.6
Pulaya	46.9	89.5
Vellala	53.7	90.9
Muslim	59.4	92.2
Syrian Christian	41.2	89.6
Average	48.2	90.1

Generally speaking 90 per cent. of the women have given birth to the first child before attaining 25 and about 50 per cent. before attaining 20. Among Brahmans 70 per cent. have given birth to the first child before attaining 20.

10. The following table shows for all communities the ages at birth of first child and the number of children born against each group.

Age at birth of first child.	Average number of children born.
15 and below	7.54
15—20	7.38
20—25	6.46
25—30	5.08
30—35	4.02
35—40	2.23
40 and above	2.19
Average	6.65

It may be noted that the number of children born decreases as the age at birth of first child advances or in other words as the effective duration of marriage decreases.

11. That there is a relation between the number of children born and the age at birth of first child is further elucidated in the following table which shows for each number of children born the percentage of women who have given birth to the first child before attaining 20 or 25.

Number of children born.	Percentage of women whose age at birth of first child was below	
	20	25
1	26.8	65.3
2	32.1	74.0
3	36.2	80.6
4	38.8	84.7
5	40.8	87.8
6	44.7	91.0
7	48.2	93.0
8	53.3	95.0
9	58.3	96.0
10 and above	67.0	97.7

Of those who have only one child each, about 27 per cent. gave birth to it before 20 while of those who have 10 children 67 per cent. gave

birth to the first child before 20. Conversely it has been observed that of those women who gave birth to the first child while between 15—20, 61 per cent. have 7 or more children while of those who gave birth to the first child between 20—25 only 49 per cent. have 7 or more children. Again of those who gave birth to the first child while above 40, no one was returned as having more than 6 children whereas 67 per cent. have below 2 children. Out of the 166,596 mothers aged 45 and above, barely one per cent. gave birth to the first child after 35 (*vide* Fertility Table iii).

12. On comparing the average number of children born to married women living in urban and rural areas it is observed that fertility in the urban areas (municipal towns) is generally lower. The finding is substantiated by the Enquiry of 1931 also. The following table shows the average number of children born for married women in each community in the urban and rural areas.

Community.	Number of children born per family in	
	Urban area.	Rural area.
Brahman	5.7	6.3
Ilava	6.5	6.7
Kammala	6.5	7.3
Kurava	5.6	5.6
Nadar	6.5	6.5
Nayar	5.7	6.4
Paraya	6.0	6.0
Pulaya	6.0	6.4
Vellala	5.4	6.2
Muslim	6.0	7.2
Syrian Christian	7.1	7.1
Average	6.1	6.7

That urban fertility is generally lower than rural fertility has been substantiated by enquiries made in other places also.

13. The survival ratios (number of children surviving per 1,000 children born) of children born to married women of the various communities are given below along with the average number of children surviving.

Community	Average number of children surviving per family	Proportion surviving per 1000 born
Syrian Christian	2.98	790
Nadar	2.86	786
Kurava	2.43	778
Nayar	2.79	766
Muslim	2.83	762
Ilava	2.89	753
Kammala	2.92	752
Brahman	2.30	734
Vellala	2.47	721
Pulaya	2.38	694
Paraya	2.15	660
Average	2.81	762

For a strict comparison of the survival rates of children born in various communities, one should have a knowledge of the age-constitution of the children coming under each group. On comparing the figures of children surviving it is observed that Syrian Christians, Kammalas, Ilavas and Nadars show high averages. Parayas show the lowest average of children surviving. The ratio of survivorship is also highest for the Syrian Christians. The same ratio is lowest for the Parayas.

14. A comparison on the other hand of the average number of children surviving of mothers who are 45 years or above will show better the rate of survivorship in respect of each community in as much as the age-constitutions of the children falling within each community are not likely to be materially different from one another. The following table shows the average number of children surviving for the different communities when only mothers of 45 and above are taken into account. The communities are arranged in the order of the rate of survival.

Community	Average number of children surviving	Proportion surviving per 1000 born
Syrian Christian	4.9	702
Nadar	4.5	692
Brahman	3.9	669
Muslim	4.7	688
Ilava	4.4	682
Nayar	4.1	648
Kurava	3.5	641
Kammala	4.6	639
Vellala	3.7	621
Paraya	3.6	601
Pulaya	3.6	589
Average	4.4	664

The Parayas and Pulayas appear last in the list.

The average number of children surviving is high for Syrian Christians, Kammalaa, Muslims, Ilava and Nadars. The same is low for Pulayas and Parayas.

The average number of children surviving and rate of survivorship according to age-groups of mothers are given below :

Age of mother	Average children surviving	Proportion surviving per 1,000 born
Below 15	·02	637
15—20	·38	855
20—25	1·28	841
25—30	2·26	836
30—35	3·11	829
35—40	3·76	791
40—45	4·16	791
45 and above	4·41	664
All ages	2·81	762

15. The average number of children surviving is seen to be larger for the higher age-groups. When the actual rates of survivorship are considered certain variations are observed between the figures for different age-groups. The net survivorship of children of mothers of any age-group will be the result of the specific mortalities and the age constitution of the children of the mothers in the group and the period for which these children have been exposed to risk. Thus one may expect that the average age of children of women between 15 and 20, will mostly be less than that of the children of women 45 and above, and that the latter will on the average have been exposed to longer periods of risk. The net result is, that the resulting mortality is most pronounced among children of mothers of 45 and above and decreases with the age of the mother. In the case of children of mothers below 15, the rate of mortality appears to be high.

16. The following table shows the number of children surviving and their rate of survivorship according to the age at birth of first child.

Age at birth of first child	Average number of children surviving	Proportion surviving per 1,000 born
Below 15	4·78	633
15—20	4·91	664
20—25	4·23	655
25—30	3·63	713
30—35	2·89	718
35—40	2·05	729
40 and above	1·49	679
Average	4·41	662

In this table only women who have completed their fertility period have been included. Hence the higher the age of the mother at birth of first child, the lower will be the average age of the children ; and the period for which they may have been exposed to risk will consequently be smaller than in the case of women who have given birth to first child at earlier ages. The net survivorship will reflect all these factors. It is significant however that the average number of children surviving of mothers who gave birth to the first child between 15 and 20 is higher than the corresponding average for those who gave birth to the first child below 15. (4·91 against 4·78).

17. The following table shows for each number of children surviving the percentage of women who gave birth to their first child before 20 or 25.

Number of children surviving	Percentage of married women of completed fertility who gave birth to the first child before	
	20	25
1	36·7	78·5
2	41·8	84·3
3	43·8	87·9
4	47·1	90·2
5	48·8	91·9
6	52·9	94·1
7	57·3	95·4
8	62·4	96·5
9	67·1	97·0
10 and above	73·3	98·0

It was already shown that of the women of completed fertility, who have had 10 or more children born to them nearly 98 per cent gave birth to the first child before attaining the age of 25. When we take into account only the number of children surviving it is seen that of the women who have only one child surviving, 78 per cent had given birth to the first child before attaining 25 while of those who have 10 or more children surviving 98 per cent had given birth to the first child before attaining 25. Conversely it has been observed that of those women who gave birth to the first child while between 15 and 20, 88 per cent have 7 children or less surviving. Of those who gave birth to the first child while above 40, no one has more than 5 children surviving though 3 per cent had 6 children born to them (*vide* Fertility Table iv).

18. The following table shows the average number of children surviving and the rate of survivorship in urban and rural areas for various communities for women of completed fertility age-groups.

Community	Average No. of children surviving		Number surviving per 1000 born	
	Urban	Rural	Urban	Rural
Brahman	4.3	3.7	746	584
Ilava	4.4	4.4	683	661
Kammala	4.4	4.7	676	636
Kurava	3.0	3.6	544	642
Nadar	4.6	4.5	717	691
Nayar	3.8	4.2	679	645
Paraya	3.4	3.6	572	602
Pulaya	3.3	3.6	544	570
Vellala	3.5	3.8	657	613
Muslim	4.1	4.8	683	663
Syrian Christian	4.9	5.0	699	702
Average	4.2	4.5	686	663

The average number of children surviving is 4.2 in the urban areas (as against 6.1 born) and 4.5 in the rural areas (as against 6.7 born). The rate of survivorship is 686 per 1,000 born in the urban and 663 per 1,000 born in the rural areas. This may be due to the better facilities available in the towns in the matter of medical help.

19. It will be instructive to find out whether survivorship has any relation to the actual size of the family. Figures have been extracted for the above purpose and the results are shown below (for completed fertility cases).

Number of children born	Number of families	Number of children		Proportion surviving per 1,000 born
		Born	Surviving	
0	2,419	..	..	..
1	5,409	5,409	3,922	725
2	7,824	15,648	11,147	712
3	10,383	31,149	21,763	700
4	14,551	58,204	43,092	740
5	19,024	95,120	67,619	711
6	22,052	132,312	92,987	701
7	24,537	171,759	119,014	692
8	22,780	182,240	122,711	673
9	16,536	148,824	98,530	662
10	12,987	129,870	76,130	586

It is observed that there is a general tendency for survivorship to decrease with the number of children born though there is a rise in the rate at 4. Since the rate of survivorship depends

upon the age-constitution of the children of each group any generalisation could be made only with some reservation.

20. The fact that the larger the family, the greater the mortality may be inferred from an examination of the distribution of families according to the number of children born and surviving. Thus it is seen that out of 166,596 families of completed fertility there are only 23,500 families in which 10 or more children were born and of these there are only 2,094 families in which 10 or more children are surviving, that is to say, in 91 per cent of such families one or more children are dead. Similarly there are 40,036 families in which 9 or more children were born of which only 5,990 families have 9 or more children surviving, *i. e.*, in 85 per cent of the families one or more children are dead. As for families in which 8 or more children are born it is found that the corresponding percentage is 73. There is therefore a progressive reduction of survivorship with increasing size of family.

21. The average numbers of children of mothers of each age-group have already been indicated. But more important than the average itself is the distribution of families according to the number of children born. Thus out of 166,596 women of completed fertility, 48 per cent have 6 children or less and about 37 per cent have 8 or more children. The remaining 15 per cent have 7 children each and this is found to be the mode. In 1931 also the mode for women of completed fertility was found to be at 7 and the corresponding percentage of families to 13.

22. The modal size and the corresponding percentages of families along with the various age-groups of mothers are given below.

Age of mother	Mode (children born)	Percentage of families with children born		
		Less than mode	Equal to mode	More than mode
15-20	1	..	82	18
20-25	1	..	43	57
25-30	2	19	25	56
30-35	4	43	29	37
35-40	5	45	17	38
40-45	5	36	14	50
45 and above	7	48	15	37

23. In a similar manner when the distribution of families in accordance with the number of children surviving is studied, it is found that the mode of children surviving is 4 in the case of women of completed fertility, the number of families having 4 children surviving being 27,460 out of 166,596 *i. e.*, 16, per cent. 34 per cent have 3 or less number of children surviving and the remaining 50 per cent have 5 or more children surviving. Similar proportions worked out for the different age-groups of mothers are given in the following table.

Age	Mode (Children surviving)	Percentage of mothers having children		
		Less than mode	Equal to mode	More than mode
15-20	1	12	75	13
20-25	1	7	47	46
25-30	2	27	28	45
30-35	3	36	21	43
35-40	4	43	18	39
40-45	4	37	16	47
45 and above	4	34	16	50

24. *Masculinity* is defined as the ratio of male to female births. Variation in the proportion of males to females is the result of a number of complex factors, mainly of changing social conditions. Urbanisation for instance is said to decrease the proportion of male births while war will increase it. The results of the Vital Statistics Enquiry showing the variation of the proportion of male to female births with varying factors is examined in greater detail in the next Appendix. In the following discussions only children of mothers who have passed through their fertility periods, *i. e.*, have arrived at the age of 45 or above are dealt with.

25. The 166,596 fertile married women of completed fertility age-groups have given birth to 1,121,826 children (6.7 on the average) of whom 577,530 are males and 544,296 are females, the ratio of females to 1,000 males being 943. If first births only are considered, it is found that of the 166,596 first births 91,143 are males and 75,453 are females the ratio of females to 1,000 males for this group being 828. Thus masculinity for first births very much exceeds masculinity for births generally. The average number of children born for women of the completed fertility group is 3.5 males and 3.2 females.

26. The ratios of female to 1,000 male children born to mothers of 45 and above of the different communities are shown below.

Community	Proportion of female children to 1000 male children among	
	First Births	Total Births
Bráhmañ	817	924
Java	818	944
Kammala	822	901
Kurava	771	989
Nadár	743	932
Nayar	857	940
Paraya	757	925
Pulaya	763	962
Vellala	877	983
Muslim	807	928
Syrian Christian	856	944
Average	828	943

Among the first born masculinity is low for Syrian Christians, Vellalas and Nayars. It is high for Muslims, Pulayas, Parayas and Nadars. Among the total number of children born, masculinity is least for Vellalas and highest for Kammalas.

27. Of the total 1,121,826 children born to the 166,596 women of 45 years and above, 62,500 (31,919 males and 30,581 females) are children of 10,183 women residing in the urban areas and 1,059,326 (545,611 males and 513,715 females) are children of women residing in rural areas. The ratio of females to 1,000 males is 958 in urban areas and 941 in rural areas. Thus masculinity in rural areas is higher than that in urban areas.

28. The following table shows for families up to 10 children, the number of male and female children and the proportion of female to male children against each.

Size of family	Number of families	Children		Proportion of females to 1000 males
		Male	Female	
1	5409	2792	2617	937
2	7824	8084	7614	948
3	10388	16169	14980	926
4	14551	29854	28350	949
5	19024	48987	46188	944
6	22052	67998	64314	946
7	24537	88356	83403	944
8	22780	98701	88539	945
9	16536	76253	72571	952
10	12987	66818	63052	944

There does not appear any general trend in the variation of the sex-ratio. The drop observed in the ratios corresponding to 3 and 6 children may not have any significance.

29. It has been a matter of considerable speculation in the past whether the sex of first child will in any way indicate the probable sex constitution of the whole family. It has often been said that in respect of families in which the first child is a male there is a greater probability of males predominating. But it is obvious that the converse proposition may be equally true statistically *viz.* if males predominate in a family there is greater chance of the first or second or any other birth being a male.

30. The following table prepared from Fertility Table vi shows the proportion of families (grouped according to the sex of the first child) in which male or female children predominate.

	Percentage of families having		
	Males greater than females	Males equal to females	Males less than females
All families	45.2	16.5	38.3
Families with male first born	57.8	16.6	25.6
Families with female first born	30.1	16.4	53.5

In the general class of families 45 per cent record an excess of males and 16 per cent. an equality. But in families with male first born 58 per cent. have an excess of males and in families with females first born 53 per cent. have an excess of females. These are different from the proportion for the generality of families.

31. It may be interesting to study whether there is any relation between the sex of the first child and the size of the family. The following table shows for each size of family up to 10 the number with male and female first born and the ratio of female first birth to 1,000 male births. Only women of completed fertility are taken into account. It is observed that the female ratio decreases up to four children and then again increases. Thus in very small as well as very large families there is greater chance of the first being a female than a male *i. e.*, if the first child is a female, the family may be either very small or very large.

Size of family	Families with		Proportion of female to 1000 males
	Male first birth	Female first birth	
1	2,792	2,617	937
2	4,224	3,600	852
3	5,676	4,707	829
4	8,076	6,475	802
5	10,451	8,573	820
6	12,054	9,998	829
7	13,316	11,221	843
8	12,328	10,452	848
9	8,916	7,620	855
10	7,044	5,943	843

32. So far we have been dealing with the sex-constitution of the children born. It is worth while to examine how the ratio of females to males varies with different communities when survivors alone are considered. The following table gives the figures for the different communities.

Communities	Number children surviving per 1000 born	
	Males	Females
Brahman	648	691
Ilava	645	682
Kammala	635	643
Kurava	664	617
Nadar	708	680
Nayar	624	672
Paraya	581	623
Pulaya	568	570
Vellala	639	603
Muslim	684	644
Syrian Christian	712	691
All communities	659	668

Generally speaking female survivorship exceeds male survivorship. Kuravas, Nadars, Muslims and Syrian Christians, appear to be exceptions.

33. An attempt has been made in the foregoing pages to analyse the figures obtained for the Fertility Enquiry. It is for the experts in the fields of anthropology, medicine, public health etc. to go deeper into the subject and find reasons physiological and psychological for the variations observed in the different communities at different age-groups. The function of the Census Commissioner stops with the analysis of the data and the presentation of the facts thereby disclosed. This section should be read along with the next (Appendix II) on Vital Statistics to get a clear idea of the factors which determine the population trends in the State.

APPENDIX II.

VITAL STATISTICS ENQUIRY.

It has already been stated in the preceding section that the Census Commissioner for India had introduced a few questions on fertility in the general enumeration card and that his object in doing so was to do something in the way of propaganda to awaken public consciousness of the extreme importance of vital statistics. In Travancore, the previous Census Commissioners have dwelt at length on the absence of reliable vital statistics data and the consequent difficulties encountered by them in giving a correct explanation of the growth of population. The Census figures reveal that the existing vital statistical records are largely erroneous. This error must mainly be attributed to the inadequacy of the agency employed for registration of births and deaths to cope with the work. Further there are defects in the form of presentation of data such as the absence of information about the age of mother. Recent literature on population problems, foreign and Indian, lays considerable stress on the classification of births according to the age of mother. This information, coupled with that regarding the total number of married women in each age-group furnished by the Census, will enable us to calculate what are called the specific birth-rates. Similarly deaths have to be classified according to age-group and the number of deaths in each group studied with reference to the total population in that age-group. The variation of births and deaths from region to region or from season to season will not give any idea of the factors causing these variations unless the specific birth-rates and death-rates are calculated. It was proposed therefore to utilise the opportunity afforded by the present Census to conduct in

selected areas a special enquiry on births and deaths occurring in one year, of which 1st March 1941, the date of the Census, was the central point. This device eliminated the necessity for estimating population in various age-groups forming the basis of the figures for the calculation of the specific birth and death-rates.

2. Two cards were designed for the purpose, containing a series of questions, one relating to births and the other to deaths. Though for purposes of immediate population study such a large number of items was not necessary, most of the questions have a public health significance and are helpful in illustrating the methods by which public health problems are to be tackled. Specimens of the Specific Fertility and Mortality Enquiry Cards are appended.

3. The area selected for the Enquiry consisted of the Police Conservancy Towns and the Health Unit at Neyyattinkara. The total population of these centres numbered 270,000. In these centres the registration of births and deaths was done directly by the staff of the Public Health Department. The investigators were thus people with the necessary training and equipment. As each birth or death occurred, the particulars regarding the same were recorded in the specified card and forwarded direct to the Census Office at the end of each month. The results obtained have amply justified the assumption that registration of births and deaths in these areas is more or less accurately carried on, by verification with the data obtained through the Population Census. The tabulation of the data was done in the Census Office. The tables prepared are mainly illustrative

of the uses to which vital statistics can be put. They are not exhaustive. As suggested in para I, in the case of births, the age of mother and in the case of deaths, the age of the deceased are fundamentally differentiating factors and hence the sorting of birth-cards was first done according to age of mother and the death-cards according to the age of the deceased. The birth-cards in each age-group of mothers were further sorted by community, means of livelihood of father, duration of marriage and rank of child born. Similarly the 'death-cards' in each age-group were further sorted by community, means of livelihood, cause of death and age of parents. It will be clear from the above that the method adopted will facilitate the extraction of the details required for a comprehensive study of the subject.

4. In discussing the results certain serious limitations of the Enquiry have to be borne in mind. Firstly the Enquiry was confined to one year. The fact that the year chosen is a normal one from the point of view of public health and economic conditions, will, however enhance the value of the Enquiry. The second limitation is that the Enquiry has been confined to selected areas, *viz.*, the Police Conservancy Towns and the Health Unit. Though the centres selected constitute the urban area only, the fact that in the State most of the Police Conservancy Towns are but outgrown villages will make it clear that the deductions from the data collected will generally apply to the rural population also. This is confirmed by the close approximation in most cases of the figures obtained by the Vital Statistics Enquiry with the population figures. The proximity of these centres to the City or the municipal towns, where medical help in maternity cases is more easily available, constitutes an element of error but not to such an extent as to affect the general conclusions.

5. The total number of births registered in the areas selected was 7,432 in a population of 270,000, thus giving a crude birth-rate of 28 per mille of the population. The number of deaths registered was 4,028 and the crude death-rate

was therefore 15 per mille. The number of infant deaths recorded was 949 thus giving a rate of 127 per mille of live births. Variations of these rates from region to region or from period to period will broadly indicate changes in public health conditions. Of the above three rates the infantile mortality rate is the most sensitive index of social conditions since it is directly and immediately affected by biological and environmental factors, economic condition of the group dealt with, social customs, etc.

6. To illustrate by an example how the rates differ for different regions, the conservancy towns may be briefly classed under two groups, one consisting of Aramboly, Bhuthapandy, Cape Comorin, Suchindram, Achanputhur and Samburvadakara and the other group consisting of the remaining towns. (For complete list refer to Table I at the end of this annexure.) In the former group the Tamilian element of the population predominates and their conditions correspond more or less to those prevailing in the neighbouring districts of Tinnevelly and Madura. In the remaining towns the Malayalee element predominates and they really represent the true conditions of the major portion of Travancore. The general averages however have not deviated far from the average for the Malayalee group of towns since the percentage of total population in the Tamilian group of towns is only 13. This may be seen from the following table.

Group of Towns	Birth rate per 1,000	Death rate per 1,000	Infantile mortality rate per 1,000 births
Tamilian	37	22	199
Malayalee	26	14	111
General Average	28	15	127

Thus in the Tamilian areas the general mortality and the infant mortality-rate are higher than those prevailing in the other group. The constant aim of the Public Health staff is to bring down the mortality-rates of these areas when they are high, by ascertaining, controlling and regulating the factors which cause these variations. In the same manner the vital rates in the same region may vary from year to year.

Hence arises the necessity for keeping a continuous and complete record of vital statistics for each geographical unit. It is very apt that the recording of vital occurrences has been called the "book keeping of life" while the Census is something like a taking of stock at regular intervals.

7. Till recently it has been assumed by population experts that the difference between the birth-rate and death-rate will form a good index of the population growth and that so long as births exceed deaths the population may be considered to be increasing satisfactorily. More recent researches in vital statistics have revealed that this need not always be the case in as much as birth-rates are different for different age-groups of mothers and it may happen that the apparent increase in births and decrease in deaths, may be merely the result of a favourable age-constitution and this favourable state of affairs may be suddenly replaced by quite unfavourable conditions due to changes in age-constitution. Since from the point of view of reproduction, women play a more prominent part it is highly essential that each girl born now should give birth at least to one girl before her death so that the population may replace itself adequately and this is the best index of population growth.

8. The following data are required to calculate what is generally called the net reproduction-rate which gives the ratio of future girls that will be born to every 1,000 girls now born:—

- (i) Specific birth-rates at different ages of mothers from 15—50;
- (ii) A life table showing the number of women who will survive at different ages according to current mortality-rates at each age;
- (iii) Ratio of female births to total births; and
- (iv) The proportions of married women to total women in each age-group.

Of these various requisites the Census will provide only the fourth. The remaining have to be obtained from a correct record of vital statistics. The results of the present Vital Statistics Enquiry have been utilised to extract the

required data on (i), (ii) and (iii) and thereby to get an idea of the current net reproduction-rate.

9. The 7,432 births recorded have been grouped according to the age of mothers. The total number of married women living in each age-group of mother is also obtained from the Census results. From these the specific birth-rates are calculated as below;

Age of mother.	No. of births for mothers	Total number of married women	Number of births per 1,000 married women.
15—19	979	4,266	230
20—24	2,055	8,317	247
25—29	1,974	8,904	222
30—34	1,281	7,665	167
35—39	889	6,804	141
40—44	200	4,479	45
45—49	51	3,345	15

10. Approximate specific birth-rates for each individual age have been worked out by graphical interpolation. These are given below. It may be noted that the birth-rate at the very early ages 15 or 16 is not so high as for the ages 19 or 20. It is highest at about 23—24 and then steadily decreases till it falls to 0 after 50. This is in accordance with the experience recorded of all countries.

Specific Birth-rates. (individual ages)					
Age	Children born per 1,000 married women.	Age	Children born per 1,000 married women.	Age	Children born per 1,000 married women.
15	222	27	231	39	100
16	226	28	221	40	87
17	229	29	211	41	72
18	232	30	200	42	54
19	235	31	192	43	43
20	237	32	185	44	37
21	240	33	176	45	30
22	244	34	168	46	24
23	246	35	154	47	19
24	248	36	144	48	14
25	245	37	130	49	7
26	240	38	115	50	2

11. The 4,028 deaths have been classified according to the age of the deceased. The total population living in the areas selected in each age-group being known from the Census, the specific mortality rates for certain broad age-groups are calculated for males and females separately. In spite of the comparative smallness of the number of cards dealt with, it is noted that the law of mortality generally observed holds good for the State as a whole.

Mortality-rates by age and sex.

Age-group.	Males.	Females.
0—1	143.2	111.5
1—5	19.5	23.7
5—10	4.3	4.1
10—15	2.5	2.7
15—20	4.0	4.2
20—25	5.0	5.5
25—30	7.7	7.1
30—35	7.1	6.4
35—40	8.6	7.3
40—45	12.9	8.5
45—50	16.6	11.0
50—55	18.5	12.3
55—60	30.7	20.5
60—65	51.9	32.5
65—70	61.6	58.0
70 and over	128.2	128.4

The slight irregularities observed in the trend of the rates were smoothed out by means of a graph and the mortality-rates for individual ages obtained by interpolation. The rates so obtained are given in column 4 of the Life Tables given at the end of this annexure. The following inferences are found to hold good.

- (i) Between 0 and 12 mortality among males is higher than that among females;
- (ii) Between 13 and 29 female mortality is higher;
- (iii) After 29 female mortality is again lower.

12. Based on the mortality-rates estimated from the Vital Statistics Enquiry, a life table has been prepared, for males and females. This is the first life table prepared in this State from recorded vital statistics data. Starting

with 10,000 babies, we apply the mortality-rate at each age and successively calculate the number surviving and dying at each age till all of them die out. The average expectation of life at each age also has been worked out. A life table prepared in 1931 from theoretically estimated mortality-rates gives figures for quinquennial ages only. The following table compares the figures, at decennial ages, of mortality-rates and expectation of life in 1931 and 1941. Even

Age.	Males				Females			
	Death rate per 1,000.		Expectation of life in years.		Death rate per 1,000.		Expectation of life in years.	
	1931	1941	1931	1941	1931	1941	1931	1941
10	3.8	3.1	46.0	50.3	3.5	2.8	44.8	52.6
20	4.2	3.2	37.5	41.5	6.8	4.5	36.6	44.2
30	8.5	6.3	29.5	33.2	11.6	5.9	29.5	36.3
40	14.2	10.6	22.3	25.5	17.2	8.2	22.7	28.5
50	27.7	18.5	16.1	18.5	26.9	12.5	17.0	20.9
60	46.8	36.8	10.7	12.3	39.8	24.7	11.6	13.7
70	99.0	75.2	6.5	7.5	88.1	67.0	7.0	8.0
80	196.5	178.8	3.5	3.7	132.7	164.7	3.8	3.9
90	509.0	502.0	1.3	1.3	493.7	485.9	1.3	1.4

though the mortality-rates for 1941 are deduced from figures relating to conservancy towns only, we may not be wrong in inferring that the mortality rates for the State in 1941 are definitely lower than those that prevailed in 1931 and similarly the expectation of life in 1941 at all ages is higher than that revealed by the figures for 1931. Moreover the increase in female survivorship at all ages is greater than that in male survivorship. The fact that the female ratio in the general population is greater in 1941 than in 1931 can therefore be attributed at least in part to the increase in female survivorship. The schemes of maternity and child welfare work inaugurated during the last decade must have contributed to this.

13. Having constructed a life table for females and ascertained the specific birth-rates for each individual age, the calculation of the total number of children that will be born to 10,000 girls now born is an easy step. Applying the specific birth-rates to the number of women

who will survive at 15, 16, 17, etc., to 50, we find that the total number of children that will be born to 10,000 girls is 40,100 if all the girls get married. But in practice all these girls are not likely to get married. Taking into account only the proportions of those who will be married, it is noted that the total number of children will be reduced to 28,900. The enquiry has further revealed that out of 7,432 births 3,827 are males and 3605 are females, the proportion of female to total births being 48.5 per cent. If this proportion is applied to the total number of children born to 10,000 girls as calculated above the total number of girls that will be born to 1,000 girls of today is found to be about 1,400 according to the current rate of marriages and fertility. The net reproduction rate is therefore 1.4 which shows that the present age-constitution, marriage rates and fertility rates are quite satisfactory for adequate replacement and normal increase of population. The most important purpose for which the Vital Statistics Enquiry was conducted *viz*, the calculation of the specific birth-rates and death-rates the preparation of a life table and the calculation of the net reproduction rate, has been illustrated in this and the preceding paragraphs. In the following paragraphs other salient features of the data collected are dealt with briefly.

14. It is observed that of the total of 7,432 births 5,011 or 67 per cent. are born to mothers below 30. Only 251 or 3 per cent. are born to those above 40 and about 30 per cent. to those between 30 and 40. These proportions may be assumed to hold good approximately at least for births in general in the State. The mean age of the mothers who give birth to children is 27.4. The following table shows the distribution of births according to the age of the father with the average age of the mother for each age-group of fathers. It is observed that 27.5

Age-group of father.	No. of births.	Percentage to total births.	Average age of mother
Below 20	6	0.1	17.5
20—24	455	6.1	18.1
25—29	1,606	21.6	21.7
30—34	1,633	22.0	25.1
35—39	1,639	22.1	28.8
40—44	1,028	13.6	32.9
45—49	635	8.5	35.4
50—55	288	3.2	36.9
55 and over	142	2.2	36.4

per cent. of the births are for fathers below 40 and only 2 per cent. take place in respect of fathers above 55. The mean age of the fathers is 35.7 so that the average of the difference between the ages of the husband and wife is 8.3. From the above table it is also seen that the disparity between the ages of the husband and wife is greater with regard to the higher age groups of husbands. Thus husbands who are on the average 32.5 years have wives of average age 25.1 years while those who are on the average 47.5 years have wives of average age 35.4 years. After this age-group of husbands the change in the average age of the wives who give birth to children is not appreciable.

15. The following table shows the average duration of marriage of mothers in each age-group and the average number of children born to them.

Age of mother	Average duration of marriage in year	Average number of children born including the present child.
15—19	3.1	1.3
20—24	5.7	2.2
25—29	10.8	3.8
30—34	14.9	5.8
35—39	19.2	6.8
40—44	23.2	8.0
45—49	25.4	8.5
Average	10.3	3.8

A significant inference possible from the above table is that the average number of children born to women for the various age-groups and particularly for the age-group 35—39, 40—44 and 45—49 is found to be comparatively higher than the average number recorded for the married women of these groups in the general population. It is likely that women with large families have a tendency to give birth to more children after the age of 35, 40 or 45. The average age of the married women has been already shown to be 27.4 years and the average duration of marriage is 10.3 years. The average age of marriage is therefore deduced to be 17.1 years. When compared to this average it is found that the average age of marriage of the women who continue to give birth to children between 45 and 49 is also higher (47.5—25.4=22.1) years. The average number of children born is 3.8. Generally speaking about 53 per cent. of the total births occur in the case of mothers, the duration of whose marriage is below 10 years and they

are either first, second or third births. Comparing individual ranks, it is seen that 1st births predominate (about 20 per cent.), there being a steady decrease in the frequency of births of other rank. Similarly for births between different durations of marriage the frequency is greatest for duration below 5 years. The fall in frequencies must be due to the fact that fertility-rates decrease with age of woman (*vide* table on page 183).

16. The 7,432 births returned have been grouped according to the means of livelihood of the father in certain broad classes. Only under pasture and agriculture, industry, trade, professions and liberal arts, and unspecified labour have more than 500 cases been returned. Against public administration, 319 births have been recorded. A study of the births returned under the other means of livelihood may not be of any interest since their numbers are comparatively small. The following table shows the average age of the mothers returned against each principal means of livelihood.

Means of livelihood of father.	Number of births.	Average age of mother.
Agriculture	2,643	27.6
Industry	901	27.2
Trade	1,336	27.1
Public Administration	319	27.9
Professions and Liberal Arts	620	27.5
Labour	1,356	26.5

The average age will indicate the nature of the age-constitution of the wives. Since fertility is higher in the lower age-groups a lower average is conducive to higher birth-rate. It may be noted that the age-constitution of the wives of persons following public administration and professions is such as will bring down fertility; but in the case of labour, industry and trade the effect is just the reverse. The agriculturist will occupy a middle place.

17. Since the figures for births returned against the various communities are too small it is not possible to compare the birth-rates for the different communities. The following table however shows the birth-rate calculated from population for the more important communities

residing in the areas selected for the enquiry. It appears that the Hindus and the Muslims have

Community.	Population.	Births.	Birth-rate.
Hindu	163,000	4,621	28 per mille
Christian	79,000	1,966	25 "
Muslim	28,000	845	30 "
Total	270,000	7,432	28 "

higher birth-rates than the Christians. The lower birth-rate for the Christians may be due to the fact that excepting for certain sections of the Syrian Christians, marriages take place among them at later ages.

18. Of the 7,432 births, 3,827 were males and 3,605 were females, the ratio of males to 1,000 female births being 1,061. It is known that the ratio of males to females in the general population is only 1,007. Naturally it can be inferred that female survivorship is greater than that of male survivorship in general.

19. It may be of interest to examine the variation of masculinity of birth for mothers of different age-groups, different communities and for different durations of marriage, means of livelihood of father, etc. But the value of the data collected is very limited owing to the smallness of the numbers dealt with as well as the restricted area brought under the enquiry.

Masculinity in relation to age of mother.

Age of mother.	Proportion of male births to 1,000 female births.
15—19	1,070
20—24	1,090
25—29	1,065
30—34	1,011
35—39	1,147
40—44	818
45—49	700

One significant feature noted is that masculinity is comparatively high in the earlier ages 15-19, 20-24 and 25-29 and low in the higher ages 40-44 and 45-49. Masculinity is very

Masculinity vs. Community.

Community.	Proportion of male to 1,000 female births.
Brahmin	1,272
Nayar	1,059
Ilava	1,013
Muslim	1,280
Syrian Christian	1,101
Nadar	1,022
Kammala	1,000
Vellala	926

high for Brahmins and Muslims but Vellalas Nayars, Ilavas and Nadars record a low masculi-

Masculinity vs. Means of Livelihood.

Means of livelihood of father.	Proportion of male births to 1,000 female births.
Agriculture	999
Industry	998
Trade	1,090
Administration	1,085
Professions	1,058
Labour	1,156

nity. On comparing the more important means of livelihood it is observed that in the case of labour proportionately more male children are born than in the case of the other means of livelihood.

Masculinity vs. Rank of child.

Rank of child.	Proportion of male to 1,000 female births.
1	1,073
2	1,073
3	1,009
4	1,002
5	1,140
6	1,058
7	1,121
8	1,181

When masculinity is compared for births of different ranks it is observed that excepting in the case of 3rd and 4th births masculinity is generally high.

Masculinity vs. Duration of marriage

Duration of marriage	Proportion of male births to 1,000 female births
0-5 years	1,067
5-9 "	1,098
10-14 "	1,056
15-19 "	955
20-24 "	1,198

Masculinity is high in the earlier years of duration. At 15-19 years there is a fall. This is supported by the fact that the masculinity is found to be low among births by mothers of ages 40-49.

20. The most important classification of deaths, viz., by age and sex has been discussed in the earlier paragraphs in connection with the life table. The classification of deaths was also made according to means of livelihood of the deceased, community, cause of death and age of the dead and living parents. The results are shown in the tables at the end of this annexure.

21. The following table shows for each age of the deceased the proportion of mothers and fathers who are dead.

Age of deceased	Proportion of mothers dead	Proportion of fathers dead
0-1	2.8 per cent.	1.2 per cent.
1-5	2.6 "	4.9 "
5-10	6.2 "	8.7 "
10-15	8.8 "	17.0 "
15-20	11.4 "	25.7 "
20-25	25.5 "	45.5 "
25-30	30.1 "	41.2 "
30-35	48.5 "	66.7 "
35-40	64.1 "	77.8 "
40-45	75.9 "	86.2 "
45-50	78.0 "	91.7 "
50-55	88.7 "	94.0 "
55-60	95.9 "	100.0 "
60-65	97.2 "	100.0 "
65-70	97.6 "	100.0 "
70 and over	100.0 "	100.0 "

22. Naturally with the advancing age of the deceased, the proportions of mothers or fathers dead also increase. For instance with regard to deceased person aged 55-60, 95.9 per cent of the mothers and 100 per cent. of the fathers are dead. One noteworthy feature is that in the case of infant deaths the proportion of mothers dead is higher than the proportion of fathers dead. This is mostly due to the deaths among women during child-birth. The table below shows for each age-group of the deceased the average age at death of the mother and the average age at death of the father. It is noted that excepting for one or two erratic cases, the higher the age of the deceased, the higher also is the age at death of the father or mother of the deceased. It substantiates a generally established finding that longevity has some relation to heredity.

Age of the deceased	Average age at death of	
	Mother	Father
0-1	28.8	40.2
1-5	30.0	36.2
5-10	31.0	51.5
10-15	28.8	51.6
15-20	43.7	49.9
20-25	32.0	51.2
25-30	47.4	48.4
30-35	51.6	58.2
35-40	54.8	60.8
40-45	55.9	61.8
45-50	59.0	80.0
50-55	58.5	62.0
55-60	63.4	67.2
60-65	63.1	68.4
65-70	65.4	68.0
70 and over	67.0	71.4

Thus for persons deceased at 70 and over the average age of the mothers at death is 67.0 and that of the fathers at death is 71.4.

23. It is generally conceded that means of livelihood has some relation to mortality since some occupations are more conducive to longevity than others. A detailed analysis of the effect of the means of livelihood on mortality is not possible because the number of cards dealt with is too small. Only a few occupations have returned more than a hundred cases and the proportionate distribution of deaths calculated for certain broad age-groups for these is given below.

Means of Livelihood	Number of deaths returned	Proportion dying per mille at age		
		0-20	20-60	60 & over
Pasture & Agriculture	386	28	529	443
Industry	119	50	689	261
Trade	140	57	579	364
Domestic Service	920	63	465	472
Unspecified Labour	192	57	708	235

The comparatively large proportions observed for the age-group 60 and above under pasture and agriculture and domestic service may indicate either that these occupations are favourable for longevity or that old persons also can continue these occupations. Similarly the high proportions for the age-group 20—60 under industry or labour indicate that these occupations are followed mostly by persons of middle age or that they are not favourable for longevity. With regard to domestic service out of 920 persons returned 870 are females. For the other occupations the number of females returned are relatively very small.

24. Of the 4,028 deaths returned, 2,066 had no occupations at all, *i. e.*, they include children and wholly dependent persons. For the whole population in general it is observed that 498 per mille of those who die are below 20 years of age, 268 are between 20 and 60 and the rest (234) above 60 years. The following table shows

the crude death-rate calculated for the major communities. The Hindus and Muslims have

Community	Number of deaths	Population	Death rate per mille
Hindu	2,617	163,000	16
Christian	976	79,000	12
Muslim	485	28,000	15
Total	4,028	270,000	15

higher death-rates than Christians. But as the birth-rate for Muslims and Christians is higher than that of Hindus the natural increase of the former is higher than that of the latter.

25. Of the major castes only Nayars, Ilavas, Muslims, Other Christians, Nadars and Kammalas and Other Hindus have returned more than 200 deaths each in the year under enquiry in the selected centres. The following table shows the proportional distribution of deaths in certain broad age-groups for certain communities.

Community (Caste)	Number of deaths	Proportion dying at ages		
		Below 20	20-60	Above 60
Nayar	569	413	281	306
Ilava	437	458	311	231
Vellala	194	515	227	258
Muslim	435	538	248	214
Syrian Christian	197	457	299	244
Kammala	228	478	278	244
Nadar	237	477	244	279

It is noted that the Nayars show the highest proportion dying above 60 years and Muslims the least.

26. The 4,028 deaths returned have been classified according to certain major causes of death. A study of these figures has interest only from the public health aspect but has no direct bearing on the population problems. The value of the data is also limited by the fact that no statistics of morbidity are available, for unless the number of actual attacks under each cause is known the incidence of mortality cannot be measured.

The major causes of death are shown below along with percentage in each class of disease to the

Cause of death	Number of deaths	Percentage to total
Smallpox	17	0.4
Typhoid	77	1.9
Malaria	28	0.7
Fevers	350	8.7
Dysentery & Diarrhoea	780	19.3
Respiratory diseases	744	18.4
Diseases of the circulatory system	583	14.5
Genito Urinary system	50	1.2
Maternal deaths	62	1.5
Accidents	87	2.2

total. Fevers, Dysentery and Diarrhoea, diseases of respiratory and the circulatory system predominate. Accidents also account for an appreciable number of deaths.

27. The following table shows the proportional distribution of deaths in certain broad age-groups for the more numerous returned of the causes.

Cause of death	Number of deaths	Per mille dying in the ages		
		Below 20	20—60	above 60
Typhoid	77	545	455	...
Fevers	350	637	234	129
Dysentery and Diarrhoea	780	693	187	170
Respiratory diseases	744	375	421	204
Diseases of the circulatory system	583	182	336	482
Maternal deaths	62	258	742	...
Accidents	87	414	494	92

From the above table it is seen that Typhoid, Fevers and Dysentery are more prevalent in the lower age-groups while diseases of the circulatory system are most prevalent in the higher age-group. Diseases of the respiratory system appear to be most prevalent in the middle age-group.

28. In order to discover whether any periodicity exists in the variation of births and deaths it is necessary to have figures by months concerning a series of years. Since we have figures for one year only, such a process is not possible. Still the proportion of births to deaths (vital index) calculated for the various months will indicate which are the most favourable months from the

standpoint of growth of population. The following table shows the vital indices (births for every 100 deaths) calculated for the various months.

Month	Vital Index
September	197
October	230
November	194
December	179
January	168
February	238
March	185
April	187
May	172
June	176
July	150
August	161
Total	185

The vital index is above the average from September to November and February to April. It is very low for July, August, December and January which are, as far as this State is concerned, considered as unhealthy months.

29. The vital indices calculated for certain specified communities are also given below for comparison. A noteworthy feature is that the

Community	Vital Index
Brahman	238
Nayar	180
Ilava	172
Muslim	194
Syrian Christian	338
Nadar	228

Syrian Christians have a comparatively high vital index.

30. Infantile mortality is the best index of social welfare since it is susceptible to even slight variations in public health, economic and other factors. The number of infant deaths recorded was 949 against 7,432 births thus giving a rate of 127 per 1,000 births. This is much lower than the rates prevailing in other parts of India which vary from 200 to 300. It was already stated that on comparing different regions the Tamilian group of towns (Aramboly, Bhoothapandy, Cape Comorin, Suchindram, Achanputhur and Samburvadakara) have a much higher infantile mortality rate (199 per 1,000 births) than the other towns, which have a rate only of 111 per 1,000 births. The difference must be mainly

due to the insanitary conditions, backwardness in education and unhealthy social customs of the Tamilian areas.

31. The following table shows the difference in infantile mortality with varying ages of mother and for certain communities

Age of mother		vs. Infantile mortality	
Age of mother	Number of births	Number of infant deaths	Infant deaths per 1,000 births
15—20	979	132	135
20—25	2,055	262	127
25—30	1,974	208	105
30—35	1,281	167	130
35—40	889	133	149
40—45	200	27	135
45 and above	51	6	117

Community		vs. Infantile mortality	
Community	Number of births	Number of infant deaths	Infant deaths per 1,000 births
Brahman	250	37	148
Nayar	1,077	107	99
Ilava	751	80	107
Muslim	845	116	137
Syrian			
Christian	666	34	51
Vellala	287	54	188
Kammala	268	52	194
Nadar	540	52	96

Comparing different age-groups of mothers it appears that infantile mortality is low for the age-groups 20—25 and 25—30. The variations between communities are more marked. Nayars, Ilavas, Syrian Christians and Nadars have low infant mortality rates. For Brahmans,

Muslims, Vellalas and Kammalas the rates are high.

32. The number of still births recorded in the year under enquiry was 168 (96 males and 72 females) giving a ratio of 22 per 1,000 live births. As the number of cards returned under this item is very small and as still births are of no special significance in vital statistical studies no detailed classification of these was attempted.

33. From the preceding paragraphs it may be seen that a correct record of vital statistics is required for the formulation of population policies. The increasing attention bestowed on population problems and the intimate bearing which these have on social planning whether in the field of public health, education, or economic development make it very essential to make the registration of births and deaths as accurate as possible. The registration of births and deaths is a fairly old practice and all civilized Governments have created administrative machineries to carry on this item of work, but perfection has been attained only in some of them. This is possible only by the hearty co-operation of the public with the Governments concerned. The public have in their turn to be properly enlightened by persistent propaganda in regard to the uses of vital statistics. If the present Vital Statistics Enquiry in the State has served this purpose, to whatever little extent it may be, it can be said to have justified the time and effort spent on the same.

ENQUIRY CARDS

CENSUS OF TRAVANCORE 1941

Specific Fertility Enquiry Card

Taluk.....
 Police Conservancy town.....Block No.....Name of
 head of family.....
 Circle No.....House No.

A. - Particulars of child born

1. Male..... Date of birth..... Order of birth.....
 or
 Female.....

B. Particulars of parents

	Father	Mother
Name		
Age (years and months)		
Caste		
Occupation		
Birth place		
Whether first, second or third marriage		
Duration of present marriage		

C. Particulars of previous children of the same mother.

Order. Male or female. Age of living. Age at death, if dead.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Countersigned
 Sanitary Circle Officer.

Conservancy Overseer.

CENSUS OF TRAVANCORE 1941

Specific Mortality Enquiry Card

Taluk.....
 Police Conservancy town.....
 Circle No. Block No..... House No.....
 Name of head of family.....

A. Particulars of deceased.

1. Name
2. Sex
3. Age in years and months
4. Whether married or not
5. Caste
6. Occupation last followed
7. Birth place
8. Cause of death
9. Date of death

B. Particulars of parents of deceased.

	Father.	Mother.
Name		
Age (if living)		
Age at death, if dead		
Occupation		
Birth place		

Countersigned
 Sanitary Circle Officer.

Conservancy Overseer.

TABLES ON VITAL STATISTICS

TABLE I—Classification of births according to months

Conservancy towns	Months												Total
	September	October	November	December	January	February	March	April	May	June	July	August	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Aramboly	22	24	18	20	16	19	19	26	28	23	28	28	271
Bhuthapandy	12	12	11	10	14	16	27	17	11	13	17	18	178
Cape Comorin	18	12	16	19	8	11	12	9	14	14	16	15	164
Suchindram	16	7	8	10	8	12	13	20	11	14	10	12	141
Eraniel	24	23	22	16	27	25	19	34	17	28	35	30	300
Thiruvithancode	16	17	14	17	15	19	13	8	14	23	9	17	182
Thiruvattai	2	2	4	5	8	4	7	7	6	3	3	4	55
Parassala	9	10	9	10	16	24	5	6	8	8	13	10	128
Nedumangad	5	5	4	5	4	3	6	7	6	2	9	4	55
Varkala	14	10	14	12	10	3	9	9	9	12	12	4	118
Kottarakkara	18	7	13	11	16	25	14	15	15	15	13	14	176
Punalur	45	19	23	26	32	42	26	23	36	36	27	31	366
Achanputhur	18	15	18	33	22	14	20	10	15	18	29	28	240
Samburvadakara	23	16	14	24	28	17	35	17	31	31	26	30	292
Karunagapally	20	15	15	13	18	14	15	7	16	27	10	16	187
Haripad	19	25	26	26	19	19	17	24	29	26	19	22	271
Mavelikara	40	31	37	30	29	37	26	17	31	33	30	30	371
Chengannur	27	22	24	21	22	35	24	26	31	45	25	23	325
Pathanamthitta	15	13	18	12	11	10	11	11	15	10	11	3	148
Ambalapuzha	30	42	35	24	23	32	23	23	21	29	28	18	328
Sherthala	3	13	24	14	13	13	13	11	9	18	17	14	162
Ettumanur	21	27	12	18	15	20	10	8	15	18	13	17	197
Minachil	8	9	8	7	10	9	12	4	10	7	9	4	97
Mundakayam	12	14	22	13	13	14	16	13	15	20	17	31	200
Muvattupuzha	21	25	19	20	25	23	15	16	21	7	..	..	192
Thodupuzha	20	14	16	15	8	12	13	13	8	6	19	..	144
Perumpavoor	23	17	17	22	12	22	14	22	15	21	14	14	213
Neyyattinkara Health Unit	143	171	175	176	175	153	179	161	178	179	142	99	1,931
Total	639	618	636	629	617	655	613	564	638	686	601	536	7,432

TABLE II—Classification of births by age and community of mother and sex of child

Community	Age of mother and sex of child														
	Below 15			15-19			20-24			25-29			30-34		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Brahman	..	..	..	57	26	31	64	41	23	54	29	25	36	18	18
Nayar	..	..	..	158	81	78	304	155	149	280	144	136	108	104	94
Ilava	..	..	..	94	49	45	210	113	97	199	89	110	129	64	65
Muslim	1	..	11	130	78	52	229	131	108	204	120	84	144	83	61
Syrian Christian	..	..	..	65	34	31	186	106	80	189	94	95	126	65	61
Other Christian	..	..	..	137	62	75	344	172	172	391	194	197	219	102	117
Other Hindu	2	1	1	199	106	93	370	191	179	316	170	146	213	108	105
Hindu Nādar	..	..	..	52	30	22	154	70	84	151	85	66	102	45	57
Kammāla	..	..	..	28	14	14	86	44	42	68	27	41	49	29	20
Vellāla	..	..	..	39	18	21	76	39	37	84	39	45	45	22	23
Paraya	..	..	..	8	4	4	9	3	6	8	6	2	7	1	6
Pulaya	..	..	..	8	3	5	19	13	6	20	14	6	10	3	7
Kurava	..	..	..	3	1	2	4	4	..	10	7	3	3	..	3
Total	3	1	2	979	506	473	2,055	1,072	982	1,974	1,018	956	1,281	644	627

Community	Age of mother and sex of child											
	35-39			40-44			45 and above			Total		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
17	18	19	20	21	22	23	24	25	26	27	28	
Brahman	35	24	11	3	1	2	1	1	..	250	140	110
Nayar	112	58	54	20	10	10	4	2	2	1,077	554	523
Ilava	95	52	43	23	10	13	1	1	..	751	378	373
Muslim	104	50	54	28	14	14	5	..	5	845	466	379
Syrian Christian	67	36	31	28	12	16	5	2	3	666	349	317
Other Christian	162	77	85	32	13	19	15	6	9	1,300	626	674
Other Hindu	171	94	77	38	19	19	10	5	5	1,319	694	625
Hindu Nādar	61	34	27	15	6	9	5	3	2	540	273	267
Kammāla	28	16	12	7	3	4	2	1	1	268	134	134
Vellāla	37	20	17	3	..	3	3	..	3	287	138	149
Paraya	5	4	1	..	..	..	..	..	..	37	18	19
Pulaya	8	7	1	2	2	..	..	..	..	67	42	25
Kurava	4	3	1	1	..	1	..	..	..	25	15	10
Total	889	475	414	200	90	110	81	21	30	7,332	3,827	3,605

TABLE III—Classification of births according to age of mother, age of father and sex of child

Age of mother and sex of child

Age of father	Age of mother and sex of child														
	Below 15			15—19			20—24			25—29			30—34		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Below 20	..	..	..	6	5	1	..	..	..	..	..	..	..	..	..
20—24	2	1	1	317	159	158	131	79	52	3	1	2	1	..	1
25—29	1	..	1	449	232	217	957	465	462	195	101	94	3	2	1
30—34	..	..	..	143	73	70	626	317	309	798	418	380	111	60	51
35—39	..	..	..	45	29	16	243	138	110	686	354	332	551	262	239
40—44	..	..	..	12	5	7	61	28	33	181	86	95	379	188	191
45—49	..	..	..	7	3	4	18	8	10	70	35	35	157	87	70
50—54	..	..	..	..	..	..	8	4	4	23	12	11	50	26	24
55 and above	..	..	..	..	..	..	6	3	3	18	11	7	29	19	10
Total	3	1	2	979	508	478	2,055	1,072	983	1,974	1,018	956	1,284	644	637

Age of mother and sex of child

Age of father	Age of mother and sex of child											
	35—39			40—44			45 and above			Total		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
	17	18	19	20	21	22	23	24	25	26	27	28
Below 20	..	..	..	..	..	..	..	..	..	6	5	1
20—24	1	..	1	..	..	..	..	..	..	455	240	215
25—29	1	..	1	..	..	..	..	..	..	1,606	830	776
30—34	5	4	1	..	..	..	..	..	..	1,683	872	811
35—39	106	52	54	1	..	1	2	1	1	1,639	836	803
40—44	363	189	174	30	14	16	2	..	2	1,028	510	518
45—49	280	156	124	93	40	53	10	4	6	635	333	302
50—54	84	50	34	54	25	29	19	8	11	238	125	113
55 and above	49	24	25	22	11	11	18	8	10	142	76	66
Total	839	478	414	200	90	110	51	31	30	7,432	3,927	3,605

TABLE IV - Classification of births according to age of mother, duration of marriage and sex of child

Duration of marriage (Years)	Age of mother and sex of child											
	Below 15			15-19			20-24			25-29		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13
Below 5	3	1	2	865	449	416	922	482	440	201	97	104
5-9	..	..	..	114	57	57	941	493	448	674	304	310
10-14	..	..	..	..	..	..	192	97	95	929	476	454
15-19	..	..	..	..	..	..	..	..	..	170	82	86
20-24	..	..	..	..	..	..	..	..	..	..	..	..
25 and above	..	..	..	..	..	..	..	..	..	..	..	..
Total	3	1	2	979	503	473	2,055	1,072	933	1,974	1,018	956

Duration of marriage (Years)	Age of mother and sex of child														
	30-34			35-39			40-44			45 and above			Total		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
Below 5	46	21	25	18	11	7	..	..	..	..	..	..	2,055	1,061	994
5-9	108	55	53	29	9	20	2	..	2	1	..	..	1,869	978	891
10-14	454	234	220	98	53	45	13	7	8	..	..	..	1,696	846	820
15-19	547	284	263	294	150	144	20	6	14	5	4	1	1,036	506	530
20-24	126	70	56	393	219	174	85	42	43	7	2	5	611	333	278
25 and above	..	..	..	57	33	24	80	35	45	38	15	23	175	88	92
Total	1,281	644	637	889	475	414	200	90	110	51	21	20	7,432	3,827	3,605

TABLE V—Classification of births according to age of mother and rank and sex of child

Rank of present child	Age of mother and sex of child											
	Below 15			15-19			20-24			25-29		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13
I	3	1	2	745	380	365	592	313	279	112	58	54
II	210	111	99	734	388	346	270	135	135
III	20	12	8	477	244	233	475	230	245
IV	1	1	..	197	100	97	513	272	241
V	3	2	1	39	18	21	395	210	185
VI	16	9	7	139	79	60
VII	57	26	31
VIII	13	8	5
IX
X
XI
XII
XIII
XIV
Total	3	1	2	979	503	473	2,055	1,072	983	1,974	1,018	988

Rank of present child	Age of mother and sex of child														
	30-34			35-39			40-44			45 and above			Total		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
I	23	11	12	2	2	..	..	..	..	1	..	1	1,478	765	713
II	75	37	38	18	6	12	1	..	1	..	..	..	1,308	677	631
III	116	61	55	39	19	20	5	3	2	1	..	1	1,133	569	564
IV	200	90	110	58	24	34	7	2	5	1	..	1	977	489	488
V	269	150	119	106	56	50	12	3	9	2	1	1	826	440	386
VI	280	137	143	156	77	79	16	11	5	5	1	4	612	314	298
VII	183	91	92	172	101	71	40	20	20	2	2	..	454	240	214
VIII	85	41	44	168	95	73	33	16	17	10	4	6	309	164	145
IX	39	21	18	103	52	51	33	13	20	10	2	8	185	88	97
X	7	3	4	36	27	9	28	13	15	8	4	4	79	47	32
XI	4	2	2	21	10	11	14	6	8	10	6	4	49	24	25
XII	..	..	..	5	4	1	6	3	3	..	..	..	11	7	4
XIII	..	..	..	4	1	3	3	..	3	1	1	..	8	2	6
XIV	..	..	..	1	1	..	2	..	2	..	..	..	3	1	2
Total	1,281	644	637	1,859	475	414	200	90	110	51	31	30	7,332	3,827	3,605

TABLE VI—Classification of births according to age of mother, occupation of father and sex of child

Occupation of father	Age of mother and sex of child														
	Below 15			15—19			20—24			25—29			30—34		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Exploitation of Animals and vegetation	..	..	..	324	161	163	721	377	344	723	344	379	436	221	315
Industry	1	1	..	122	64	58	273	133	140	216	105	111	146	83	65
Transport	..	..	..	5	4	1	17	9	8	12	8	4	3	2	1
Trade	..	..	..	216	112	104	345	179	166	348	188	160	239	124	115
Public Force	..	..	..	2	1	1	5	4	1	8	5	3	2	..	2
Public Administration	1	..	1	28	15	13	97	44	53	79	49	30	62	28	34
Professions and Liberal Arts	..	..	..	78	40	38	172	86	86	161	88	73	112	46	66
Pension	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..
Domestic service	..	..	..	16	7	9	43	26	17	38	20	18	23	12	11
Unspecified labour	..	..	..	174	94	80	368	205	163	367	197	170	244	120	124
Unproductive	..	..	..	2	2	..	1	1	..	..	..	..	1	1	..
Student	1	..	1	3	1	2	..	..	..	..	..	..	..	..	..
Nil	..	..	..	9	5	4	13	8	5	22	14	8	10	6	4
Total	3	1	2	979	503	473	2,055	1,072	933	1,974	1,013	935	1,231	644	637

Occupation of father	Age of mother and sex of child											
	35—39			40—44			45 and above			Total		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
	17	18	19	20	21	22	23	24	25	26	27	28
Exploitation of Animals and vegetation	344	176	168	75	32	43	20	10	10	2,043	1,321	1,322
Industry	110	51	59	26	10	16	5	2	3	901	449	452
Transport	2	1	1	1	1	..	..	..	..	40	25	15
Trade	146	78	68	32	14	18	10	2	8	1,336	697	639
Public force	..	..	..	..	..	..	..	..	..	17	10	7
Public Administration	40	26	14	11	3	8	1	1	..	319	166	153
Professions and Liberal Arts	78	49	29	16	8	8	3	1	2	620	318	302
Pension	1	1	..	1	..	1	1	..	1	4	2	2
Domestic service	9	5	4	1	..	1	1	1	..	131	71	60
Unspecified labour	156	85	71	37	22	15	10	4	6	1,356	727	629
Unproductive	2	2	..	..	..	..	..	..	..	6	6	..
Student	..	..	..	..	..	..	..	..	..	4	1	3
Nil	1	1	..	..	..	..	..	..	..	55	34	21
Total	889	475	414	200	90	110	51	21	30	7,432	3,827	3,605

TABLE VII—Classification of deaths according to months

Conservancy towns	Months												Total
	September	October	November	December	January	February	March	April	May	June	July	August	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Aramboly	11	24	17	18	10	9	8	12	14	20	14	16	173
Bhuthapandy	4	8	10	3	9	1	12	10	6	12	9	6	90
Cape Comorin	5	7	5	11	10	6	5	5	7	8	6	11	86
Suchindram	13	9	7	4	13	5	10	9	11	6	10	4	101
Eraniel	13	10	10	7	10	16	14	10	11	13	15	14	143
Thiruvithancode	5	5	10	8	3	9	9	8	9	8	13	8	95
Thiruvattar	2	..	2	4	3	2	3	6	4	2	3	3	34
Parassala	1	4	6	4	12	6	3	..	8	4	3	3	56
Nedumangad	4	2	4	3	1	1	1	4	4	2	3	7	36
Varkala	3	2	8	10	4	2	6	6	9	14	14	6	84
Kottarakkara	10	3	2	8	7	7	9	3	9	12	14	5	89
Punalur	10	3	11	16	13	11	9	8	9	13	12	15	130
Achanputhur	12	5	15	17	16	15	12	5	16	14	5	10	142
Samburvakara	16	10	19	24	16	9	21	6	10	12	11	9	163
Karunagapally	10	13	8	10	16	7	5	7	8	17	24	10	135
Haripad	15	12	11	22	13	22	17	13	24	13	27	27	216
Mavelikara	23	23	21	11	21	15	19	10	7	16	16	21	203
Chengannur	24	13	16	12	13	13	9	18	14	9	21	13	175
Pathanamthitta	10	8	5	4	7	4	4	8	9	9	10	5	83
Ambalapuzha	18	14	20	22	16	20	14	23	31	21	31	15	245
Sherthala	8	6	13	14	11	6	9	9	8	11	7	10	112
Ettumanur	12	9	4	16	9	5	7	5	5	9	10	15	108
Minachil	2	2	2	3	5	1	3	3	4	4	1	2	32
Mundakayam	11	7	7	7	11	5	8	10	19	13	8	10	116
Muvattupuzha	7	9	6	8	9	11	11	4	9	7	..	..	81
Thodupuzha	11	6	12	9	4	3	4	2	4	3	8	5	71
Perumpavur	11	3	9	10	9	2	6	8	7	9	7	12	93
Neyyattinkara Health Unit	53	52	67	66	97	62	94	37	96	108	97	70	949
Total	324	269	327	361	368	275	332	301	372	389	399	332	4,033

N. B.—11 cases were ownerless dead bodies. Detailed information regarding these were not available. They have been excluded from the general sorting.

TABLE VIII—Classification of deaths by age, community and sex of the deceased

Community of the deceased	Age and sex of the deceased																	
	Below 1		1-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Brahman	25	12	5	10	8	4	1	1	..	4	..	1	1	1	..	1	..	2
Nayar	63	44	41	37	15	10	5	9	4	7	7	9	7	11	9	6	6	11
Ilava	41	39	29	50	12	9	1	2	8	11	5	9	12	4	6	5	10	9
Muslim	63	53	32	28	12	8	11	8	12	7	4	1	8	10	9	8	4	5
Syrian Christian	20	14	17	17	5	4	1	7	3	2	3	4	3	4	3	3	4	1
Other Christians	108	77	64	69	18	19	10	9	12	7	16	16	11	19	18	10	12	10
Other Hindus	113	97	54	79	6	14	8	6	8	10	13	13	12	16	11	14	18	10
Vellála	31	23	12	24	1	4	2	..	2	1	..	1	6	2	..	1	2	3
Kammala	28	24	16	27	5	4	1	1	1	1	2	1	8	3	2	2	3	3
Nadar	24	28	23	24	4	1	1	4	4	4	3	6	5	2	1	3	4	1
Pulaya	6	6	9	11	1	1	1	1	..	2	..	1	..	..	..	..	1	2
Paraya	7	2	2	1	..	..	1	..	1	..	1	1	..	..	1	..	1	..
Kurava	..	1	..	4	1	1	2	..	..	..	..	..	..	1	..	..	..	..
Total	529	420	304	381	83	79	45	48	53	56	54	63	73	73	60	57	64	56

Community of the deceased	Age and sex of the deceased																
	40-45		45-50		50-55		55-60		60-65		65-70		70 and above		Total		
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Persons	Males	Females
	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Brahman	2	..	3	1	1	..	1	1	3	3	4	3	4	8	105	53	52
Nayar	6	11	10	15	12	6	20	15	25	17	19	18	41	54	509	289	280
Ilava	12	8	10	12	10	4	7	13	13	12	12	8	23	33	437	209	228
Muslim	9	5	16	2	8	6	13	5	20	7	14	7	23	22	435	258	177
Syrian Christian	8	2	6	4	8	3	2	1	9	5	4	4	19	7	197	115	82
Other Christians	15	9	16	11	14	10	20	9	20	11	14	21	51	44	770	419	360
Other Hindus	11	14	13	6	14	8	15	11	13	13	20	20	32	54	746	361	385
Vellála	4	..	2	4	6	8	4	1	10	4	1	5	13	17	194	96	98
Kammala	5	1	5	4	5	3	8	9	5	4	8	5	8	25	226	110	116
Nadar	5	3	6	..	2	4	6	3	8	3	4	6	23	22	237	123	114
Pulaya	1	..	..	1	..	..	6	1	1	1	..	..	2	3	58	28	30
Paraya	1	1	..	..	..	..	..	1	1	..	..	1	1	2	26	17	9
Kurava	..	..	..	..	..	..	1	..	1	3	..	..	2	2	19	7	12
Total	79	54	87	60	80	52	103	70	129	83	100	98	242	293	4,028	2,066	1,943

TABLE IX—Classification of deaths by age, occupation and sex of the deceased

Occupation of the deceased	Age and sex of the deceased																	
	Below 1		1-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Exploitation of animals and vegetation	1	..	10	..	16	..	21	..	19	..	19	1
Industry	6	..	4	..	15	2	7	1	14	3
Transport	1	..	..	..
Trade	2	..	6	..	3	..	13	..	6	..	7	..
Public force	1	..	..	..	1	..	..	..
Public Administration	1	..	..	..	..	..	1	1	..	..
Professions and Liberal Arts	4	..	2	1	2	..	1	1
Pension
Domestic service	12	..	46	1	52	1	65	..	51	1	46
Insufficiently described occupations	1	1	7	2	14	3	12	3	18	3	15	3
Unproductive	1	..	..	1	..	..	..	..	..	..
Student	23	21	25	10	6	2	1	..	..	..	..	..	..	..
Nil	529	420	304	381	60	58	16	25	16	6	10	7	9	2	5	1	7	2
Total	529	420	304	381	83	79	45	48	53	56	54	63	73	73	60	57	64	56

Occupation of the deceased	Age and sex of the deceased															Total		
	40-45		45-50		50-55		55-60		60-65		65-70		70 & above		Persons	Males	Females	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females						
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
Exploitation of animals and vegetation	29	..	34	..	32	..	33	..	47	..	36	..	86	2	386	383	3	
Industry	9	..	8	..	7	1	8	3	11	1	7	..	11	1	119	107	12	
Transport	..	..	..	..	1	..	..	..	..	..	..	..	1	..	3	3	..
Trade	14	2	10	1	12	..	13	..	20	..	13	..	18	..	140	137	3	
Public force	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	..
Public Administration	5	..	10	..	8	..	..	..	2	..	..	..	..	..	28	27	1
Professions and Liberal Arts	5	..	2	1	7	..	5	..	8	..	3	..	8	..	50	47	3	
Pension	..	..	..	..	..	..	5	..	3	..	5	..	9	..	22	22	..
Domestic service	1	46	2	53	2	48	5	54	10	76	11	87	16	234	920	50	870	
Insufficiently described occupations	11	4	14	2	3	1	22	8	9	3	6	2	14	11	192	146	46	
Unproductive	..	..	..	..	..	..	1	..	2	..	1	1	2	3	12	7	5
Student	..	..	..	..	..	..	..	..	..	..	..	..	..	..	88	55	33
Nil	5	2	7	3	8	2	11	5	17	3	18	8	77	42	2,066	1,099	967	
Total	79	54	87	60	80	82	103	70	129	83	100	98	242	293	4,028	2,085	1,943	

TABLE X—Classification of deaths by age and sex of the deceased and the cause of death

Cause of death	Age and sex of the deceased																	
	Below 1		1-5		5-10		10-15		15-20		20-25		25-30		30-35		35-40	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Small-pox	..	2	..	2	..	..	..	..	..	..	..	..	2	1	1	..	1	1
Typhoid	..	1	5	5	6	4	7	2	5	7	4	4	8	7	4	1	2	..
Malaria	..	..	1	1	1	2	..	1	2	..	..	..	3	..	1	2	1	2
Other fevers	39	33	35	54	13	7	10	12	14	6	6	5	4	12	5	2	7	3
Accident	2	1	6	1	4	5	6	3	4	4	4	3	8	..	3	2	3	1
Dysentery and Diarrhoea	105	86	138	150	19	24	3	3	5	7	11	4	9	5	5	7	3	0
Respiratory diseases	68	64	38	43	10	9	9	11	14	13	16	20	30	16	21	20	21	20
Genito urinary diseases	1	..	..	..	1	..	1	..	..	..	..	..	2	1	2	2	1	2
Diseases of the circulatory system	5	2	19	38	9	14	4	10	2	3	6	3	5	15	6	7	12	10
Other causes	309	231	62	87	20	14	5	6	7	18	7	24	7	16	12	14	13	11
Total	529	420	304	381	83	79	45	48	53	56	54	63	73	73	60	67	64	56

Cause of death	Age and sex of the deceased																Total		
	40-45		45-50		50-55		55-60		60-65		65-70		70 and above		Persons	Males	Females		
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females							
1	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
Small pox	..	1	1	..	1	1	..	..	2	..	..	..	..	1	17	8	9
Typhoid	4	..	2	..	1	..	2	1	..	..	..	..	..	..	77	45	32
Malaria	2	2	..	3	..	..	..	2	2	..	..	..	..	..	28	13	15
Other fevers	4	4	6	5	3	5	9	2	7	4	7	3	10	14	350	179	171		
Accident	10	2	3	..	2	1	1	..	1	1	2	1	2	1	87	61	26		
Dysentery and Diarrhoea	6	4	6	8	8	6	7	12	15	14	10	19	26	49	780	376	404		
Respiratory diseases	24	17	23	14	17	11	23	20	25	14	23	15	38	37	744	400	344		
Genito urinary diseases	3	1	2	..	4	1	4	1	2	..	1	1	17	..	50	41	9		
Diseases of the circulatory system	10	8	19	20	23	11	23	18	39	25	34	33	65	85	583	281	302		
Other causes	16	15	25	10	21	16	34	14	36	25	23	23	84	106	1,312	691	621		
Total	79	54	87	60	80	52	103	70	129	83	100	93	242	293	4,085	2,085	1,943		

TABLE XI—Distribution of deaths according to age of the deceased and the age of the deceased's mother (living and dead)

Age of the deceased	Age of mother living and dead*																			
	Below 15		15-19		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59	
	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0-1	3	..	132	..	251	11	203	5	162	5	131	2	25	2	5	1	1	..	..	..
1-5	30	2	147	1	214	4	139	8	95	3	29	..	8	..	1	..	..	..
5-10	1	..	13	1	48	6	41	1	27	..	14	1	7	1	1	..	..	..
10-15	2	..	4	2	16	1	24	2	15	..	13	2	7	..	1	..
15-20	1	8	..	33	2	20	4	13	2	9	3	7	..
20-25	1	1	1	1	1	8	3	14	7	23	6	12	3	9	1
25-30	1	6	1	6	8	5	28	8	17	6	25	6
30-35	3	..	5	..	5	6	8	9	11	20	7	..
35-40	4	..	..	..	2	..	2	..	7	..	7	4	11	9	11
40-45	2	..	..	3	..	7	..	8	..	18	1	16	..
45-50	1	..	..	..	1	..	3	..	6	..	7	..	17	2	19
50-55	1	..	4	..	8	..	13	..	13	..	..	14
55-60	2	..	..	..	1	..	3	..	3	..	11	..	9	..	24
60-65	2	..	..	1	..	3	..	4	..	15	..	13	..	20
65-70	2	..	3	..	3	..	9	..	12	..	16
70 and above	1	..	3	..	6	..	3	..	8	..	12	..	31	..	35

Age of the deceased	Age of mother living and dead*																Total		Particulars of parents 'unknown
	60-64		65-69		70-74		75-79		80-84		85-89		90 and above		Persons	Living	Dead		
	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead							
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
0-1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	949	913	26	10
1-5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	685	663	18	4
5-10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	162	152	10	..
10-15	..	..	1	1	..	..	..	..	..	..	..	..	..	..	93	83	8	2
15-20	3	..	..	..	..	..	..	..	..	..	..	..	..	..	109	93	12	4
20-25	7	..	5	..	2	..	..	..	..	..	..	..	..	..	117	82	28	7
25-30	4	2	6	1	4	..	1	..	..	1	..	..	..	..	146	95	41	10
30-35	14	10	3	..	1	1	1	1	..	..	..	..	..	..	117	54	51	12
35-40	11	11	7	4	4	3	3	2	..	4	..	..	..	..	120	38	68	14
40-45	8	15	5	9	6	8	6	..	2	1	..	..	..	1	133	28	88	17
45-50	6	21	8	9	5	11	3	7	3	1	1	..	1	..	147	29	103	15	
50-55	..	20	4	8	9	7	3	5	3	4	..	..	..	1	132	19	98	15
55-60	..	32	..	20	..	22	3	6	1	7	..	2	2	..	173	6	142	25	
60-65	..	37	..	28	..	30	..	12	3	7	..	2	2	1	212	5	176	31	
65-70	..	29	..	25	..	36	..	13	1	10	3	1	..	2	198	4	162	32	
70 and above	..	72	..	57	..	74	..	51	..	42	..	22	..	19	535	..	436	99	

N. B.—In the case of dead parents, the age group specified represents the age at the time of death

TABLE XII—Distribution of deaths according to age of the deceased and the age of the deceased's father (living and dead)

Age of the deceased	Age of father living and dead																			
	Below 15		15-19		20-24		25-29		30-34		35-39		40-44		45-49		50-54		55-59	
	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0-1	87	..	186	1	194	4	188	1	140	1	89	3	80	..	8	..
1-5	15	1	101	7	139	5	167	3	105	5	77	2	26	2	17	2
5-10	7	2	82	1	41	3	23	2	15	2	13	1	8	1
10-15	1	..	3	..	10	2	16	2	20	3	9	4	8	2
15-20	1	..	1	4	13	8	20	5	18	2	12	2
20-25	2	1	4	5	5	18	12	11	13	8	6
25-30	1	8	2	8	10	8	14	12
30-35	1	..	1	..	3	..	4	..	5	1	9	9	15
35-40	2	..	3	..	4	..	5	..	14	2	9
40-45	1	1	..	3	..	4	..	5	..	9	1	14
45-50	1	..	1	..	3	..	1	..	6	..	14	..	18
50-55	2	..	1	..	3	..	7	..	17	..	9
55-60	1	..	..	..	2	..	5	..	6	..	15
60-65	1	..	1	..	4	..	2	..	10	..	20
65-70	1	..	..	..	2	..	1	..	3	..	7	..	9	..	11
70 and above	2	..	4	..	5	..	6	..	5	..	24	..	20

Age of the deceased	Age of father living and dead																	Total	Particulars of patients unknown
	60-64		65-69		70-74		75-79		80-84		85-89		90 & above		Persons	Living	Dead		
	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead	Living	Dead							
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
0-1	5	1	1	..	..	1	..	..	..	..	..	..	..	..	949	928	11	10
1-5	3	1	2	1	1	..	..	..	..	..	..	..	..	..	685	652	29	4
5-10	3	1	..	1	1	..	..	..	..	..	..	..	..	..	182	148	14	..
10-15	4	1	1	2	2	..	1	..	..	..	..	..	..	..	98	75	18	2
15-20	10	2	2	3	1	1	..	..	..	..	..	..	..	..	109	78	27	4
20-25	11	3	6	3	3	2	1	..	1	..	..	..	..	..	117	60	50	7
25-30	14	11	16	2	7	5	4	2	1	..	1	..	1	..	146	80	66	10	
30-35	10	14	9	9	3	5	1	2	1	2	1	..	..	..	117	85	70	12
35-40	7	16	8	8	5	9	1	7	..	4	1	1	..	..	120	24	82	14
40-45	8	28	3	19	3	10	1	6	2	3	1	..	2	..	138	16	100	17	
45-50	..	35	5	13	3	14	2	3	..	8	1	4	..	..	147	11	121	15
50-55	..	35	..	14	2	11	3	1	..	7	1	2	1	1	132	7	110	15	
55-60	..	35	..	23	..	32	..	15	..	9	..	3	..	2	173	..	148	25	
60-65	..	23	..	37	..	37	..	21	..	15	..	6	..	4	212	..	181	81	
65-70	..	25	..	27	..	35	..	18	..	19	..	3	..	5	198	..	166	82	
70 and above	..	60	..	53	..	72	..	60	..	74	..	29	..	22	535	..	436	99	

LIFE TABLE—MALES.

(Prepared from smoothed specific mortality rates obtained from the vital statistical enquiry)

Age	Number living	Number dying	Mortality per mille	Average expectation of life in years	Age	Number living	Number dying	Mortality per mille	Average expectation of life in years
x	lx	dx	1000 qx	ex	x	lx	dx	1000 qx	ex
1	2	3	4	5	1	2	3	4	5
0	10000	1430	143.0	44.6	48	5728	95	16.5	19.9
1	8670	422	49.2	51.6	49	5633	99	17.5	19.2
2	8148	230	28.2	53.2	50	5534	102	18.5	18.5
3	7918	162	20.4	53.7	51	5432	106	19.6	17.9
4	7756	117	15.1	53.8	52	5326	110	20.7	17.2
5	7639	81	10.6	53.6	53	5216	114	21.9	16.5
6	7558	54	7.2	53.2	54	5102	119	23.3	15.9
7	7504	38	5.1	52.6	55	4983	126	25.2	15.3
8	7466	30	4.0	51.9	56	4857	133	27.3	14.7
9	7436	26	3.5	51.1	57	4724	140	29.6	14.1
10	7410	23	3.1	50.3	58	4584	146	31.9	13.5
11	7387	20	2.7	49.4	59	4438	152	34.2	12.9
12	7367	18	2.4	48.6	60	4286	158	36.8	12.3
13	7349	18	2.5	47.7	61	4128	164	39.5	11.8
14	7331	19	2.6	46.8	62	3965	169	42.5	11.3
15	7312	20	2.7	45.9	63	3796	174	45.8	10.7
16	7292	20	2.8	45.0	64	3622	179	49.4	10.2
17	7272	21	2.9	44.2	65	3443	184	53.4	9.7
18	7251	22	3.0	43.3	66	3259	188	57.6	9.3
19	7229	22	3.1	42.4	67	3071	189	61.7	8.8
20	7207	23	3.2	41.5	68	2882	190	66.0	8.3
21	7184	24	3.4	40.7	69	2692	190	70.4	7.9
22	7160	25	3.6	39.8	70	2502	188	75.2	7.5
23	7134	28	3.9	39.0	71	2314	188	81.1	7.0
24	7106	30	4.2	38.2	72	2126	187	87.6	6.6
25	7076	32	4.5	37.3	73	1939	184	94.8	6.2
26	7044	34	4.8	36.4	74	1755	182	104.0	5.8
27	7010	36	5.1	35.6	75	1573	178	113.4	5.4
28	6974	38	5.5	34.8	76	1395	173	124.2	5.0
29	6936	41	5.9	34.0	77	1222	166	135.7	4.7
30	6895	43	6.3	33.2	78	1056	157	148.5	4.3
31	6852	46	6.7	32.4	79	899	146	162.8	4.0
32	6806	48	7.1	31.6	80	753	135	178.8	3.7
33	6758	51	7.5	30.8	81	618	122	197.2	3.4
34	6707	53	7.9	30.0	82	496	109	219.3	3.1
35	6654	55	8.3	29.3	83	387	95	245.6	2.8
36	6599	57	8.7	28.5	84	292	80	272.8	2.5
37	6542	60	9.1	27.7	85	212	64	303.9	2.3
38	6482	62	9.5	27.0	86	148	50	335.2	2.1
39	6420	64	10.0	26.3	87	98	36	370.1	1.9
40	6356	67	10.6	25.5	88	62	25	409.4	1.7
41	6289	70	11.2	24.8	89	37	17	453.3	1.5
42	6219	73	11.8	24.1	90	20	10	502.0	1.3
43	6146	77	12.5	23.3	91	10	6	555.3	1.2
44	6069	80	13.2	22.6	92	4	2	613.4	1.2
45	5989	83	13.9	21.9	93	2	1	676.3	1.0
46	5906	87	14.7	21.2	94	1	..	..	..
47	5819	91	15.6	20.5					

LIFE TABLE—FEMALES
(Prepared from smoothed specific mortality rates obtained from the vital statistical enquiry)

Age	Number living	Number dying	Mortality per mille	Average expectation of life in years	Age	Number living	Number dying	Mortality per mille	Average expectation of life in years
x	lx	dx	1000 qx	ex	x	lx	dx	1000 qx	ex
1	2	3	4	5	1	2	3	4	5
	10000	1162	116.2	49.4	48	6291	70	11.2	22.4
1	8838	367	41.5	45.3	49	6221	73	11.8	21.6
2	8471	197	23.3	46.7	50	6148	77	12.5	20.9
3	8274	122	14.8	47.1	51	6071	80	13.2	20.1
4	8152	79	9.7	46.9	52	5991	83	13.9	19.4
5	8073	53	6.6	46.4	53	5908	87	14.7	18.7
6	8020	38	4.8	45.8	54	5821	90	15.5	18.0
7	7982	30	3.8	45.1	55	5731	94	16.4	17.2
8	7952	25	3.2	44.3	56	5637	98	17.4	16.6
9	7927	23	2.9	43.5	57	5539	103	18.6	15.8
10	7904	22	2.8	42.6	58	5436	111	20.4	15.1
11	7882	21	2.7	41.8	59	5325	119	22.3	14.4
12	7861	22	2.8	40.9	60	5206	129	24.7	13.7
13	7839	23	2.9	40.1	61	5077	139	27.8	13.0
14	7816	24	3.1	39.2	62	4938	149	30.1	12.4
15	7792	25	3.3	38.4	63	4789	160	33.5	11.8
16	7766	27	3.5	37.5	64	4629	173	37.5	11.2
17	7739	29	3.8	36.7	65	4456	186	41.7	10.6
18	7710	32	4.1	35.9	66	4270	196	46.0	10.0
19	7678	33	4.3	35.1	67	4074	206	50.5	9.4
20	7645	34	4.5	34.2	68	3868	216	56.0	8.9
21	7611	36	4.7	33.4	69	3652	225	61.5	8.4
22	7575	36	4.8	32.6	70	3427	230	67.0	8.0
23	7539	37	4.9	31.8	71	3197	232	72.5	7.5
24	7502	38	5.0	31.0	72	2965	233	78.7	7.0
25	7464	38	5.1	30.3	73	2732	233	85.3	6.6
26	7426	39	5.3	29.5	74	2499	233	93.5	6.2
27	7387	41	5.5	28.7	75	2266	232	102.4	5.7
28	7346	41	5.6	27.9	76	2034	229	112.5	5.3
29	7305	42	5.8	27.1	77	1805	223	123.4	5.0
30	7263	43	5.9	26.3	78	1582	214	135.6	4.6
31	7220	44	6.1	25.5	79	1368	204	149.2	4.2
32	7176	45	6.3	24.7	80	1164	191	164.7	3.9
33	7131	46	6.5	23.9	81	973	177	182.4	3.5
34	7085	47	6.7	23.2	82	796	162	203.7	3.2
35	7038	48	6.9	22.4	83	634	145	229.1	2.9
36	6990	50	7.2	21.6	84	489	125	255.6	2.6
37	6940	51	7.4	20.8	85	364	104	286.3	2.4
38	6889	52	7.6	20.0	86	260	83	317.4	2.1
39	6837	54	7.9	19.3	87	177	66	352.8	1.9
40	6783	56	8.2	18.5	88	111	43	391.8	1.7
41	6727	57	8.4	17.7	89	63	30	436.1	1.5
42	6670	59	8.7	17.0	90	38	18	485.9	1.4
43	6611	60	9.1	16.2	91	20	11	540.9	1.2
44	6551	62	9.5	15.4	92	9	6	601.7	1.0
45	6489	64	9.8	14.7	93	3	2	668.2	0.8
46	6425	66	10.2	23.9	94	1	..	..	..
47	6359	68	10.7	23.2					

APPENDIX III.

RANDOM SAMPLES.

The study of a population necessarily implies the study of the traits or characteristics that are common to the individuals in the group. Certain characteristics are measurable while others, though non-measurable, allow of qualitative estimation. These values are the constants called parameters that define the population.

2. The study of a population involves the evaluation of the parameters referred to above. The changes noticeable in these parameters due to differences in time and space indicate the trends in growth of the population. Hence a correct estimate of the parameters is of fundamental importance in all population studies.

3. The Census that occurs once in ten years is an attempt at measuring the traits in the population—men and women in a country. The census operations, in view of the fact that all the individuals in the country have to be enumerated, require the setting up of a very costly, complicated and unwieldy machinery. Even assuming that the cost should not stand in the way, it has to be observed that the Census enumerators are invariably new to the work, being mostly teachers from the various schools in the State. However correct and precise the instructions given to the enumerators may be, it is only natural that a margin of error should creep in during the census work. Apart from the difficulties of the field work, the Tabulation in the Census Office is much too heavy and laborious a process. Any one who has sorted the Census Cards before the Tables are presented in the form seen in the Census Report will bear ample testimony to the time required for the different stages in the work and the possibilities of a slip here or there that will bring about disparities between the final totals arrived at.

4. Thus from the different points of view from which the census operations can be looked at, one feels the uncomfortable misgiving if this laborious method is not in a sense 'primitive'. In statistical studies, as in all fields of human

activity, the aim should be to secure the maximum benefit with minimum expenditure and time. In spite of the supposed accuracy possible in the census one would unhesitatingly go in for a simpler and more convenient mode of approach where there is perfect certainty of the extent of error that may be committed and where cost and time can be saved. To quote the Census Commissioner for India "If we can through improvement or skill, so lessen our error and extend our scope that we can establish types from which we can accurately project the whole we have before us the possibility of a far more useful application of our limited and relatively inextensible financial resources. That is, of course, sampling".

5. A brief reference to the sampling method to bring out the advantages and limitations therein is only appropriate. The sampling method is resorted to in ordinary life almost involuntarily, by every one in making judgments or inferences. When you wish to buy anything from the bazaar you satisfy yourself as to its quality by testing it with the help of the sample. In large manufacturing concerns, the same method is employed in the control of quality of manufactured goods. "In Statistical sampling, however, we are not quite in the position of the commercial traveller and there is a great deal to do in the actual checking of our methods and the quality of the sample we produce by them".

6. Consider a homogeneous population for the sake of simplicity. The values of the characteristics for the large majority of individuals will lie in fairly short intervals round the corresponding values of the parameter in such populations. There will no doubt exist a small minority lying outside the regions so specified. If, therefore, a sample is taken from such a population one can expect that most of the individuals in the sample will correspond to those that are in the neighbourhood of the population parameters and in consequence, the

sample can be utilised in estimating these parameters.

7. "The object of the sample is to afford an indication of the whole of which it is a fragment; and the better the sample, the more confidently and closely we can predict the whole". The success of the sampling method, therefore, depends on so designing it as to give a miniature form of the original population. In the case of homogeneous groups, the end is achieved by picking out at random the individuals for the sample. It may mathematically be demonstrated that the method is correct and that the sample gives the values of the population constants with accuracy that can be measured. The random selection to form the sample has to be done by the lottery method. But when the population is large and where the individuals cannot be numbered in serial order, the method is not applicable. One of the devices usually adopted to get a random sample from large populations is known as the *n*'th method. If it is desired for instance to take a ten per cent. sample of the houses in a locality, the procedure is to take every tenth house that comes in by following a particular order in counting them. The method is not so efficient as the one involving the use of Random Sampling numbers. But the shortcomings may be overlooked when the sample itself is large.

8. It has been observed that the random sample is applicable only in the study of homogeneous populations. An indiscriminate use of the random sample in studying what may be called heterogeneous populations will only give distorted facts regarding the population. In such cases the method for scientific inference is to resort to the Stratified Random Sample. This method has been discussed at length in the volume on Economic Survey.

9. The study of population problems by the sampling method necessarily involves the important step of taking a fairly good and representative sample. The theoretic method of the Stratified Representative Sampling is undoubtedly more efficient. In studies based on this method,

stress is placed on an intensive appraisal of the features relating to the many-sided activities of the individuals forming the population. The study is in this respect microscopic by taking sections. Such a study may not be necessary in social and administrative problems where indices showing broad tendencies alone are required. The age-composition of the population, their civil condition, literacy and occupational facilities—are some of the factors that require measurement, in the broad sense, before the trends can be indicated. If each of these items has to be studied in detail the only method available is the one mentioned above. But if only a birds-eye-view that gives the salient features of the group—is required the question may be asked why not the Random Sample method. "The predictive qualities of a Statistical sample of this kind will vary according to the aspect under examination and in general will be best where the aspect is universally present in the population". The sample should be selected by grouping throughout the entire group. Naturally the Principle of Insufficient Reason—in other words, the Principle of Equal Distribution of Ignorance—urges one to assert that the Random Sample will give a miniature population containing all the traits of the parent group. How far this is correct can be judged only by the results it yields.

10. The method suggested by the Census Commissioner for India enables a comparison of the Sample values with the population values. The results of the comparison may be accidental. Before the final verdict on the utility of the method could be given the question as to how the results based on this method behave in repeated samples has to be gone into. But the possibility of verifying the results with the population census figures has not necessitated the further subdivision of the sample for noting the sampling fluctuations. It may however be pointed out that the surprising agreement between the sample values and the population values obtained in the present investigation warrants the statement that the method is

sufficiently reliable and efficient. It was suggested by the Census Commissioner for India that a 1/50 sample of the population should be selected and that the sample slips so selected should be sorted for certain Imperial Tables and the results compared. The marking of the sample slips was accordingly done before the enumeration pads were broken up for the general sorting. The pads were arranged in the serial order of the blocks, each taluk being treated as one whole unit, the Municipal town if any in a taluk being placed last in the list of pakhthies in each taluk. Counting from the first slip of each taluk, every 50th slip was marked off with a bold X at the back (the marking being done for males and females in two separate series) till the whole taluk was finished. The actual extraction of the sample slips was done at the close of the general sorting. The sample slips were then sorted for Imperial Tables VII, XI, and XIII and the data obtained are given at the end of this note.

11. The total number of slips obtained by this sampling amounted to 121,366 (60,889 males and 60,477 females.)

12. *Imperial Table VII.* This table is perhaps the most important of the Imperial Tables and one of the most expensive to compile. It is estimated that 1/3 of the expenditure on Tabulation has to be set apart for the sorting and the compilation of this table. If therefore the results of the sample sorting for Table VII prove satisfactory for studying the nature and variation of the age distribution there will be sufficient justification for adopting this method in limiting tabulation to samples in future Censuses. The Census Commissioner has remarked that the results of the sample will be most satisfactory when the attribute studied is one universally present in the population; as for instance age. For attributes which are likely to be localised in particular centres *viz.*, community or literacy or industry the value of the sample will decrease in proportion to such concentration. The following table gives the number of

persons in each age-group as per the sample side by side with the results estimated from the original Imperial Table and the range of possible divergence due to random sampling.

Age-group	Number obtained as per sample	* Number calculated from the general distribution	Difference	* Possible range of error due to random sampling
0—5	17,494	17,550	- 56	246
5—10	16,686	16,716	- 30	244
10—15	15,693	15,568	+130	232
15—20	12,611	12,446	+165	212
20—25	10,576	10,544	+ 32	196
25—30	9,181	9,336	-155	186
30—35	8,070	8,153	- 83	174
35—40	7,251	7,176	+ 75	164
40—45	6,085	5,551	+134	150
45—50	5,067	5,035	+ 32	138
50—55	3,898	3,991	- 93	124
55—60	3,086	3,180	- 94	112
60—65	2,271	2,341	- 70	96
65—70	1,535	1,538	- 3	78
70 & over	1,862	1,879	- 17	86

So far as the age distribution is concerned the results of the sample are highly satisfactory. In all cases the results of the sample are in close agreement with the estimated results. A comparison of the proportional distribution of males and females according to age may be made from the following and the same inference is patent.

Proportional age distribution of males and females for the general population and the sample (per cent.)

Age-group	Males		Females	
	Population	Sample	Population	Sample
0—5	14'53	14'45	14'38	14'36
5—10	13'76	13'96	13'78	13'55
10—15	12'92	13'09	12'72	12'76
15—20	10'12	10'30	10'38	10'48
20—25	8'47	8'49	8'90	8'94
25—30	7'57	7'43	7'81	7'70
30—35	6'71	6'64	6'73	6'65
35—40	5'99	6'02	5'84	5'93
40—45	5'01	4'99	4'79	5'04
45—50	4'23	4'12	4'06	4'23
50—55	3'38	3'28	3'19	3'15
55—60	2'65	2'62	2'59	2'47
60—65	1'94	1'86	1'92	1'89
65—70	1'24	1'21	1'29	1'32
70 & over	1'48	1'54	1'62	1'53

* If p is the probability of occurrence of any event and $q=1-p$ and n is the size of the sample.

Mean frequency in the sample $= np$
 Standard deviation of the mean \sqrt{npq}
 Range of random error has been taken as $2 \times \sqrt{npq}$

The proportions in either case show very close resemblance thereby revealing that the results obtained from the sample are very satisfactory.

13. The proportional distribution by civil condition for certain age groups also confirms this fact (*vide* table below). The figures in italics show the proportions for the general population extracted from the subsidiary table on Imperial Table VII.

Proportional distribution by civil condition per 1,000 in each age-group

Age-group	Unmarried		Married		Widowed and Divorced	
	Male	Female	Male	Female	Male	Female
0—5	1,000	1,000	...	...	...	...
	<i>1,000</i>	<i>1,000</i>				
5—10	1,000	1,000				
	<i>1,000</i>	<i>1,000</i>				
10—15	999	974	1	25	...	...
	<i>998</i>	<i>975</i>	<i>2</i>	<i>25</i>	...	...
15—20	945	634	53	353	1	13
	<i>943</i>	<i>624</i>	<i>51</i>	<i>363</i>	...	<i>13</i>
20—40	318	92	664	828	18	80
	<i>320</i>	<i>85</i>	<i>660</i>	<i>854</i>	<i>20</i>	<i>81</i>
40—60	20	8	904	589	76	403
	<i>24</i>	<i>11</i>	<i>907</i>	<i>645</i>	<i>69</i>	<i>344</i>
60 & over	15	6	761	235	224	759
	<i>15</i>	<i>7</i>	<i>765</i>	<i>245</i>	<i>220</i>	<i>748</i>
All Ages	608	499	367	390	25	111
	<i>604</i>	<i>497</i>	<i>369</i>	<i>392</i>	<i>27</i>	<i>111</i>

The proportions in most cases agree very closely. The results of the sample can therefore be relied upon for a study of the distribution of the population by age and civil condition.

14. *Table XI.* Considering the next important *Table viz.*, Literacy, it is observed that in the sample population of 121,366 persons 57,766 or 47.6 per cent. are literate. The corresponding proportion for the total population is 47.1 per cent. The proportion to the population literate in English according to the sample is 6.4 per cent. while that obtained from the Census is 6.7 per cent. The result shows a slight variation and can be attributed to the fact that the literate in English are concentrated in urban areas and hence has affected the sample. In general the distribution of literate population in various age-groups is in close agreement to the distribution estimated from Imperial Table XI as may be seen from below:—

Age-group.	Literacy by age-group.	
	Number estimated.	Number obtained as per sample.
0—5	...	...
5—10	8,519	8,554
10—15	10,686	11,690
15—20	8,570	8,617
20—30	11,979	11,949
30—50	12,709	12,448
50 and over	4,694	4,508

A slight exaggeration is noted about the group 10—15 probably because a large number of school-going children belong to this group and since schools are mostly present in urban areas there may be a bias for localisation in this group.

15. *Table XIII.* As regards the distribution by community of the sample population the resemblance between the theoretical and actual distribution is even more striking (*vide* table below).

Community.	Sample.	Estimated.	Range of random error.
Scheduled Hindu	7,925	7,016	172
Other Hindu	62,957	62,911	348
Muslim	8,526	8,680	180
Indian Christian	39,149	39,158	328
European	12	10	6
Anglo-Indian	20	25	10
Jain	1	1	2
Jew	4	7	5
Tribe	2,772	2,568	104

The results indicate that excepting in the case of Tribes, the community distributions of the sample are very close to the calculated results. But even in their case the difference is not much. The Tribes are a localised community being confined mostly to Forest areas. It is interesting to observe that in Baroda also this slight exaggeration in the figure for Tribes was noted in the sample table on community.

16. *House sampling.* One table has been compiled to study the relation between the number of rooms and the size of the household on the basis of a sample of selected houses. One in 20 of the houses in certain taluks and Municipal towns was ticked off in the block lists and the table compiled for the houses so selected. The salient inferences obtained from this table have already been discussed in paragraph 100. The table is given along with the population sample tables.

17. It is evident from the investigations on the Sample that qualitative characteristics of a population can be assessed with great accuracy by the Sampling Method. Thus it may be possible to dispense with the compilation of the Imperial Tables on Age and Civil Condition, Literacy and Main Communities and replaced by a smaller and more compact procedure based on the Sample. The investigators should however be specially trained and the units carefully selected before the sample method is substituted for the census method.

TABLE VII—Age and Civil Condition

Age	Population			Unmarried		
	Persons	Males	Females	Persons	Males	Females
	2	3	4	5	6	7
All ages	121,366	60,899	60,477	67,148	36,998	30,150
0	3,326	1,639	1,687	3,326	1,639	1,687
1	3,515	1,751	1,764	3,515	1,751	1,764
2	3,554	1,830	1,724	3,554	1,830	1,724
3	3,634	1,838	1,796	3,634	1,838	1,796
4	3,465	1,743	1,722	3,465	1,743	1,722
0—5	17,494	8,801	8,693	17,494	8,801	8,693
5—10	16,686	8,498	8,188	16,686	8,498	8,188
10—15	15,693	7,973	7,720	15,487	7,966	7,521
15—20	12,611	6,272	6,339	9,949	5,929	4,020
20—25	10,576	5,171	5,405	4,553	3,400	1,153
25—30	9,181	4,526	4,655	1,798	1,489	309
30—35	8,070	4,046	4,024	573	475	98
35—40	7,251	3,666	3,585	253	182	71
40—45	6,085	3,037	3,048	129	96	33
45—50	5,087	2,507	2,560	79	59	20
50—55	3,898	1,999	1,899	48	38	15
55—60	3,086	1,593	1,493	40	27	13
60—65	2,271	1,130	1,141	24	16	8
65—70	1,535	735	800	14	11	3
70 and over	1,862	935	927	21	16	5

Age	Married			Widowed			Divorced		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
	8	9	10	11	12	13	14	15	16
All ages	45,926	22,337	23,589	7,475	1,334	6,141	817	220	597
0	..	..	..	..	..	..	..	..	..
1	..	..	..	..	..	..	..	..	..
2	..	..	..	..	..	..	..	..	..
3	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	..
0—5	..	..	..	..	..	..	..	..	..
5—10	..	..	..	..	..	..	..	..	..
10—15	202	7	195	1	..	1	3	..	3
15—20	2,575	336	2,239	26	2	24	61	5	56
20—25	5,787	1,731	4,056	109	17	92	127	23	104
25—30	7,032	2,962	4,070	210	38	172	141	37	104
30—35	7,018	3,479	3,539	358	58	300	121	34	87
35—40	6,323	3,364	2,959	559	86	473	116	34	82
40—45	5,168	2,813	2,355	700	104	596	88	24	64
45—50	4,034	2,300	1,734	893	127	766	61	21	40
50—55	2,909	1,814	1,095	907	137	770	34	15	19
55—60	2,075	1,400	675	951	159	792	20	7	13
60—65	1,329	945	384	897	162	735	21	7	14
65—70	751	570	181	758	148	608	14	6	8
70 and over	723	616	107	1,108	296	812	10	7	3

1/50 Sample

TABLE XI—Literacy

Age Number	Population			Literate			Illiterate			Literate in English		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
	2	3	4	5	6	7	8	9	10	11	12	13
All ages	121,366	60,889	60,477	57,766	35,218	22,550	63,600	25,673	37,927	7,773	5,659	2,114
0—5	17,494	8,801	8,693	..	..	..	17,404	8,801	8,603	..	..	..
5—10	16,636	8,498	8,188	8,554	4,741	3,813	8,132	3,757	4,375	272	170	98
10—15	15,693	7,973	7,720	11,690	6,090	5,600	4,003	1,888	2,120	1,320	804	405
15—20	12,611	6,272	6,339	8,817	5,000	3,817	3,804	1,272	2,722	1,002	1,130	553
20—30	19,757	9,697	10,060	11,949	7,247	4,702	7,808	2,450	5,358	2,277	1,000	617
30—50	26,473	13,256	13,217	12,448	8,569	3,859	14,025	4,607	9,358	1,650	1,500	350
50 and over	12,652	6,392	6,260	4,508	3,549	959	8,144	2,843	5,301	344	308	30

TABLE XIII—Community

State and administrative Division	Population			Scheduled Caste Hindu			Other Hindu					
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females			
	2	3	4	5	6	7	8	9	10			
STATE	121,366	60,889	60,477	7,925	3,988	3,939	62,957	31,457	31,500			
Administrative Divisions												
Southern	33,736	16,812	16,924	1,170	588	582	21,095	10,435	10,660			
Central	46,824	24,388	24,441	3,269	1,638	1,631	27,126	13,460	13,657			
Northern	38,806	19,694	19,112	3,486	1,760	1,726	14,736	7,553	7,183			
	Indian Christian			Anglo-Indian			European					
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females			
	11	12	13	14	15	16	17	18	19			
STATE	39,149	19,697	19,452	20	10	10	12	6	6			
Administrative Divisions												
Southern	8,467	4,233	4,184	4	2	2	5	2	3			
Central	12,646	6,347	6,299	7	3	4	2	2	..			
Northern	18,036	9,067	8,969	9	5	4	5	2	3			
	Muslim			Tribe			Jew			Jain		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
	20	21	22	23	24	25	26	27	28	29	30	31
STATE	8,526	4,351	4,175	2,772	1,379	1,393	4	2	2	1	1	..
Administrative Divisions												
Southern	2,340	1,181	1,159	655	321	334
Central	3,913	1,991	1,922	1,860	932	928	1	1	..
Northern	2,273	1,179	1,094	257	126	131	4	2	2

HOUSING CONDITION

1/20 sample from selected Taluks

Distribution of occupied houses by number of rooms and number of residents

Number of residents	Number of rooms										Total
	1	2	3	4	5	6	7	8	9	10 and over	
1	648	361	179	39	56	20	14	24	7	2	1,350
2	1,434	1,004	489	186	90	33	17	6	4	10	3,278
3	2,019	1,631	763	268	109	62	21	12	6	17	4,908
4	2,395	2,057	989	403	164	65	47	34	12	13	6,179
5	2,382	2,089	1,255	432	198	116	54	36	25	13	6,600
6	1,834	1,847	1,136	453	229	90	54	21	11	23	5,698
7	1,271	1,525	994	416	184	93	52	18	2	17	4,572
8	764	941	641	339	157	73	38	25	14	21	3,013
9	376	534	470	212	106	78	39	17	7	11	1,850
10 and over	329	578	610	362	221	154	71	72	32	78	2,507
Total	13,452	12,567	7,526	3,110	1,514	784	407	265	120	205	39,950

APPENDIX IV

SMOOTHING (LITERACY FIGURES.)

The estimate of literacy by the enumerator cannot in the nature of things guarantee scientific accuracy. Whether a person possesses a working knowledge of the three R's will be determined by the enumerator largely according to his own individual impression of what constitutes "a working knowledge." If the test is too rigid or too flexible there is the common danger of not getting an exact estimate of the literates in a country. In a State like Travancore, one should normally expect a uniform progress with only reasonable fluctuations if the test of literacy had been based upon a measurable standard, but unfortunately this has not been disclosed by the figures. It has therefore become necessary to smooth the figures relating not only to literacy but to the population in the relevant age-groups. Any process of smoothing is empirical and arbitrary. Hence it is not claimed that the process will eliminate all the errors of enumeration, but it will help to a considerable extent in measuring with dependable accuracy the trends in the progress of literacy from decade to decade.

The data available for the present work consist of the Census figures for the four decades—1901 to 1941. The figures are available in different age-groups for each Census. From the point of view of literacy, the study may be confined to the ages 5 and above. Great inaccuracies are likely to arise in the returns in the age-group 5-10 and consequently, for purposes of analysis the data have been arranged into broad categories—5 to 10, 10 to 20 and 20 and above. Thus the figures analysed may be given in the following tabular form.

Age-group	Census year				
	1	2	3	4	5
5-10	p_{11}	p_{12}	p_{13}	p_{14}	p_{15}
10-20	p_{21}	p_{22}	p_{23}	p_{24}	p_{25}
Over 20	p_{31}	p_{32}	p_{33}	p_{34}	p_{35}
All ages	p_{41}	p_{42}	p_{43}	p_{44}	p_{45}

From a table of the above type it is clear that the data, for purposes of smoothing, are

scanty. Hence the usual methods of smoothing—the Summation Method of the actuary or other methods based on elaborate mathematical formulæ—cannot with propriety be applied in the present case. The graphical method of plotting the points and drawing a smooth curve through them either by freehand or by the use of a spline is probably adequate; but the space covered by the given points is so little that a certain amount of lack of control is bound to creep in allowing a great variety of curves to be fitted to the points. These considerations have made the present problem rather too difficult for a satisfactory solution.

The data have been analysed in four steps corresponding to the four rows of the above Table. For convenience the figures in any row will be denoted by $p_1, p_2, p_3, p_4,$ and p_5 . Direct smoothing of these values by Polynomial Regression would mean assuming the values to be given by $p = a + bt + ct^2 + \dots$ where p denotes the smoothed value and t , the Census year. The number of constants (a, b, \dots) has to be very small as there are only five values in the Table. Further, in population problems where the increase in figures is more or less on the logarithmic scale, it will be more desirable to take logarithms of p rather than the actual p . If this method is adopted, the process of smoothing will take into account the relations between the several values of p only through the coefficients in the equation. It was felt therefore that a better way of levelling the inaccuracies in the values of p would be to smooth the cumulative effect. Denoting this by Q , it was found by actual trial that $Q = \text{Log } P$ approximately followed the Parabolic Trend. Hence the formula for smoothing has been taken as $Q = a + bt + ct^2$.

Adopting the least square method of estimating the constants, we minimise

$$U = \sum_1^5 [Q - (a + bt + ct^2)]^2 \text{ with respect to } a,$$

b and c . This gives the following equations to determine the value of a , b and c .

$$5a + 15b + 55c = R$$

$$15a + 55b + 225c = S$$

$$55a + 225b + 979c = T$$

where

$$R = Q_1 + Q_2 + Q_3 + Q_4 + Q_5$$

$$S = Q_1 + 2Q_2 + 3Q_3 + 4Q_4 + 5Q_5$$

$$T = Q_1 + 4Q_2 + 9Q_3 + 16Q_4 + 25Q_5$$

$$Q_1 = \text{Log. } p_1$$

$$Q_2 = \text{Log } (p_1 + p_2)$$

$$Q_3 = \text{Log } (p_1 + p_2 + p_3)$$

$$Q_4 = \text{Log } (p_1 + p_2 + p_3 + p_4)$$

$$Q_5 = \text{Log } (p_1 + p_2 + p_3 + p_4 + p_5)$$

$$a = (322R + 35T - 231S)/70$$

$$b = (187S - 33T - 231R)/70$$

$$c = (7R + T - 6S)/14$$

It is by using these formulae that the figures for the four groups in the Table have been smoothed. The results of the smoothing are given in the final Table. The smoothed figures are in fair agreement with the unsmoothed ones as will be evident from the percentage of error given for each. Thus without shooting too wide of the mark, the Table may be used with advantage in the study of trends regarding literacy in the State for the last few decades.

Appendix IV
(TABLE)

APPENDIX IV.

Age-group.	1901			1911			
	Male	Female	Total	Male	Female	Total	
5-10	A	193,654	193,563	387,217	230,525	228,858	459,383
	B	193,790	194,264	388,054	229,276	226,672	455,948
	C	0.07	0.36	0.22	0.54	0.96	0.75
	D	381,215	395,609	776,824	458,396	466,798	925,194
	E	6,600	2,878	9,478	10,437	4,978	15,415
	F	376,088	391,165	767,253	462,115	467,951	930,066
	G	6,067	2,365	8,432	13,062	8,402	21,464
10-15	A	17.31	7.27	12.20	22.77	10.66	18.66
	B	182,786	166,685	349,471	216,495	200,873	417,368
	C	182,956	168,603	349,559	216,771	201,511	418,282
	D	0.09	0.05	0.03	0.13	0.32	0.22
	E	24,920	7,186	32,106	36,565	14,339	50,904
	F	23,346	6,640	29,986	43,515	17,702	61,217
	G	136.33	43.11	91.87	168.90	71.38	121.96
15-20	A	127.60	39.36	10.99	28.27	17.95	23.08
	B	135,496	140,126	275,622	159,935	166,980	326,915
	C	135,737	140,325	276,062	159,539	166,184	325,723
	D	0.16	0.14	0.16	0.25	0.48	0.37
	E	35,778	8,109	43,887	50,805	16,271	67,076
	F	353,56	7,761	43,117	52,433	18,292	70,730
	G	264.05	57.37	159.23	317.66	97.44	205.18
20 and over	A	260.47	55.31	156.19	328.68	110.07	217.15
	B	790,668	759,572	1,550,240	896,537	862,961	1,759,498
	C	790,408	759,847	1,550,255	896,745	859,247	1,755,992
	D	0.03	0.05	0.01	0.02	.43	0.20
	E	252,679	26,660	279,339	331,142	48,512	379,654
	F	252,503	24,549	277,052	331,747	60,448	392,195
	G	319.58	35.10	180.19	369.36	56.22	215.77
All Ages	A	319.46	32.30	178.70	369.95	70.35	223.35
	B	1,490,165	1,461,992	2,952,157	1,731,363	1,697,612	3,428,975
	C	1,485,189	1,458,040	2,943,229	1,735,170	1,694,893	3,430,063
	D	0.34	0.27	0.30	0.22	0.16	0.03
	E	319,977	44,833	364,810	428,949	84,100	513,049
	F	317,272	41,315	358,587	440,762	104,844	545,606
	G	214.73	30.67	123.57	247.75	49.54	149.62
Literacy	A	213.62	28.34	121.83	254.02	61.86	159.07
	B						

Population { A—Census figures.
B—Smoothed figures
C—percentage of error

Literacy { D—Census figures
E—Smoothed figures

APPENDIX IV.

1921			1931			1941		
Male	Female	Total	Male	Female	Total	Male	Female	Total
272,589	269,029	541,618	341,345	331,750	673,095	419,042	416,736	835,778
275,908	270,949	546,857	337,712	331,712	669,424	420,441	416,218	836,659
1.20	0.71	0.96	1.68	0.01	0.54	0.33	0.12	0.11
538,800	535,007	1,073,807	732,196	768,141	1,550,337	861,575	851,716	1,713,291
36,831	39,970	76,801	56,526	37,425	93,951	233,056	192,922	425,978
571,911	568,737	1,140,648	712,252	701,966	1,414,218	892,139	879,692	1,771,831
31,127	26,992	58,119	82,099	78,410	160,509	239,685	205,965	445,650
68.36	74.71	71.52	72.27	48.72	60.60	270.50	226.61	248.63
54.43	47.46	50.96	115.27	111.70	113.50	268.50	234.13	251.52
262,894	248,386	511,280	313,728	304,211	617,939	393,543	384,610	778,159
260,435	246,759	507,194	317,279	305,916	623,195	391,948	383,063	775,011
0.94	0.66	0.81	1.12	0.66	0.84	0.41	0.17	0.29
93,747	52,275	146,022	98,484	60,928	159,412	300,447	233,939	534,386
82,272	44,636	126,915	157,813	106,461	264,274	307,048	240,177	547,225
356.60	210.46	285.60	313.92	200.28	257.97	763.44	608.24	686.73
315.93	180.89	250.23	497.40	348.01	424.06	783.39	625.62	705.27
193,514	199,943	393,457	233,499	249,413	487,912	308,269	314,056	622,325
192,926	210,105	403,031	240,077	248,678	488,755	307,410	314,216	621,626
0.30	0.58	0.15	0.66	0.30	0.17	0.28	0.05	0.11
84,573	45,157	129,730	126,411	68,260	194,671	244,420	184,090	428,510
82,592	41,363	123,955	139,146	89,740	227,886	245,343	186,800	432,143
437.04	225.85	329.72	530.03	273.68	398.998	792.88	586.17	688.56
428.10	205.68	314.58	575.42	360.87	466.26	798.23	594.50	696.25
1,037,345	990,173	2,027,518	1,230,650	1,209,135	2,439,785	1,481,716	1,474,528	2,956,243
1,038,681	1,000,108	2,038,789	1,228,262	1,198,309	2,426,571	1,482,842	1,478,035	2,960,877
0.13	0.99	0.55	0.19	0.90	0.54	0.08	0.24	0.16
456,915	158,665	615,580	584,892	184,993	769,890	990,373	478,806	1,469,179
456,307	134,537	590,844	657,079	270,653	927,732	990,574	492,145	1,482,719
440.47	160.24	303.61	475.27	153.00	315.56	668.40	324.72	496.98
439.31	134.52	239.80	537.97	225.86	382.32	668.02	332.97	500.77
2,032,553	1,973,509	4,006,062	2,565,073	2,530,900	5,095,973	3,045,102	3,024,916	6,070,018
2,063,953	2,016,709	4,080,662	2,497,870	2,454,869	4,952,739	3,074,339	3,055,906	6,130,245
1.52	2.14	1.83	2.69	3.10	2.89	0.95	1.01	0.98
672,066	296,067	968,133	866,313	351,611	1,217,924	1,768,296	1,089,757	2,858,053
652,305	247,523	899,823	1,035,137	545,264	1,580,401	1,782,690	1,125,087	2,907,777
330.65	150.02	241.67	337.73	138.98	239.00	580.70	300.26	470.85
316.05	122.74	220.51	414.41	222.12	319.10	579.86	368.17	474.33

D1—Population below 10 (Census).

E1—Population below 10 (Smoothed figures).

Literate per 1000 { F—(Census.)
G—(Smoothed).

GLOSSARY

ADVAITA—The system of Vedanta philosophy expounded by Sri Sankaracharya

ALLOMS—Salt-pans

ANANTHASAYANAM—Repose on Anantha (The infinite repose)

ANCHAL—Travancore and Cochin postal service

ASAN—Village schoolmaster

ASRAMAS—Hermitages

ATTAKKATHA—A kind of dramatic literature peculiar to Kerala

CATHANAR—Syrian Christian priest

CHAMPU—A classical form of Malayalam Literature where prose and verse intermingle

CHITTY—Chit Fund

ILLOMS—Malayala Brahman houses

JENMI—Landlord

KALARI—Physical Academy

KARA—A minor subdivision of a taluk

KARAKKAR—People of a kara

KARANAVAR—Head of a family

KARIMTAMIL—An old form of Tamil

KATHAKALI—A kind of pantomime peculiar to Kerala

KAYAL—Backwater or lagoon

KETTUTHENGU SYSTEM—Payment in kind, (coconuts), proportionate to the yield

KILIPPATTU—A form of melodious poetry represented as being sung by a parrot

KUDIVAROM—Tenant's share of crop

KUDIVILA—Tenant's share of price

KUDIYAN—Tenant

MAHTAB SYSTEM—Muslim system of schools

MAKKATHAYAM—Inheritance from father to son

MAKKATHAYIS—Those who follow the system of inheritance from father to son

MARUMAKKATHAYAM—Inheritance in the female line

MARUMAKKATHAYIS—Those who follow the system of inheritance in the female line

MELKOIMA—Overlordship—Suzerainty

MELVAROM—Government's share of rent—additional rent

MUNDU—Loin Cloth usually worn by the people of Kerala

NALUKETTU—A building with four separate apartments with an open quadrangle in the centre

NAMASANKIRTHANAM—Recitation of the name of the Lord

NARTHAKALAYAM—Dancing School.

NATYASASTRA—The Science of dancing

NITHISASTRA—The Science of law and morality

PUDAVA—Kerala women's garment

PULIKUDI—A ceremony observed by women during the first pregnancy

PUNJA—Wet cultivation ; wet land

ROWKA—A jacket worn by Kerala women

SAIVITES—Worshippers of God Siva

SAMBANDHOM—Marriage

SAMSKARA—Ceremony

SANATANISTS—Followers of orthodox Hinduism

SAVARNAS—Those belonging to the four castes of Hindu Society

SHASHTIABDAPOORTHI—Completion of the 60th year ; a ceremony conducted in connection with it.

SLOKAS—Verses

SRI VALUMKODE—(Lit—the land of prosperity) Ancient name of Travancore

SURMA—Collyrium

TARAWAD—Joint-family

THALIKETTU—A marriage ceremony, the important item of which is the tying of a neck-ornament (Thali)

THIRANTU KALYANAM—A ceremony connected with the attainment of puberty

THORTHU—Towel

THIRIPPADIDANAM—Dedication to God

THULLAL KATHA—A variety of Malayalam poetry

UTHSAVAMS—Periodical temple celebrations

VAISHNAVITES—Worshippers of God Vishnu

VANAPRASTHAM—(Lit.—Retiring to the forest) the third stage of life prescribed for the higher castes

VEDANTISM—The system of religious philosophy generally accepted by the Hindus

VISISHTADVAITOM—A philosophical system expounded by Sri Ramanujacharya

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