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# Census of India, 1931

VOLUME XIX

## BARODA

### PART I—REPORT

*By*

**SATYA V. MUKERJEA**

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## INTRODUCTION

**1. Introductory**—This Report embodies the results of the seventh census of this State. The first regular census of the modern type was taken in Baroda on the 21st February 1872. It was not however part of the general Indian Census. The preliminaries were undertaken independently by the State authorities and the materials were in part tabulated here and completed in Bombay, but no separate Report was written. 1881 was the first occasion when a census was taken synchronously with the rest of India, on a uniform general plan conformed to by all the British provinces and principal Indian states co-operating under the Census Commissioner for India. The Baroda Census Report for 1881 was the first of its kind issued by this State. The Report on the Baroda Census of 1891 was issued in 1894 as Volume XXIV of the all-India series. Since then the Census Reports of this State have regularly formed part of the Indian Census Volumes, issued under the general editorship of the Census Commissioner for India, and conforming in all material respects—arrangements of chapters, forms of tables, etc., to other Reports of the series. This Report is therefore the sixth issued by the State. It forms Volume XIX of the all-India series. The different parts of the Baroda Census series are detailed in the margin. An abridged report—entitled “Some Results of the Census”,—was issued as soon as the Tables were compiled, in order to enable local officers and others to have a first view of the results. The Gujarati Summary is being prepared by Mr. Gokaldas M. Shah, Principal of the Male Training College, who has done this work with great credit since 1911.

Name	Part of Volume XIX
Census Report .. .. .	Part I
Some Results of the Census .. .. .	" I.A
Imperial and State Tables Volume .. .. .	" II
Administrative Volume .. .. .	" III
Gujarati Summary Volume .. .. .	..
Village Tables Volume (also in Gujarati).	..

**2. Process of Census Taking described:** (a) *Preliminary Operations*—The Administrative Volume gives a very full and detailed account of the various stages of the operations from start to finish. This volume is intended for the use of future Census Commissioners of the State and other officers entrusted with the details of the work. This Report, on the other hand, is primarily intended for the general reader. But there may be some of this category whom the minutiae of census taking do not appeal. Assuming that these pages do find their way to such an individual, he may want to know how the thing is done. The census was taken on the 26th February 1931. But the preparations began about ten months previously. The State Census Office was opened on the 1st May 1930. The first requisite was the drafting of a Census Act on the lines of the British Indian legislation. Next, the district organisation was mobilised. The Subas, Naib Subas and Vahivatdars became *ex-officio* district census officers, sub-divisional census officers and charge superintendents respectively for their jurisdictions. The Municipal Commissioner was similarly appointed City census officer. The Executive Officer, Baroda Cantonment, was *ex-officio* census officer for the civil and military areas within his charge. The heads of the municipal executive in the various towns similarly became charge superintendents for their municipal areas under the general superintendence of the mahal charge superintendent. After these appointments were made, the next step was the fixing of the names of villages, the preparation of a general village register in each mahal, and of census maps determining the jurisdictions of subordinate inspecting officers under the charge superintendents. This was finished by about the beginning of July. Immediately thereafter, a provisional list of blocks and circles was made. The unit of census enumeration was the block of 60 to 100 houses. Normally one block was in charge of an enumerator, ten to fifteen of these blocks formed a

circle. Each circle was under a supervisor. Three or four circles were comprised in a charge.

(b) *House Numbering*—The next important stage was reached in the last week of October when the houses were numbered, a corrected list of blocks and circles was prepared, with the estimate of the enumerating staff required for the actual count of the inhabitants. Hitherto the ordinary revenue and police establishments in the mahals, with the municipal staff in towns had sufficed for these preliminary stages, but now a larger number of workers was required for the actual count. This necessitated a preliminary period of intensive training. The central organisation did this in three stages. First the superior census staff throughout the State was trained in the general details of all the processes of census taking. Secondly the subordinate police and revenue staff were given a detailed and intensive training at all mahal headquarters in the work of house numbering. Thirdly when the whole staff was appointed in December 1930, a general course of training in the details of enumeration was given as to how the work was to be set about, how the questionnaire was to be filled in, and so on. The house numbering was finished by about the third week of November. Actually 815,381 houses were numbered. The majority of municipalities were persuaded to have permanent house numbers. Some idea of the magnitude of the census army can be had when it is stated that we employed 106 charge superintendents, 1,255 supervisors and 9,409 enumerators for the general census. The intensive training of this huge organisation was no light task. Along with training classes, the Central office sent out leaflets, instruction books and circulars by tens of thousands. The district census staff followed up the work of the Central organisation by holding meetings. Occasionally their zeal had to be curbed, as they were giving wrong instructions. As the bulk of enumerators were school teachers, the periodical conferences organised by the Education department were very helpful in this regard. The taking of the

Name of Census staff	No. of prizes	Amount of each prize in rupees	Total amount sanctioned in rupees
<i>Charge Superintendents</i>			
(i) First prize .. ..	6	30	180
(ii) Second prize .. ..	9	15	135
Municipal staff .. ..	3	10	30
Mahal office clerks .. ..	9	10	90
Supervisors .. ..	31	10	310
<i>Enumerators</i>			
(i) First prize .. ..	30	8	240
(ii) Second prize .. ..	553	5	2,765
Sex Enquiry workers (women only) .. ..	57	8, 6, 4	250

census was always included as an item in their programmes, and the teachers showed keen interest in this regard. Zeal for census work was stimulated by Government of the State announcing cash prizes amounting to Rs. 4,000 distributed as in the margin amongst the census workers up to the charge superintendents. But this prize amount was only meant to rouse healthy rivalry and was never intended as an adequate recompense. Considering that the whole work was

entirely honorary and irksome, being in addition to their ordinary duties, it was remarkable that these humble low-paid clerks, talatis and teachers trooped up to the call of duty with such loyalty and devotion. The Baroda State ought to congratulate itself in managing its seven censuses without a talatis' or clerks' strike.

(c) *The Actual Count*—The actual census of the people was taken in two stages. The first was the preliminary record spread over, in villages from the 15th January to 10th February, and in towns from the 25th January to the 10th February. The second stage was the final count on the census day itself. A revision of the preliminary record was done in the morning of the 26th February; thereafter between the hours of seven in the evening and the mid-night of that day, the final count was taken in which those absent or dead since the first count were scored out and those who had come or were born since were added to the record. During the whole period, the central and district census staff were continually on the move, giving final touches to the training of the staff, inspecting the record already made, and gathering materials for the Report. In addition to the usual district agency, the Census department decided on this occasion to entertain a special staff of nine census inspectors who were sent to almost all the villages. The City and Baroda mahal were given to the most experienced of these inspectors.



**3. Distinctiveness of the Baroda Census of 1931**—In most matters up to the enumeration stage, the all-India procedure was conformed to here, but when the final stage of actual counting was reached, this State struck out a departure on this occasion from the general pattern. Hitherto it was the practice to record census details in enumeration schedules, which were later collected in the Abstraction office in which the particulars of each individual person were copied out in slips, which were later sorted and compiled into Tables. On this occasion, the Baroda Census decided, with the approval of the Census Commissioner for India to do away with the slip-copying system altogether and to record census particulars of an individual direct on to books of slips, which could later be cut out, sorted and compiled. The slip or card was  $7\frac{1}{4}$ " by  $3\frac{1}{2}$ " in size as per specimen enclosed. The books were of standard sizes, three slips to a page, and so many pages to blocks of different sizes. A ream of paper of the size of 22" by 29" would produce 11,520 such cards. As it was convenient to have sex differentiation from the very beginning, it was decided that information regarding males should be recorded on white slips, and that for females on buff-coloured ones. It is sincerely hoped that feminists will forgive this colour distinction. But the difference in colour was of very great practical use in keeping the slips from being mixed up and the danger of omission of record of sex was entirely eliminated. The books were of a handy size so that they were less cumbersome to handle than long sheets of enumeration schedules, which used to get crumpled and the writing on which was often defaced and made illegible by the time they reached the slip-copying stage. Secondly the system was to be recommended because it eliminated the errors due to abstraction which were inevitable in large offices of hastily trained clerks working on the piece-wage system, who had little interest in the business. Lastly the introduction of the new system meant a large saving in the cost of establishment, which, considering the high cost of the Baroda Census, was a vital consideration. Of course the system needed constant supervision and very rigorous watch over the mahal agency; the business of transmission and return of slips and their subsequent handling in the Abstraction office, had to be transacted exactly on the basis of treasure, controlled by an elaborate series of call books, distribution registers, and receipt counterfoils which are fully described in the Administrative Volume. But the method justified itself; there was no loss of slips, each one being numbered, tallied and accounted for, after the census was over, in the Abstraction office. The Census Commissioner for

CARD FOR MALES		1
1	Serial No.....	of person
2	Mahal.....	Village.....
3	Circle.....	Block No..... House No.....
4	Name.....	
5	Religion (with sect).....	
6	Married..... Unmarried..... or Widowed.....	
7	Age (in years only).....	
8	Caste, tribe or race } (with sub-caste) }	
9	Whether earner..... working dependent..... or total dependent.....	
10	Principal occupation of earner.....	
11	Subsidiary occupation of earner; or } occupation of working dependent }	
12	Industry in which } employed (if any) }	
13	Birth District.....	
14	Mother tongue.....	
15	Other languages } ordinarily used }	
16	Whether literate or not..... If literate whether in Hindi..... or Urdu.....	
16 (a)	If not literate, whether able to read only.....	
17	Whether literate in } English or not }	
18	Whether insane..... totally blind..... deaf-mute..... or leper.....	

India, on inspection of the Baroda Census Office on the 3rd July, 1931, was pleased to declare that

“the Bulletin Individuals system has worked extremely well particularly as combined with the offer of rewards for the return of the best books of slips. Sex was dealt with by having male and female printed on different colours on alternate pages involving perhaps a slight waste, so slight as to be negligible as compared to the saving in the trouble of sorting. No other symbols were used. The same system of differentiating sex by colour is carried out in sorting tickets with great advantage. This might perfectly well have been done for India as a whole as the waste on tickets would probably be no greater than that under present conditions. The total saving involved by the abolition of slip-copying obtained by this process works out at almost 50 per cent of the cost of abstraction in Baroda, though I do not think that this would be the case elsewhere. It also involves the elimination of one source of error and the danger from loss of slips is obviated by the treatment of slips as if they were government treasure issued only on receipts and a receipt given for each book on its return.”

**4. New Enquiries**—Apart from this feature, the Baroda Census carried on additional enquiries along with the general census, some of which were first instituted in 1921, and the rest were new. In common with the rest of India an Unemployment census was taken, but as shown in the Chapter on Occupation, not much success was attained in this matter. There is some consolation in the thought however that in other parts of India, this enquiry similarly did not come up to expectations. On the other hand the special enquiry into the size and sex constitution of families achieved a much greater measure of success than the pioneer enquiry in 1921. On the present occasion, we were happily able to secure more popular support to the idea than before; it was possible also to engage a much larger number of women workers from the Education and Medical departments for this purpose. The enquiry was spread over seven months from December 1930 to July 1931. Altogether 3,573 workers were actually employed including 429 women. Besides this, the census of livestock, the classification of homesteads according to standards of house room, the size of the normal household, the special tenement enquiry in the City of Baroda, the collection of statistics and other materials regarding the practice of divorce amongst the people, a special Life Table for the State population and a food survey of the principal castes were among the additional matters in which the census organisation was utilised. In addition, additional tables were compiled, some by a special sort like the occupation of literates in English, the age-groups of immigrants; the civil condition of the infirm, non-working dependency by caste and age, literacy by scripts, the distribution of the population by annual ages, and the record of sects. Altogether 39 special tables (not counting parts of tables, and the special statistics regarding divorce and the food survey) were compiled for the State Census. We have therefore at hand a volume of statistical material unsurpassed by any other census unit in India.

**5. Co-operation from all concerned**—That it was possible to collect such a mass of material was due to the co-operation of all concerned. Unlike British Gujrat and certain other parts of British India, the census of His Highness's dominions was unattended by any political turmoils. On the contrary, one of its happiest features was the ready goodwill with which people everywhere offered assistance to the census army of supervisors, sex enquiry workers and enumerators and the leaders co-operated by agreeing to work on census committees and volunteering as enumerators or workers on sex enquiry. The municipal staff in the different towns worked throughout under the superintendence of non-official charge superintendents and carried out the various items of the census with great efficiency and zeal. There was vigorous competition between the different charge superintendents to be first with their charge totals. By the afternoon of the 27th all the charge totals—including the remotest ones—were received, and the provisional results were telegraphed to the Census Commissioner for India, 17½ hours after the midnight hour of the census day, thereby beating all previous records in the State for promptitude. For this result, the Baroda Census is indebted to all concerned. Without the co-operation and goodwill of all departments of the State and of the people, nothing can be done. There was hardly any hitch. The usual routine crop of difficulties of course had to be countered. Certain departments were

induced by their clerks who dreaded to be drafted in as enumerators, to declare that the census time was their busiest season and that they could not spare any men on that account. Here the Government came to the aid of the Census by setting their face sternly against these pretexts. But we had other difficulties of an amusing kind, the *amour propre* of certain Head Masters had to be mollified, as they thought that to be called supervisors was derogatory! So the term "assistant charge superintendent" was invented to meet this perplexing problem. Certain English-educated school mistresses, suffering from a well-known complex, declared that they would not undertake the sex enquiry as the items in its questionnaire were not decent! Here sternness combined with good humour solved the problem. In this and in all other difficulties, the Commissioner of Education remained a staunch ally. The collection of industrial statistics and other economic data would not have been possible without the help of the Commerce, Revenue and Agricultural departments. The materials regarding caste, religion, divorce, dietary, etc., were largely gathered through the help of census committees and honorary correspondents too numerous to mention.

**6. Abstraction and Compilation**—The abstraction of these materials into tabular statements was at once taken in hand immediately after the census. The enumeration books were collected with all speed, scrutinised and recounted per block for the Register A from which details per village were prepared. They were thereafter cut up into slips, which were heaped in bags and boxes according to mahal and religion. Sex differentiation was continued throughout, the sorting staff for females being kept apart from males with different coloured sorting tickets and separate boxes for their slips. The final totals of the population were declared on the 24th March, *i.e.* only 26 days after the census, and differed from the provisional by only 83, so that the margin of difference was only .0034 per cent. But the margin of error was even lower than this small figure. Part of the difference was due to the fact that the final count results of the remote outpost of Salher had not arrived when the Songadh Mahal Charge Superintendent wired his results and he therefore only reckoned in the figure of the preliminary count for his charge totals. If this figure is deducted, we get the real margin of error which is only 35 or .00143 per cent, which means a remarkably high degree of accuracy unknown hitherto in the records of the Baroda Census. Regular sorting of tables was begun soon after the declaration of the final population figure and it continued till the 27th June when it was completed. Compilation had been already taken in hand. By the 7th October, 1931, the compilation of Imperial Tables was completed. With a view to secure reduction in expenses, the Government of India decided to drop a few of the Imperial Tables, but we decided in this state to retain all but one of the dropped ones, as this could be done along with other tables without any extra expense. The abridged report called "Some Results" was ready in print by the beginning of December. The Imperial and State Tables Volume was ready in print on the 26th December. The Census Commissioner for India when he received the copies of "Some Results" and the Tables Volume, was good enough to congratulate the Baroda Census on despatch in publishing: "You have been extraordinarily quick in getting your abridged report out and I congratulate you on being the first to get the Volumes of Tables printed and published."

**7. The Report**—The writing of the Report was taken in hand as soon as the Tables were ready. The abridged report was taken as the basis for amplification, but I have not hesitated to make changes, wherever I thought on a fuller analysis of the figures, that an alteration was necessary; I am thankful to say however that these changes were confined to details and did not affect materially the conclusions reached in the earlier publication. In the writing of the Report I have been moved mainly by two considerations. In the first place I have always kept before me the ideal of the previous Census Reports of the State which was to attempt at fullness of treatment. But some of the previous Reports erred on the side of excess in this respect. The Dalal Report of 1901 for instance was a ponderous tome of nearly 650 pages, so that if each line was stretched on the top of another together they would reach an altitude of 11,700 feet or more than twice the height

of the fortified peak of Salher! Rao Bahadur Govindbhai's production of 1911 and my own previous effort of 1921, although not reaching this fearful eminence, were still of tremendous dimensions. On the present occasion, I have attempted the utmost economy in space in the discussion of statistical material, although in volume, the data collected have exceeded the record of previous censuses in the State. I have been able to do this in order to make room for appendices dealing with caste, divorce, food survey and other matters which I was specially ordered to include. Secondly, I have tried to humanise the document with pictures and topics of more descriptive interest. The diagrams, although fewer than in 1921, have been planned on a more generous scale. I leave the result to the judgment of the reader. My experience has been that a Census Report, although intended for the general benefit of students and officers, is rarely read. Officers and publicists like to get a complimentary copy—for it is the thing to do so,—look at its opening pages and then relegate it to their shelves, resorting to it most occasionally as an inducement to sleep, when all the “drowsy syrups” of the doctors have failed. What destiny is reserved for these humble pages, their author will be the last person to know.

**8. Acknowledgments**—This is the second Report I am submitting on the Baroda Census. While I am deeply sensible of the honour His Highness's Government have done me by asking me to conduct the census for the second time in succession, I realise the difficulty of writing a second Report on the same subject. The methods of statistical analysis are getting standardised everywhere; the Indian Census in particular has stereotyped its subject-matter so much that it is not possible to go through the various Provincial Reports without being struck by the sameness of treatment. There can be little scope for originality and one would imagine that the average reader is thankful for that fact. What is new from year to year in the Indian Census is the change and the wondrous variety in social phenomena, through the infinite inter-relations of which the attempt to discover the process of ever-present laws is the most fascinating of all forms of human research. Such newness that my present Report can claim, is based on the value and the variety of these social experiences. In the general plan and methods of statistical analysis, I have therefore drawn largely from my own Report of 1921, but my borrowings from other sources have lain heavily on my conscience. I have tried to acknowledge them as far as possible. My own personal indebtedness to Dr. Hutton, the Census Commissioner for India, is great. He was always prompt and courteous in his disposal of questions and whenever I sought assistance on points of intricate detail, I found his great experience on points of Indian sociology an unfailing guide. Moreover his calling of the Census Conference in January 1931 was a wise departure from precedent which I trust will be followed in future censuses. It helped to clarify many points of difficulty and to bring about a greater uniformity in the treatment of certain subjects than ever before. The Government of the State are entitled to my special obligations. The essential requisites of a successful census, as pointed out often before, are finance, guidance and co-operation. The budget allotments were ample for my requirements, and I was given the most ample latitude and the widest powers of finance and discipline. I must take this opportunity of recording my gratitude for this token of unstinted confidence with which the Government have honoured me. For the rest, my indebtedness to the departments I have already referred to. My own staff was all that I could wish for. Messrs. Maganlal and Jhaverbhai again assisted me with their signal services. In my last Report of 1921, I referred in high appreciation of their work. Mr. Maganlal after completing the work of compilation joined his judicial duties on the 6th October 1931. Mr. Jhaverbhai is to continue until the Report is ready in print and the census office is closed. He has discharged his very heavy duties to my complete satisfaction. He has prepared the appendix on the cattle census and has also helped me specially in getting up materials for the appendix on divorce. Prof. Mukherji, of the Baroda College, has contributed Part II of Chapter IV in which he discusses by an actuarial analysis of the age-returns the Life Table which he has prepared for the State population. I am sure that his contribution will enhance the value of my Report. Dr. Fredoon P. Antia, M.COM., PH.D. (LOND.), F.S.S., a young probationer recently appointed to the State, collaborated with

Mr. F. S. Kale, B.A. of the Khangi department in preparing the appendix on the food survey. Of the rest I need not speak, not because I am not sensible of their good work, but because certain confidential proposals about special promotions to the deserving staff are on the way to Government and will be more useful to these workers than any empty praise here. The Baroda State Press do not specialise in English printing but when I decided to entrust the Tables Volume to them, they rose to the occasion. The Times of India Press is well known for the excellence of its finish and execution. My abridged Report is a testimony to the high quality of their work. I am sure the reader will agree that this volume also is a credit to their enterprise.

**9. Cost of the Census**—A final word as to cost of the Census. A few details may not be uninteresting, although the final accounts are not yet made up. In 1921, the total expenditure was Rs. 1,18,107. But this did not include the cost of printing at the State Press of forms, schedules, slips, and of the Village Tables Volume which was then charged to the general budget of the Raj. On the present occasion, all these items are separately charged to the census budget. This meant that a sum of Rs. 7,591 on account of these heads should be deducted from the 1931 estimate of cost. On the other hand, the outstanding bills and the estimated cost of this Report itself have to be added. When this is done, the total expenditure, on the same basis as in 1921, will be about Rs. 1,06,800. There is thus a saving of over Rs. 11,300. The cost per mille of the population in the latest census is less by Rs. 11-13-0 than in the previous census. The pre-war level of economies, which Mr. Govindbhai was able to effect in 1911 is out of question to-day. The cost of printing and paper is now nearly double and clerical labour now demands twice the wages of 20 years ago.

Census of	Cost per 1,000 of the population in Rupees
1901 .. ..	64.0
1911 .. ..	28.5
1921 .. ..	55.5
1931 .. ..	43.7

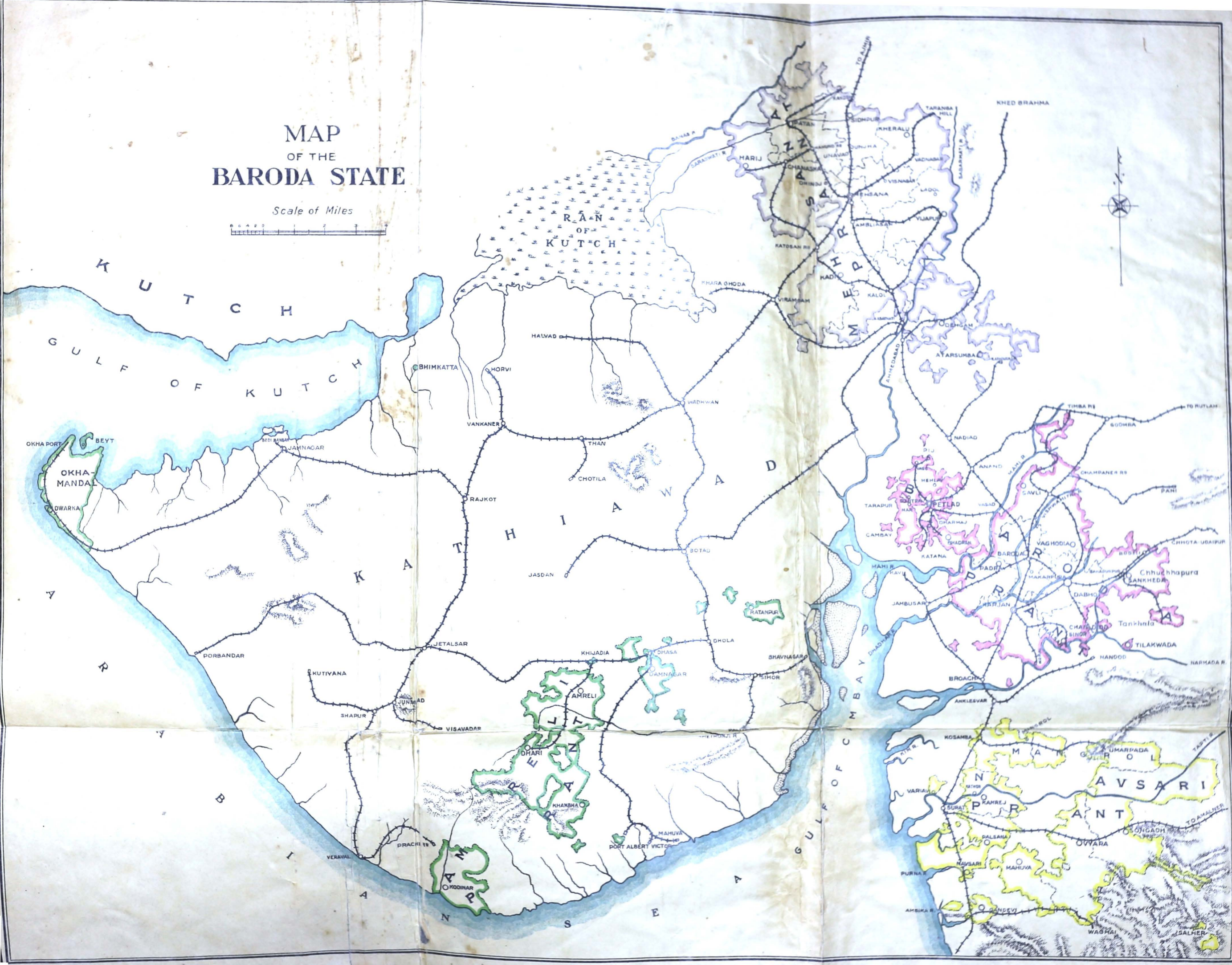
SATYA VRATA MUKERJEA,  
B.A. (OXON.), F.S.S. (LOND.),

BARODA, 16th March 1932.

Census Commissioner, Baroda State.

# MAP OF THE BARODA STATE

Scale of Miles



# REPORT

ON THE

## CENSUS OF BARODA

### 1931

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#### CHAPTER I

#### DISTRIBUTION AND MOVEMENT OF POPULATION

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##### § 1. THE AREA DEALT WITH

**1. Position of the State**—It has been well said that the Indian States are so interwoven with British India, and with one another, that their destinies are inseparably bound. Of no other State can this be said with greater truth than the dominions of His Highness the Maharaja Gaekwar. Of all the larger Indian States, Baroda is perhaps the most dispersed. Its districts are scattered all over Gujarat, to which Natural Division it wholly belongs. Gujarat is one of the historic areas of India, but it has two well-marked portions: the Kathiawad and the Mainland. The Mainland of Gujarat, like ancient Gaul, is divided into three parts: North, Central and Southern. Each of these parts contains a district of Baroda State separated from the rest by British districts and other States: while the Kathiawad portions of Baroda forming the administrative units of Amreli and Okhamandal are a scattered archipelago of the Gaekwar's rule, set in a sea of other jurisdictions.

**2. Natural Divisions**—These administrative divisions form the basis of the absolute figures given in the Imperial and State Tables, the City of Baroda being considered a separate unit by itself. In the Imperial Tables, the *prants* or districts are the unit, while the State Tables usually give the figures by talukas. But in the Report itself, it is considered more convenient to depart from this arrangement and readjust the main statistics in proportionate figures by units of natural geography. These units are determined by the homogeneity of their natural features, climate, rainfall, etc., and of the composition of their populations. But it is best to adopt within the State a scheme of natural divisions that does the least violence to administrative boundaries. In this State, we have been able to do this as our districts are distinct by themselves and happen to belong to the different portions of Gujarat in which they are situated; we have therefore adopted the nomenclature of North, Central and South Gujarat to correspond to Mehsana, Baroda and Navsari *prants* respectively, while the figures of Amreli and Okhamandal have been combined for the purposes of this Report and shown under the name of "Kathiawad." These four are the main natural divisions. For a more detailed

study of figures in certain matters, it is necessary however to attempt a further classification into thirteen natural sub-divisions. This was done in 1921, and the Report of that year contains a detailed description of each of these natural areas in justification of the scheme adopted, to which the reader is referred.\* Here it will be necessary only to give a brief summary with the general remark that the scheme does no violence to present taluka boundaries, although in strict truth this would have been in some cases necessary. These natural sub-divisions therefore are merely combinations into thirteen groups of the different talukas. In this Report whenever we shall refer to these thirteen sub-divisions, we shall call them *natural areas* in contradistinction to the bigger groups which we shall call *natural divisions*. In naming them we have generally followed popular usage and historic designations.

(i) *North Gujarat*—It is a fairly compact district about 120 miles in length and 80 in breadth; but its compactness is broken towards the south-east where the Sabarmati divides Dehgam and Atarsumba from the other talukas of the district. These two talukas are very much riddled with other territory. The country here is wild and picturesque and cut up by ravines. This is the Trans-Sabarmati area. The rest of Mehsana *prant* has two well-marked divisions: East Kadi containing the more fertile and well-wooded talukas of Kheralu, Vijapur, Kalol, Sidhpur, Mehsana and Visnagar; and West Kadi consisting of the drier and more barren country of the Patanvada, in which are comprised Patan, Harij, Chanasma and Kadi talukas. Of course the western villages of Mehsana and Kalol although grouped for convenience under East Kadi, partake of the features of West Kadi and should have been included under it. East and West Kadi together form a sloping plain uninterrupted by any hills. In the east, the *rayan*, *mahuda* and the mango abound. In the north-west, the dry winds from the Rann clog the soil with sand, and clumps of *limda* and tamarind are the only trees worth mentioning.

(ii) *Central Gujarat*—It has a more diversified aspect and its rich soil of both black and red varieties makes it one of the most fertile spots in India. It has four clearly marked and historic divisions: Charotar to the north-west is marked off from the rest by the Mahi river and contains the populous and fertile talukas of Bhadran and Petlad; here is the soil famous for growing all kinds of crops, but specialising in its one luxury crop—the tobacco—which it grows with great success. Next there is Vakal in the centre, well-wooded and drained by the Dhadhar and its tributaries, but with a composite soil in which the sand and lime are intermixed; it consists of Baroda and Padra mahals. Kahnām, to the south, with its rich black soil, bleak and treeless, but producing some of the finest cotton in India, is formed of Dabhoi, Sinor and Karjan talukas with the Narmada as its southern boundary. Finally there is the Chorashi to the north and south-east, into which the Kahnām drives as it were a wedge between Vaghodia and Sankheda talukas. This area is formed of Savli, Vaghodia and Sankheda talukas and Tilakwada *peta*. The two last named have many undulating uplands and scattered eminences interspersed by low forests and ravines. Vaghodia and Savli have expanses of grass lands alternating with *jheels* with broad sheets of water that are overgrown with weeds and teeming with game.

(iii) *South Gujarat*—Here we have an area only separated from the Kahnām part of the Central division by the narrow band of Rajpipla territory. This division is almost cut into two halves by the British district of Surat, but has three well-marked natural areas. The western talukas of Kamrej, Palsana, Navsari and Gandevi are flourishing and prosperous, with a soil of exceeding fertility in which the best varieties of cotton and sugarcane are grown. These form the Rasti area. The rivers Tapti, Ambika and Purna drain it from east to west. On the east are the talukas of Songadh and Vyara, with their fever-haunted forests and undeveloped populations. Together, these are called the Rani or the Jungle

\* Baroda Census Report, 1921, pages 9-18.

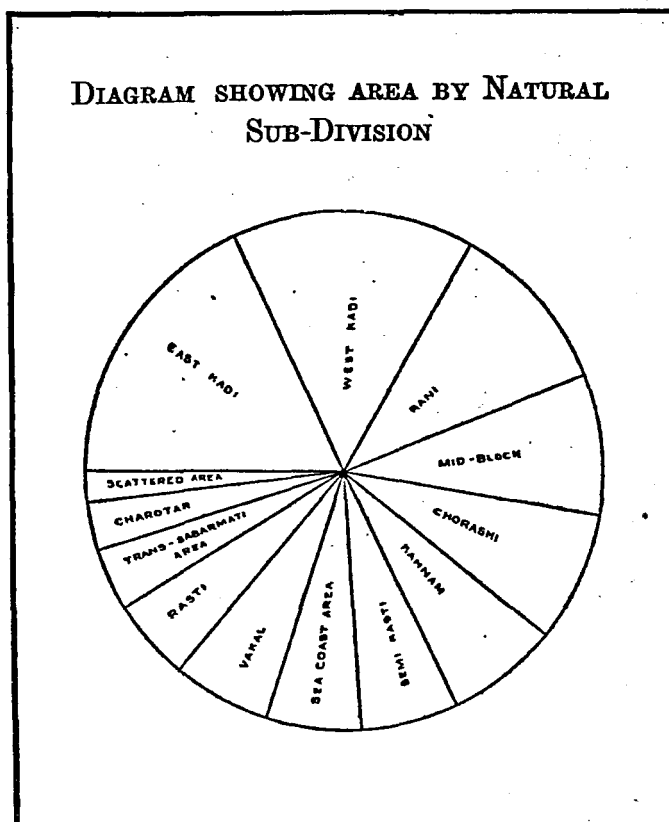


area. Midway between these two extremes are the half developed talukas of Mangrol and Mahuva which we have called Semi-Rasti. The eastern portion of Mangrol includes Umarpada forests, while Mahuva to the south-east contains an undeveloped belt where agriculture is thriftless and the climate is unhealthy. These talukas combine therefore the features of the Rasti and Rani areas.

(iv) *Kathiawad*—Towards the west, the Gaekwar's territory in Kathiawad consists of (i) the Middle Block, a fairly compact area formed of the adjacent talukas of Amreli, Dhari and Khambha; (ii) Scattered areas consisting of the talukas of Damnagar, Ratanpur and Bhimkatta (which is only an isolated village near the gulf of Cutch completely surrounded by Nawanagar State); and (iii) the Sea Coast Areas comprising Kodinar and Okhamandal. The Middle Block is fertile and well cultivated towards the north and west, but in the south, where it touches the Gir, the country rises into a hard and desolated plateau, round which forests and hills abound. Kodinar is isolated, though towards the sea coast it possesses fertile soils and abundant water facilities. Okhamandal is bleak and bare, famous only so far for its temple places as the earthly seat of Sri Krishna, where even the stunted trees are bowed low by the subservient winds in obeisance to Dwarka's lord. The lazy Karadia and the care-free and ignorant Wagher form the typical population in the Sea Coast area with small colonies of trading communities in the towns and large villages, and groups of Bhadelas and other sailors near the sea.

**3. The Area of the State**—The total area of the State is 8,164 square miles. The margin gives the details of area for the Natural Divisions in the State. The corrected areas of the different talukas are shown in State Table I, while Imperial Table I gives the area of each *prant* or division and the City of Baroda. The marginal table shows that North Gujarat is the largest division, as Kathiawad is the smallest. South Gujarat is smaller than the Central. The largest of the thirteen natural areas is East Kadi, which forms about half of Mehsana *prant*. Next come West Kadi and Rani in size. The Scattered areas in Kathiawad are the smallest natural unit in the State. Chorashi is the largest natural area in Central Gujarat. The Middle Block is rather more than half of the Kathiawad possessions of His Highness. A diagram is given here in the margin which shows the different natural areas in order of size.

NATURAL DIVISION	Area in square miles	Proportion to total area
<i>Central Gujarat</i> .. ..	1,933	24
(i) Charotar .. ..	269	3
(ii) Vakil .. ..	454	6
(iii) Kahanam .. ..	578	7
(iv) Chorashi .. ..	632	8
<i>Kathiawad</i> .. ..	1,352	17
(i) Middle Block .. ..	697	9
(ii) Scattered Areas .. ..	173	2
(iii) Sea Coast Areas .. ..	482	6
<i>North Gujarat</i> .. ..	3,068	37
(i) East Kadi .. ..	1,501	18
(ii) West Kadi .. ..	1,229	15
(iii) Trans-Sabarmati .. ..	338	4
<i>South Gujarat</i> .. ..	1,811	22
(i) Rasti .. ..	418	5
(ii) Semi-Rasti .. ..	490	6
(iii) Rani .. ..	903	11
<b>The State</b> .. ..	<b>8,164</b>	<b>100</b>



**4. The Area dealt with**—It is necessary to explain what the area given above represents. It does not include the area of first and second class States in Kathiawad and Gujarat which enjoy almost complete sovereign powers, although they pay tribute to the Gaekwar under the Walker Settlement of 1820 through the British political authorities. These number 16 in all with an area of 17,974 square miles. Nor does the area include the numerous petty states and chiefships with less than second class powers in Gujarat and Kathiawad, which though similarly paying tribute are under the political jurisdiction of the British Government. These number about 196 (70 in Kathiawad, 56 in Mahikantha, 14 in Palanpur Agency and 56 in Rewakantha) with an approximate area of 4,943 square miles (exclusive of little chiefships which have not yet been surveyed). Lastly the area does not include 183 villages, which are (i) either co-shared by Baroda with other States, or (ii) are fully within the jurisdiction of other States, but paying some kind of share of revenue or such like to this State, or (iii) those about whose ownership or control the matter is pending issue with the British Government. This last class of villages has an estimated area of 366 square miles. A total of 23,283 square miles is thus excluded and this Report is concerned only with the censused area of 8,164 square miles under the direct administration of His Highness's Government. A list is appended at the end of the Village Tables Volume, which seeks to reconcile the census list of inhabited villages with the revenue list and will be of use to Revenue authorities.

**5. Changes in Area**—The question of changes in area from census to census in this State has become a matter of woeful statistical caprice. In 1872, when the first of the censuses was taken, the area given out was only 4,399 square miles. But ten years later the area doubled itself effortlessly to 8,570 square miles, although spatially it remained the same! In 1891, the area diminished to 8,226, and in 1901, shrank still further to 8,099. In 1911 it rose again to 8,182. In 1921, the figure shown was 8,127, so that in the present census, only an increase 37 square miles has to be explained. Since 1872 it may be said that the area of the State has in reality remained practically unchanged. In 1872, the villages of Chandod and Deesa were censused by us but in later years, these were dropped from the State total. Similarly after 1881, Manekwada, Prabhas and Prachi ceased to be censused by this State, and their totals were not reckoned in the population of Amreli *prant*. Since 1891, there has been no change at all in the area of the State, that would necessitate adjustments of population. In 1921 indeed, it was recorded that the fortress of Wadi Salher (2 square miles) was formally retroceded by the British Government to this State, but this meant no change in the census arrangements as Salher had been always censused by us and its area considered part of the State. The boundary decision in 1914 in respect of the Pashu islets added a square mile to the State area. Beyond this variation (which made no difference however to the population as these islets are uninhabited), the area of the State remained practically the same for the last 40 years till 1921. Since that year, Padra and Bhadrans talukas have gained 7 square miles through alluvium, but without effecting any population changes. The villages of the Thakore of Lal Mandwa (in Atarsumba mahal) are always part of the State, within the sovereign jurisdiction of the Baroda Government. They have been always censused by the State and their population included within the State total; but these villages were not surveyed till after 1921; their area has now been ascertained to be 18 square miles. These are the two main causes of the variations since 1921. The figure of area shown in the last Census Report was what was supplied by the Survey and Settlement department. But soon after the Report was out in 1922, the same department gave out 8,135 square miles as the corrected area and, as if to impart an air of verisimilitude to an otherwise bald and unconvincing narrative, insisted on adding .2 to the total! For the present occasion, we were not content to rely on the Survey department's figures alone, but obtained the latest figures from mahals incorporating the most recent corrections in measurements of survey numbers which from the basis of the *puravani fesal patraks* (supplementary land registers). Not to be outdone by the Survey people, we give the following comparative table of changes in area since 1921 with a meticulous exactitude for which we hope to be forgiven:—

SUBSIDIARY TABLE I  
CHANGES IN AREA SINCE 1921

NAME OF DIVISION	Area given in Census Report of 1921	Survey Figures of 1922	Corrected area as shown in 1931	Gain (+) or Loss (-) since 1921	Reasons for Change
1	2	3	4	5	6
Baroda City .. ..	13	11	10.93	-2.07	In 1921, in the City area was included 2 square miles which should have been more correctly shown in the Baroda mahal area.
Baroda Prant (excluding City).	1,909	1,912	1921.6	+12.6	Baroda mahal gains by 2 square miles from the City. Padra and Bhadran owe an increase of 7 square miles through alluvium. The remaining increase of 3.6 square miles is due to corrections in measurements. Inter-taluka exchanges of villages, as between Savli and Baroda, Dabhoi and Vaghodia, Sinor and Tilakwada account for changes in the areas of these talukas since 1921.
Mehsana Prant ..	3,046	3,050	3068.3	+22.3	The 1921 figure contained a mistake of 4 square miles in the Patan area, which was corrected in 1922. Both the 1921 and 1922 estimates omitted the area of the villages of the Lal Mandwa Thakore, which were not till recently surveyed. These villages have an area of over 18 square miles.
Navsari Prant ..	1,807	1,810.6	1810.98	+3.98	Songadh taluka reports an increase of 5 square miles through corrections of measurements and Mahuva area is now less by a square mile due to the same cause.
Amreli Prant ..	1,077	1,077.4	1076.9	- 0.1	These variations are too slight to require explanation.
Okhamandal ..	275	275.2	275.2	+ 0.2	

**6. Size of Administrative Divisions**—Having got a correct idea of the area of the divisions, let us compare the average area with that obtaining in other States and Provinces. The average for the Baroda State divisions is arrived at by including the City in the area of Baroda *prant*. The whole State average is much lower than what it would be if only the three mainland districts are reckoned in. The Okhamandal division is a special unit, but it is little more than the size of a taluka, and it therefore brings the average down for the whole State. Under recent orders passed after the census was taken, this district is now reduced more or less to its old status as a *mahal*, and in many respects, such as police, judicial and educational matters, Okhamandal is now brought under Amreli district; but as the Report refers to conditions existing before the census date, the Tables have been compiled with Okha as a separate administrative unit. If Okha and Amreli are considered as one unit, the average area of divisions in the State rises to 2,041 from 1,633. These averages can be compared as in the margin with the average area of a district in some typical British provinces and Indian States. The British Gujarat district, as well as the district in Bengal and United Provinces, are small sized and about the same as in our State. The Travancore districts are even smaller, as those in Gwalior are somewhat larger, than our *prants*. Madras and Hyderabad districts have the largest size.

Province or State	Average area of a district in square miles
Bombay Presidency ..	4,745
<i>British Gujarat</i> .. ..	2,029
Bengal .. ..	2,744
Bihar and Orissa .. ..	3,959
United Provinces .. ..	2,214
Madras .. ..	5,472
Mysore State .. ..	3,682
Gwalior State .. ..	2,397
Hyderabad State .. ..	5,169
Travancore State .. ..	1,906
<i>Baroda.</i>	
(a) Whole State .. ..	1,633
(b) Mainland Divisions only.	2,271

It is to be noted finally that the averages calculated for most of the British Provinces and States are from their Census Reports of 1921, as the final figures of area and population have so far come from only a few Provinces and States.

## § 2. AREA AND POPULATION

**7. Reference to Statistics**—With these preliminary considerations regarding natural divisions and the area dealt with by the Census, which serve as the setting for our population figures, we will now proceed to unfold the general results of the Census taken on the 26th February 1931. In this chapter, which is of administrative interest, we shall deal first with the distribution of the population and in that connection refer briefly to the factors that influence density, and then proceed to study the variations in the population from decade to decade and the causes that have governed these changes. In that connection the various causes will be assessed and measured, the interrelation of the many factors that affect the general movement of the population will be traced, and finally possibilities of future expansion will also be indicated, for which purpose vital statistics, returns of size of holdings, broad age-returns, migration figures and other matters specifically dealt with in other chapters will be cursorily reviewed. The specific question of houses and house room will also be touched in conclusion. State Table I gives the general details of population by division and taluka. Imperial Table II gives the variation of population in each division during the last fifty years. State Table III gives similar details for each taluka since 1891, the population of each being adjusted on its present area. Variations in density by mahals are also given in State Table III. State Table IV gives the total area in bighas (1,089 bighas to a square mile) of mahals and of village sites within mahals. The data for Birthplace, Age, etc., are also dealt with from Imperial Tables VI, VII, etc. State Table XII gives details regarding the results of the special enquiry into the classification of homesteads which are embodied in Appendix II at the end of this chapter.

**8. Population as returned by the Census**—(i) *General Results*—The Census of 1931 disclosed a population of 2,443,007 persons (1,257,817 males and 1,185,190 females) within the State. The following Table shows the distribution of area and population in the different administrative divisions of the State:—

DIVISION	Area in square miles	POPULATION			Variation since 1921 (Increase)	
		Total	Male	Female	Persons	Per cent
Baroda State .. .. .	8,164	2,443,007	1,257,817	1,185,190	316,485	14.9
Baroda City with Camp .. .. .	11	112,860	62,744	50,116	18,148	19.2
Amreli Division .. .. .	1,077	173,948	88,806	85,142	21,363	14.0
Baroda Division .. .. .	1,922	711,481	374,884	336,597	98,681	16.1
Mehsana Division .. .. .	3,068	1,010,007	512,421	497,586	109,429	12.1
Navsari Division .. .. .	1,811	404,377	203,168	201,209	64,005	18.8
Okhamandal .. .. .	275	30,334	15,794	14,540	4,859	19.1

As the above table indicates, the increase has been fairly uniform throughout the State: only Mehsana (formerly known as Kadi *prant*) showing an increase of 12 per cent and Amreli with 14 per cent being lower than the State average. The City shows the largest proportionate increase. In the succeeding paragraphs the figures will be discussed more conveniently by natural divisions, or by natural areas wherever a more detailed analysis is desirable. The figures relating to the City will however be considered separately, whenever it is deemed necessary that they should be so isolated.

(ii) *Non-synchronous Areas*—As explained in previous census reports, the population returned in the census is meant to be the *de facto* population actually found within the limits of the State on the census date. There is of course the preliminary record, as the Introduction has explained, spread over a month, in which the normal residents as well as temporary visitors who are expected to stay

on till after the census day are noted. But the final record taken synchronously has to record the changes that have happened between the time of the preliminary enumeration and the census day, making due adjustments for departures and arrivals, births and deaths. A synchronous census therefore, if properly taken, represents only the *de facto* population, while the preliminary record more nearly corresponds to the *de jure* or normally resident population. But the census in this State as in every other place, cannot afford to be synchronous at all places. Forest regions and sub-montane tracts make it dangerous for the census staff to do a night enumeration. To meet their difficulties in such places, a day census is provided on the census date, so that it is just possible for a person who has been counted within the forest tracts to be enumerated again in the synchronous area. But these duplications are avoided by an elaborate system of enumeration passes. Again these areas are so situated that there is little or no probability of such confusion. There is very little movement: the villages themselves are sparsely populated and remote from one another.

In the margin are given details regarding these non-synchronous areas. Only one-seventh of the total area, one-sixth of the total number of villages, and hardly six per cent of the total population were affected by this difference in procedure of counting—so little was the disturbance that the accuracy of the enumeration was not affected in any way. Of greater moment are the disturbances which have been noted in the Administrative Volume (Census of India Volume XIX, Part III, para 74) within the synchronous areas to which a brief reference will be made in the next paragraph.

NON-SYNCHRONOUS AREAS			
Area dealt with	Square miles	Villages	Population
Songadh rural area ..	580.52	217	43,526
Vyara rural area ..	315.23	150	63,834
Vankal and Umarpada Tappas of Mangrol ..	195.60	74	17,439
Anaval Tappa of Mahuva..	35.43	11	8,715
Amroli Tappa of Tilakwada mahal ..	27.44	30	7,305
<i>Total Non-Synchronous Area</i> .. ..	<i>1,154.22</i>	<i>482</i>	<i>140,819</i>

**9. Accuracy of the Enumeration**—The census date is usually selected on a day which has adequate moonlight for a night enumeration. On the other hand full moon days are avoided, because many Hindus are apt to be out of their houses on that day for bathing in sacred rivers and such other objects. Further, festival days and days of markets and fairs are also avoided for similar reasons. The 26th February was selected as a suitable date from these points of view. Normally there was nothing to disturb a correct enumeration; within the limits of the State, as pointed out in the Introduction, there was nothing to disturb the harmony of the operations. In a few places however—where we least expected untoward events—disturbing factors appeared which had to be promptly dealt with. A *hat* (market day) in a Mahuva village promised to give trouble, but the Vahivatdar's prompt measures postponed the day till after the census. In a Dehgam village, the local Vankars were on merry-making bent, and if their resolutions were carried out, thousands of their caste would have flocked to this village and its changed figures would have made material alterations in Imperial Table III. Here also the Vahivatdar with great tact postponed the evil day. But in the town of Sidhpur and another village in the taluka of that name, hungry Brahmans flocking for a feast of *ladus* (sweet balls) could not be denied. Here tact did not supervene nor promptitude prevail. The town received an unearned increment of over two hundred and the village grew in size undeservedly. I am not sure whether the additional persons enumerated in these two places were not doubly counted. With these exceptions, the census throughout was conducted with great care and zeal by the local authorities, and in point of accuracy of record, it can compare favourably with its predecessors.

**10. Political Immigration**—But apart from these avoidable disturbances, we had the unearned gift in this census of thousands of British Indian residents, who migrated temporarily to our villages on account of the civil disobedience movement conducted by the Congress against the Government in British Gujarat.

The general question of migration and details regarding it will have to be deferred till the third chapter, but the special incidence of political immigration must be mentioned here while we are on the question of the accuracy of the enumeration. Normally when the census is conducted under favourable auspices, without any disturbances such as festivals or disease or other causes, a *de facto* count does not differ much from a *de jure* count. The number of temporary arrivals tend to balance the figures of those who have gone out temporarily and on the whole a fairly accurate view of the normally resident population is obtained. But in this census, this was not to be. This State is so interlaced with British Gujarat, that any movement originating in British Gujarat is bound to have its reactions in this State. About September, 1930, the civil disobedience movement in British India took the form of wholesale emigration of farmers and their families from British Gujarat to neighbouring villages in this State. This migration assumed great importance from the exaggerated estimates made even in official quarters of its strength. But its numbers varied. It reached its height about December, but there were fluctuations from time to time. People kept going and coming; the movement waned in some parts and threatened to revive in others. The estimates of local officers therefore varied in accordance with these changes. Strict instructions were issued from the State Census Office to prepare an exact count of these people. They were usually of three kinds, namely:—(1) those that squatted on *sim* lands and formed separate hamlets of their own, (2) those that found room on vacant plots in village sites and lastly (3) those that were entertained as guests or tenants of local residents in houses within the limits of our towns and villages. There is reason to believe that the figures now prepared are a very fair estimate of the strength of these immigrants, based on actual enumeration. The tension was considerably relieved about the census date. Most of them returned to their homes early in March as a result of the Delhi Settlement between the Congress and the Government of India. There are hardly any left now. These *hijratīs*, as the immigrants called themselves, in most cases were eager to be counted by us and have their details recorded in this State. The slips concerning them in the enumeration books were specially marked off from the rest and the British Gujarat village from which they came was noted against each individual. Very elaborate tables showing their strength in each village and their distribution by sex, birth place and caste have been prepared. Exact figures showing the names of villages from which the immigrants had come have been also compiled. These have been supplied on request to the Bombay Provincial Superintendent. We give here two statements summarising the main results so far as they concern us. The Table showing the names of British Gujarat villages which were the native places of these *hijratīs* is not published here as it is too long and has no interest for the general reader. But a summary will be given in the next paragraph. The main results are contained in the following Table:—

## SUBSIDIARY TABLE II

## POLITICAL IMMIGRANTS BY BIRTHPLACE

NAME OF TALUKA	Born outside Baroda State but enumerated in Baroda State			Born inside Baroda State and enumerated in Baroda State			TOTAL		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10
<b>Baroda State</b> .. .. .	<b>25,093</b>	<b>14,101</b>	<b>10,992</b>	<b>1,662</b>	<b>323</b>	<b>1,339</b>	<b>26,755</b>	<b>14,424</b>	<b>12,331</b>
<i>Baroda Division</i> .. .. .	14,686	8,732	5,954	923	98	825	15,609	8,830	6,779
Bhadran .. .. .	4,760	2,757	2,003	272	48	224	5,032	2,805	2,227
Padra .. .. .	1,361	764	597	6	..	6	1,367	764	603
Petlad .. .. .	8,380	5,119	3,261	645	50	595	9,025	5,169	3,856
Vaghodia .. .. .	185	92	93	..	..	..	185	92	93
<i>Mehsana Division</i> .. .. .	927	473	454	31	0	22	958	492	476
Dehgam .. .. .	58	31	27	..	..	..	58	31	27
Kalol .. .. .	869	442	427	31	9	22	900	451	449
<i>Navsari Division</i> .. .. .	9,480	4,890	4,584	708	216	492	10,188	5,112	5,076
Kamrej .. .. .	1,350	659	691	84	21	63	1,434	680	754
Mahuva .. .. .	3,723	1,923	1,800	300	89	211	4,023	2,012	2,011
Mangrol .. .. .	37	19	18	8	3	5	45	22	23
Navsari .. .. .	1,116	564	552	66	24	42	1,182	588	594
Palsana .. .. .	1,367	724	643	118	45	73	1,485	769	716
Vyara .. .. .	1,887	1,007	880	132	34	98	2,019	1,041	978

**11. Statistics regarding Hijratists**—The total number of immigrants due to this special cause is, as shown in the above table, 26,755 persons (14,424 males and 12,331 females). The movement was limited to only 12 talukas in the State—4 in Baroda, 6 in Navsari and 2 in Mehsana *prants*. They came from 244 villages in British districts and affected the population figures of 171 villages in this State. The marginal table sets out the main figures at a glance. Mehsana was but slightly affected, and that only in its south-east corner; Kathiawad and the City remained unper- turbed; and only Petlad, Bhadran and Padra mahals in Baroda *prant* and Mahuva, Kamrej, Palsana, Navsari and Vyara mahals in Navsari were places where the movement was concentrated. These figures ought really to be deducted from the census variations in Baroda, Mehsana and Navsari *prants*, and the true increase in the decade (in absolute figures) comes to 83,072, 108,471 and 53,817 or 13.5, 12.0 and 15.8 per cent respectively. It is important to note, however, in this connection that of these 26,755 *hijratists*, we can claim 1,662 as being born in this State and therefore part of the natural population of Baroda. The chief castes recorded amongst these people are detailed in the next Table given below. The chief part in this movement was evidently taken by the various sections of the Patidar community, particularly the intelligent and politically conscious Lewas, who form the aristocracy of Gujarat agriculture. The second place is taken by the forest tribes, particularly of Bardoli taluka where they came under the influence of Mahatma Gandhi's teachings and acted according to the behests of his lieutenant, Mr. Vallabhbai Patel.

NAME OF DISTRICT	No. of Hijratists	No. of State villages affected	No. of British villages from which they came
<b>Total ..</b>	<b>26,755</b>	<b>171</b>	<b>244</b>
Baroda .. ..	15,609	48	52
Mehsana .. ..	958	5	5
Navsari .. ..	10,188	118	187

**SUBSIDIARY TABLE III**  
**POLITICAL IMMIGRANTS BY CASTE**

NAME OF CASTE	NUMBER OF HIJRATIS											
	BARODA STATE			BARODA DIVISION			NAVSARI DIVISION			MEHSANA DIVISION		
	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
Baria .. ..	645	370	275	645	370	275	..	..	..	..	..	..
Brahman .. ..	660	357	303	219	121	98	430	231	199	11	5	6
Forest Tribes .. ..	1,464	806	658	81	37	44	1,383	789	614	..	..	..
Koli .. ..	997	499	498	..	..	..	541	273	268	456	226	230
Lewa Patidar .. ..	17,284	9,576	7,708	13,248	7,457	5,791	3,727	1,960	1,767	309	159	150
Matia Patidar .. ..	2,920	1,269	1,651	..	..	..	2,920	1,269	1,651	..	..	..
Uda Patidar .. ..	395	198	197	..	..	..	395	198	197	..	..	..
Rajput .. ..	892	522	370	793	468	325	99	54	45	..	..	..
Vania .. ..	194	110	84	33	18	15	153	89	64	8	3	5
Rest of Hindus .. ..	1,263	689	574	555	335	220	534	265	269	174	89	85
Muslims .. ..	41	28	13	35	24	11	6	4	2	..	..	..

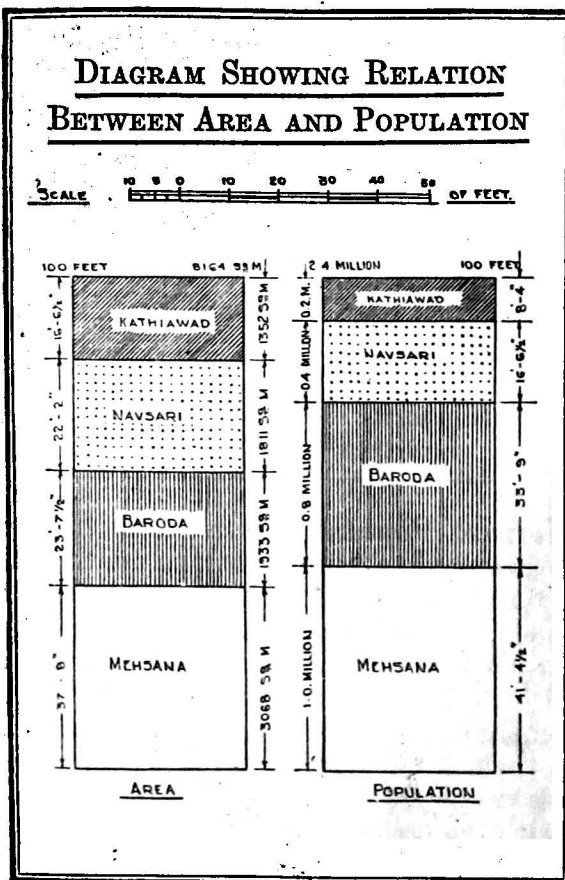
**12. Corrected Population and Normal Population**—In view of the transient nature of the immigration just described, the corrected population of the State is reduced from 2,443,007 to 2,416,252 (1,243,393 males and 1,172,859 females). A further deduction has to be made from this on account of the floating population counted in trains, on railway platforms, boats and other vessels. Imperial Table III gives in a Note details of 3,539 persons counted in this way. Thus we get 2,412,713. This we may compare with the estimate of the normal population from the size of households about which we conducted a special enquiry at the time of the preliminary record. This enquiry was first initiated in 1921 and was continued in this census also. Along with the preliminary count an additional record was made on the house list itself, of the number of persons per inhabited

“house,” which in this census, as in the last, was defined to be the residence of a commensal family. Care was taken in this enquiry to exclude from the calculation, all casual visitors and servants. Inmates of asylums, hospitals and jails, and the residents of *dharmashalas*, hotels and other places of temporary residence were excluded from the calculation, so that an idea could be had not only of the normal population, but also of the normal size of the household. The instructions were not precisely followed: members of the family temporarily away were liable to be excluded and temporary visitors were inadvertently included. Lastly in spite of instructions in certain places, *hijratis* were included in this reckoning. Under the circumstances, the following results can be accepted as only roughly true:—

**SUBSIDIARY TABLE IV**  
**COMPARISON OF NORMAL WITH DE FACTO POPULATION**

NATURAL DIVISION	DE FACTO POPULATION		Normally Resident Population	Normal Population per 1,000 of census population
	As at census	As corrected above		
1	2	3	4	5
Baroda State .. .. .	2,443,007	2,412,713	2,404,847	984
The City .. .. .	112,860	111,740	111,934	992
Central Gujarat excluding City .. .. .	711,481	695,183	695,715	978
Kathiawad .. .. .	204,282	204,030	203,477	996
North Gujarat .. .. .	1,010,007	1,007,915	1,002,275	992
South Gujarat .. .. .	404,377	393,845	391,446	968

From the above table it would appear that the corrected estimate shown in column 3 makes the closest approach to the normal population. In Central and South Gujarat, the presence of the *hijrati* factor accounts for the comparatively large divergence in those divisions between the normal and the counted population. In 1921, the estimated normal population was only 965 per mille of the census figure, thus pointing generally to the return of a larger number of Baroda-born persons to their native homes during the decade than normal. This point will be dealt with later in Chapter III.



**13. Comparison between Area and Population**—We will now go back to the table given below para 8 and see how the population is distributed in the four natural divisions. North Gujarat has 38 per cent of the area and 41 per cent of the population. Central Gujarat with the capital city is next in size with 24 per cent of the area and 34 per cent of the population. On the other hand South Gujarat occupying a little more than a fifth of the area has less than a sixth of the population. Kathiawad shows even a greater disproportion being a sixth of the area with less than one-twelfth of the population. A diagram given in the margin illustrates graphically this relation between area and population in each of the natural divisions.

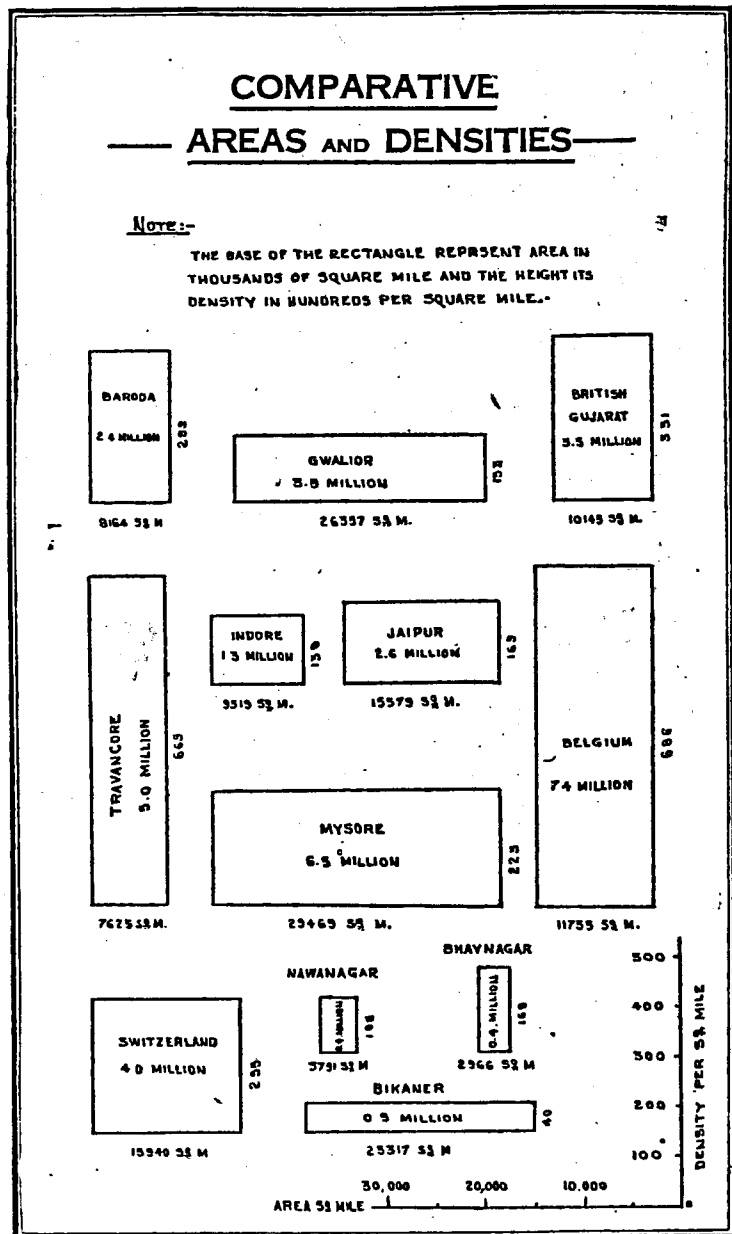


§ 3. DENSITY

**14. Comparative Densities**—From the area and population we are able to find that there are 299 persons to the square mile. If the *hijratis* and floating population are excluded, the density is reduced to 295 to the square mile. This density figure is of course based on the hypothesis of a uniform distribution of persons over the total area dealt with. Its utility lies in the fact that it affords comparison with other countries. For that purpose we shall take the latest density figures available of the countries and states concerned. Most of the states and provinces selected are from India. A few countries from the outside have been also shown, which are of a size comparable with our State. For these the figures of area and population as given in the latest issue of the Statesman's Year Book have been adopted. As to Indian States and Provinces, the final figures of area and population of only Travancore, Cochin, Mysore, and of a few other States and Provinces have so far been supplied to us. The British Gujarat density figure is based on the 1921 area and the provisional figures of the census of 1931. On this basis the marginal table is prepared. A diagram is also attached to this paragraph in illustration by means of rectangles. From these data we see that the density in this State is less than half per square mile of that in Belgium or Travancore. British Gujarat is slightly more populated, but on the other hand Baroda has 76 more to the square mile than Mysore and more than double of what Gwalior or Indore is able to maintain, nearly thrice that of Nawanagar and over seven times more than in Bikaner.

Name of Country	Area in square miles	Density per square mile
Belgium ..	11,755	686
Travancore ..	7,625	669
British Gujarat ..	10,145	331
Baroda ..	8,164	299
Switzerland ..	15,940	255
Mysore ..	29,469	223
Jaipur ..	15,579	169
Bhavnagar ..	2,966	168
Indore ..	9,519	138
Gwalior ..	26,367	133
Nawanagar ..	3,791	108
Bikaner ..	23,317	40

The British Gujarat density figure is based on the 1921 area and the provisional figures of the census of 1931. On this basis the marginal table is prepared. A diagram is also attached to this paragraph in illustration by means of rectangles. From these data we see that the density in this State is less than half per square mile of that in Belgium or Travancore. British Gujarat is slightly more populated, but on the other hand Baroda has 76 more to the square mile than Mysore and more than double of what Gwalior or Indore is able to maintain, nearly thrice that of Nawanagar and over seven times more than in Bikaner.



**15. Distribution of Population in Natural Areas**—The general figure of 299, as the density for the whole State, is merely the arithmetical expression of a uniformity in the spread of population that does not exist in reality. The City, for instance, supports 10,260 persons to the square mile. Songadh has only 78.5. This wide range in densities at once shows that the population is most unequally distributed. Central Gujarat has

426 to the square mile, North 329 followed by the Southern division with 223 and Kathiawad with 151. Taking the thirteen natural areas in order of density, we see as in the margin, Charotar to be the most densely populated area. But the census figure of density here includes 13,140 *hijratīs*. Even without these, however, the density still remains at 699. Vakal includes the City, but has few other large towns. Without the City its density is only 403. The North Gujarat range of densities is fairly even being from 250 to 400. The Kathiawad areas have a still more uniform scale of densities, but these are generally low, between 140 and 155. South Gujarat however shows the greatest contrasts in density, as it does in natural conditions. A map is attached facing this paragraph to illustrate the varying densities in the different natural areas.

Natural Area	Area in square miles	Density per square mile
Charotar .. ..	269	748
Vakal .. ..	454	642
Rasti .. ..	418	451
East Kadi .. ..	1,501	396
Kahnām .. ..	578	296
West Kadi .. ..	1,229	268
Chorashi .. ..	632	254
Trans-Sabarmati .. ..	338	252
Semi-Rasti .. ..	490	202
Sea Coast .. ..	482	154
Middle Block .. ..	682	152
Scattered Areas .. ..	173	142
Rani .. ..	903	129

**16. Distribution of the Population classified according to Density—** We will now attempt a more detailed analysis of the spread of population in the different talukas. State Table J shows that there are, excluding the City and the Cantonment, 40 talukas and peta mahals in the State (including the island of Beyt and the isolated village of Bhimkatta which are peta mahals). The following Subsidiary Table is prepared dividing the talukas into six classes according to density: (i) 750 and over, (ii) 600-750, (iii) 450-600, (iv) 300-450, (v) 150-300 and (vi) under 150:—

#### SUBSIDIARY TABLE V

##### DISTRIBUTION OF THE POPULATION CLASSIFIED ACCORDING TO DENSITY

NATURAL DIVISION	TALUKAS WITH A POPULATION PER SQUARE MILE											
	Under 150		150-300		300-450		450-600		600-750		750 and over	
	Area	Population	Area	Population	Area	Population	Area	Population	Area	Population	Area	Population
1	2	3	4	5	6	7	8	9	10	11	12	13
Bareilly State ..	1,697	174,494	2,893	698,175	3,119	1,142,233	125	70,406	86	52,649	244	305,050
	20.79	7.14	35.44	28.58	38.20	46.75	1.53	2.88	1.05	2.16	2.99	12.49
City .. ..	..	..	..	..	..	..	..	..	..	..	11	112,860
	..	..	..	..	..	..	..	..	..	..	100	100
Central Gujarat exclusive of City ..	..	..	831	212,200	822	297,997	..	..	86	52,649	183	148,545
	..	..	43.24	29.84	42.77	41.88	..	..	4.47	7.40	9.52	20.89
North Gujarat ..	..	..	1,162	292,511	1,906	717,496	..	..	..	..	..	..
	..	..	37.87	28.96	62.13	71.04	..	..	..	..	..	..
South Gujarat ..	929	96,400	320	71,046	391	126,740	125	70,406	..	..	46	39,785
	51.30	23.84	17.67	17.57	21.59	31.34	6.90	17.41	..	..	2.54	9.84
Kathiawad ..	768	78,094	580	122,328	..	..	..	..	..	..	4	3,860
	56.80	38.23	42.90	59.88	..	..	..	..	..	..	.30	1.89

**17. Consideration of Subsidiary Table V—**The above table can be best studied by administrative divisions. Taking the State generally, we observe that even now it shows a very uneven distribution of population. Two-thirds of the population is found in less than half of the area. Talukas belonging to the lowest class of density constitute more than a fifth of the area but have only one-fourteenth of the population; while high density areas (450 and above)—forming only one-sixteenth of the whole State, have no less than a fifth of the population. Nearly three-fourths of the State area has a density range of 150 to 450; this area is rather equally divided in extent into two density classes, an upper limit of 300-450 to which an area of 3,119 square miles belongs and a lower limit of 150-300 in which are classed talukas with an area of 2,893 square miles (more than a third of the State). It is in this last-named class that, *prima-facie*, density conditions hold

# DENSITY MAP OF THE — BARODA STATE —

CENTRAL  
GUJARAT  
0.8. MILLION

426.

1933 S.S. M.

NORTH GUJARAT  
1.0 MILLION

370.

3068 S.S. M.

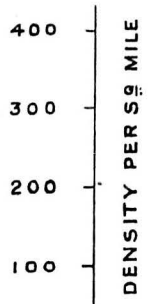
AREA S.S. MILE

SOUTH GUJARAT  
0.4 MILLION

223.

1811 S.S. M.

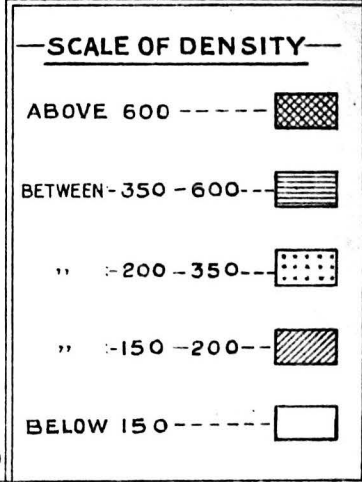
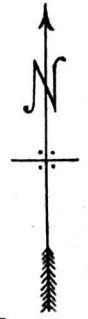
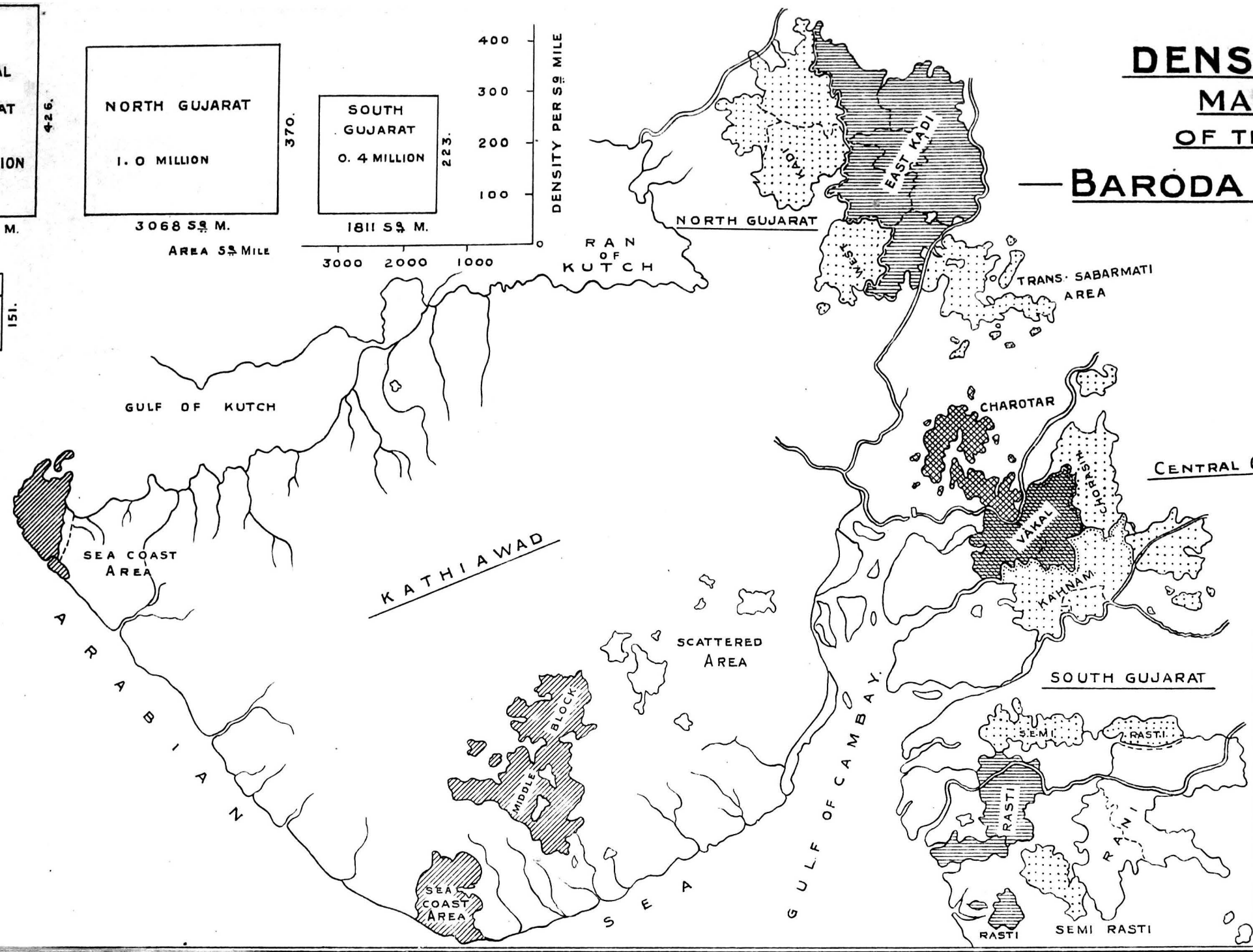
3000 2000 1000



KATHIAWAD  
0.2. MILLION

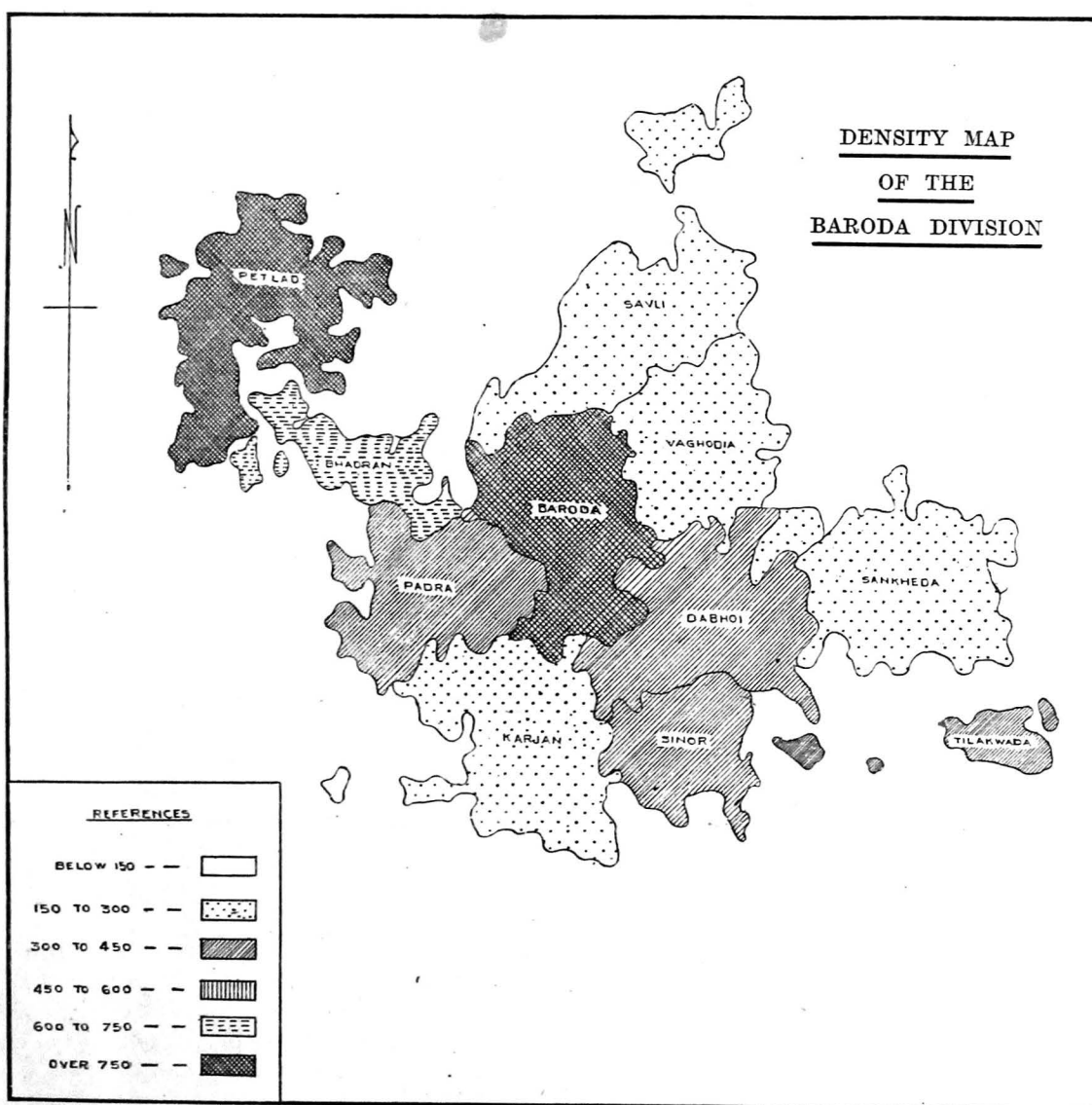
151.

1352 S.S. M.



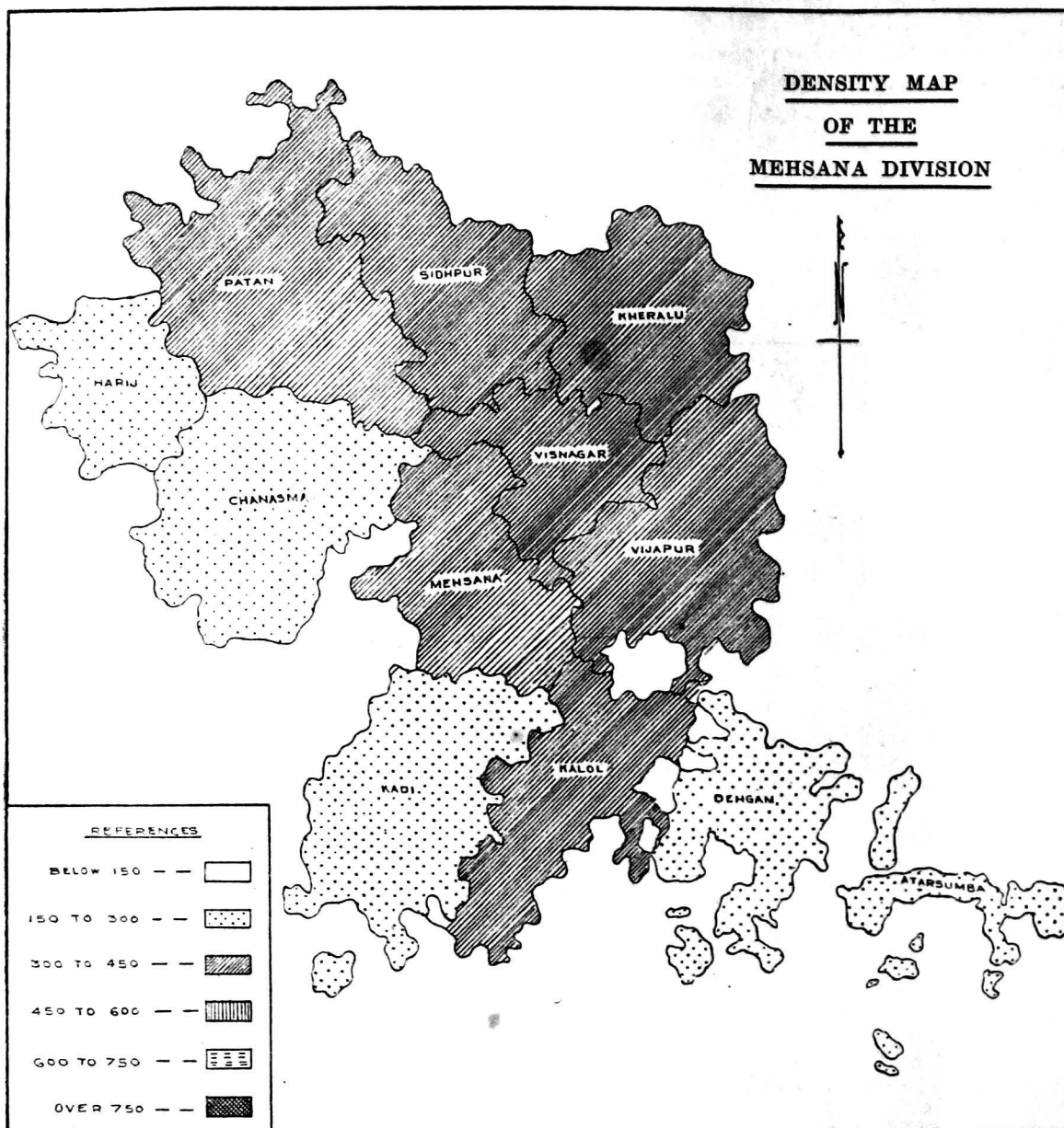
out the greatest prospect of advance in the future. The areas of greatest density (750 and over) have only 244 square miles of which 15 square miles go to form the City of Baroda and the town and island of Beyt.

(i) *Baroda Prant*—We shall now make a closer examination of the figures and begin with the metropolitan division. In the discussion of what follows we shall exclude the City figures, the analysis of which must be left to the next chapter. Taking the population of Baroda *prant* proper, we see the general unevenness of distribution very well illustrated. In this *prant*, more than a fifth of the population is concentrated on less than one-tenth of the area. 42 per cent of the people of this *prant* are found in talukas which have a density of 300 to 450. There are no talukas in the class of 450-600, so that in this district between the very dense areas and the other parts, there is some room for expansion. Nearly half of Kahnamb and the greater part of Chorashi—831 square miles in extent—belong to the density class of 150-300, indicating where advance in population is possible; but it must be remembered that in those parts of Chorashi which have a low density, there are 12 square miles of forests.



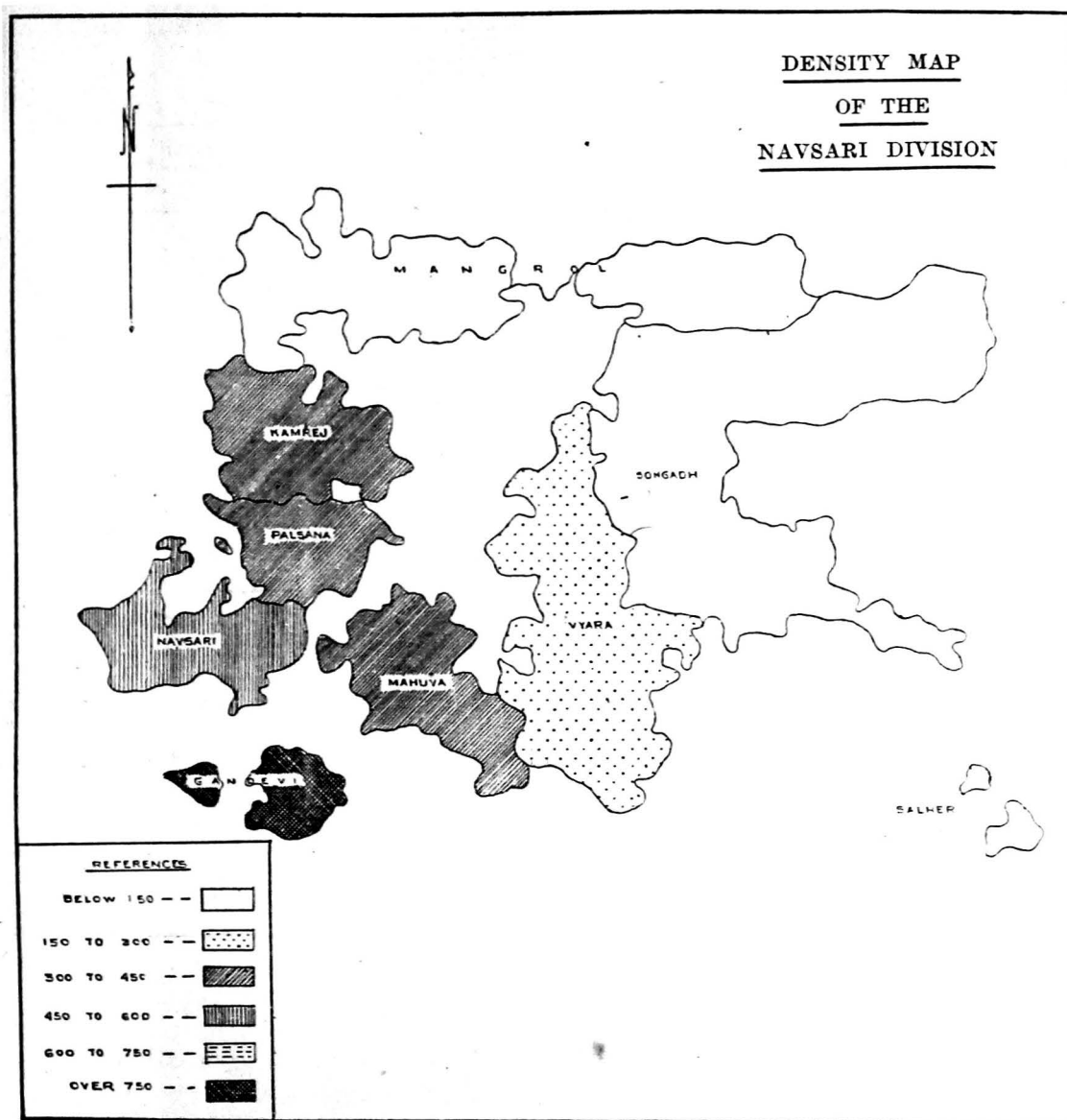
(ii) *Mehsana Prant*—Proceeding northwards we find the whole of this district on a much more uniform basis of distribution. 38 per cent of the area of the *prant* falls into the class of 150-300, and 62 per cent (*i.e.*, the remainder) in the next higher class. As we have seen already, the lowest density is in Harij taluka towards the north-west but all the other talukas have at least a density of 246 and over.

The highest density area is in the centre and east—Sidhpur, Visnagar and Vijapur talukas having over 400 to the square mile. The broken country across the Sabar-mati cannot support a very crowded population as is evidenced by Dehgam (254) and Atarsumba (246). It is in this part that the five square miles of reserved forests are found.

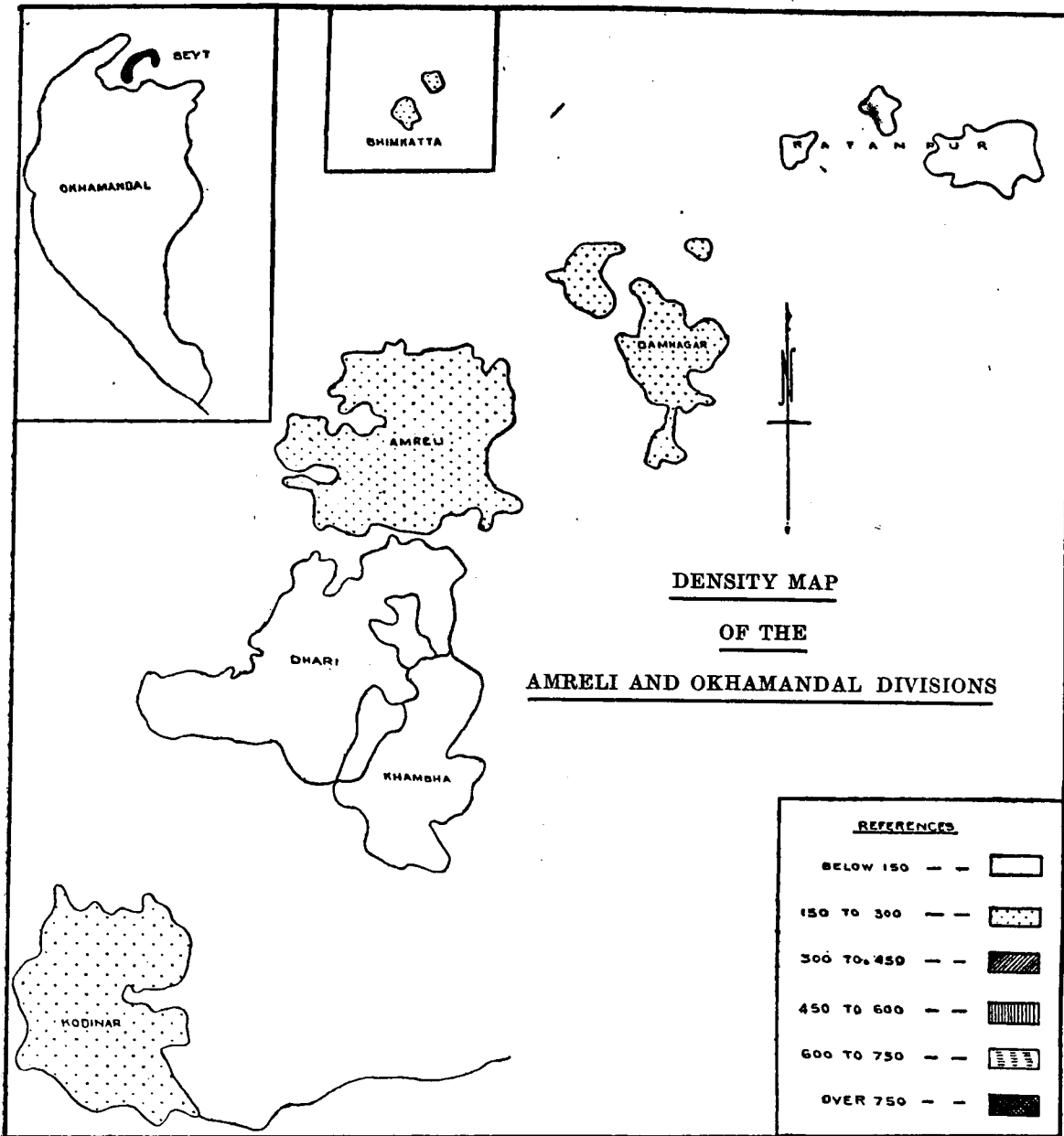


(iii) *Navsari Prant*—Coming to the southern division, we have to discount the density on total area because of the fact that nearly a third of the whole *prant* area is under forests and hills which make habitation and settlement difficult if not impossible. The forests are met with in the talukas of Songadh (where they form nearly 60 per cent of its area), in Mangrol (nearly a third), in Vyara (28 per cent) and Mahuva (only 10 square miles). Thus the whole of Rani and Semi-Rasti areas are affected by the existence of these forests. Bearing this in mind, we can easily understand that more than half the area of the district can only support a density of less than 150 per square mile. The Rasti talukas—about one-sixteenth of the whole extent of the *prant* support a density of 450 and over. Vyara is the most crowded of the forested areas but here settlement has been of comparatively recent date owing to the opening of the Tapti Valley Railway. The most populous villages are round about there between the Tapti and the Purna. Mahuva alone of the Semi-Rasti talukas has a high density (335) but there the population is

concentrated in the villages round about the river Purna, and on the west towards Jalalpur taluka (of Surat district). Mangrol (146) has the bulk of its inhabitants localised in the western villages.



(iv) *Amreli and Okhamandal*—Here we meet with talukas which have never supported a dense population. The soil is shallow, the rainfall is precarious, agriculture is profitless, and though climate is healthy, the people are thriftless and ignorant. The highest density therefore in this district is (with the exception of Beyt which is a town and island) in Amreli (230) and Kodinar (211). Bhimkatta again we need not count, but the rest of the *prant* does not have more than 167 to the square mile. Here the factor of forests comes in again. Amreli district has 70 square miles of forest mostly in Dhari and Khambha talukas. The Okha "forests", however, are mere clumps of low *char* trees, the preservation of which does not greatly affect human habitation. The conditions here militating against population are the hard rude soil, the propinquity of the sea which turns whole areas into salt and the race composition of its present inhabitants. In spite of these, however, the density in the Gaekwar's Kathiawad compares favourably with other neighbouring Indian States in that area, such as Bhavnagar (168), Nawanagar (108), Junagadh (163), etc.



**18. Density, Water-Supply and Crops**—So far we have been considering crude density figures, *i.e.*, calculated on the whole area. But so calculated, they do not serve as a true criterion of the real pressure of population on the soil. We have to find out the density on cultivable area (which in a predominantly agricultural State like Baroda does give a more correct indication whether a particular area favours the growth of population or not); we have also to exclude the item of forests from the total area, and find out the proportion of net cultivated area to the arable land available.

NATURAL DIVISION	Culti-vable Area	Density on Culti-vable Area	Density on Rural Area	Density on Area excluding Forests	Proportion of Net cultivated area to arable Area
Baroda State ..	6,461	378	236	327	80.2
Central Gujarat..	1,635	504	306	429	87.4
Kathiawad ..	1,085	188	126	165	69.01
North Gujarat ..	2,667	377	272	330	83.93
South Gujarat ..	1,074	377	190	321	71.2

Thus we get at the marginal table. Out of a total arable area of 6,461 square miles, over four-fifths are under tillage. Excluding forests, the density rises to 327. Kathiawad would seem to offer the greatest scope for population, but it has never so far supported a high density. The extent of cultivable area in that

division, as shown in the Revenue departmental reports, includes large tracts of sandy and salt-ridden soil, which are only on the margin of cultivation. That is why the net cultivated area shows a comparatively low ratio. The exclusion

of forests raises the density figure in South Gujarat to a near approach to that calculated on cultivable area, showing how the pressure there of population on means of subsistence has become well-nigh critical. From these general considerations we can now study the following detailed Subsidiary Table giving the main factors of density in the different natural areas :—

SUBSIDIARY TABLE VI  
DENSITY, WATER-SUPPLY AND CROPS

NATURAL DIVISION	Mean Density per square mile	Mean Density per square mile of cultivable area	Percentage to total area of		Percentage to cultivable area		Percentage of area which is irrigated to gross cultivated area	Normal Rainfall
			Cultivable area	Net cultivated area	Net cultivated	Double cropped		
1	2	3	4	5	6	7	8	9
Baroda State .. .. .	299	378	79.15	63.50	80.22	1.90	4.03	32.09
Central Gujarat including City ..	426	504	84.67	74.12	87.44	.48	2.15	35.39
Charotar .. .. .	748	827	90.29	84.79	93.91	1.89	12.22	30.28
Chorashi .. .. .	254	313	81.20	73.01	89.92	.38	.02	33.29
Kahnarn .. .. .	296	340	87.07	70.39	80.85	..	.13	36.56
Vakal .. .. .	642	487	83.10	72.04	86.70	.34	.48	32.97
Kathiawad .. .. .	151	188	80.25	55.38	69.01	.80	2.94	18.75
Middle Block .. .. .	152	188	80.47	59.65	74.13	.24	3.38	18.23
Scattered Area .. .. .	142	157	90.81	62.83	69.19	..	3.92	18.62
Sea Coast Area .. .. .	154	202	76.15	46.54	61.12	2.01	1.68	19.57
North Gujarat .. .. .	329	377	86.93	72.96	83.93	2.89	6.69	26.21
East Kadi .. .. .	306	455	87.22	76.24	87.41	4.92	10.79	26.05
Trans-Sabarmati Area .. .. .	252	296	85.31	71.96	84.35	2.50	.81	33.83
West Kadi .. .. .	268	308	86.96	69.24	79.56	.52	2.62	24.21
South Gujarat .. .. .	223	377	59.28	42.21	71.20	3.05	.50	48.48
Rani .. .. .	129	297	43.51	30.84	70.90	4.65	.18	53.65
Rast .. .. .	451	533	84.68	61.58	72.72	1.64	1.79	46.22
Semi-Rastl .. .. .	202	304	66.67	46.62	69.92	2.65	.30	40.83

NATURAL DIVISION	Percentage of gross cultivated area under								
	Wheat	Rice	Bajri	Juwar	Other pulses	Oil seeds	Cotton	Tobacco	Other crops
1	10	11	12	13	14	15	16	17	18
Baroda State .. .. .	2.36	6.24	19.91	17.39	10.62	7.46	25.18	1.32	9.52
Central Gujarat including City ..	.40	15.40	8.17	8.52	6.19	2.15	40.84	4.03	14.30
Charotar .. .. .	.29	8.57	19.86	10.56	10.28	3.60	5.07	17.31	24.46
Chorashi .. .. .	.23	17.60	5.09	7.09	4.40	1.73	50.49	1.46	11.91
Kahnarn .. .. .	.22	18.09	1.70	10.23	3.58	.55	54.25	.25	11.13
Vakal .. .. .	.93	13.83	12.15	7.01	9.05	3.65	26.09	2.88	14.41
Kathiawad .. .. .	2.05	.23	30.54	21.50	4.35	15.19	24.07	.02	2.05
Middle Block .. .. .	2.66	.15	28.73	19.97	6.59	15.31	24.48	.01	2.10
Scattered Area .. .. .	3.63	.21	10.46	34.90	2.97	16.13	30.68	.01	1.01
Sea Coast Area .. .. .	.20	.38	43.10	17.99	.96	14.55	20.23	.05	2.45
North Gujarat .. .. .	4.30	.59	30.54	21.68	14.45	9.71	11.03	.50	7.20
East Kadi .. .. .	6.03	.40	32.41	20.66	16.28	10.17	6.67	.72	6.66
Trans-Sabarmati Area .. .. .	.80	2.11	39.34	13.10	17.07	4.35	11.27	.25	11.71
West Kadi .. .. .	2.88	.42	25.32	25.63	11.10	10.64	17.12	.25	6.63
South Gujarat .. .. .	.57	11.90	.04	16.92	13.37	3.11	39.23	.09	14.77
Rani .. .. .	.66	15.85	..	13.85	25.52	2.56	19.65	.05	21.86
Rastl .. .. .	.40	8.84	.09	19.70	5.42	4.71	47.07	.20	13.57
Semi-Rastl .. .. .	.64	10.35	.03	17.70	6.90	2.04	55.03	.04	7.18



The above table has been prepared on the following basis. "Cultivable area" includes all lands which, even though on the very margin of cultivation, or otherwise unsuitable for tillage at profit, the Revenue department may hope some day to turn to occupation. It includes also threshing floors, well-runs and grass lands. This explains why even though 80 per cent of the total area of Kathiawad is considered fit for cultivation, nearly one-third of the so-called cultivable land remains occupied. In the Scattered areas, no less than 91 per cent of the area is shown as cultivable, but only 70 per cent of it is under the plough. As to crops, cotton claims 25 per cent, but the most highly "cottonised" tracts are Kahn timer (54 per cent), Semi-Rasti (55), Rasti (47), Chorashi (50.5), Vakal (36), and the Kathiawad Scattered areas (31). Rice has only 6 per cent, but Kahn timer, Chorashi and Rani (Vyara taluka) show the largest incidence. Wheat is even less grown (only 2 per cent) but it is mostly to be found in East Kadi. Tobacco is a luxury crop which has become almost a speciality of Charotar (where it occupies 17 per cent of the gross sown area). Oil seeds are similarly confined to Kathiawad and North Gujarat. Bajri is grown extensively in North Gujarat and Kathiawad, but its extent in Central Gujarat is small and it is hardly known in South Gujarat. Juwar is grown everywhere, but it is less extensive in Central Gujarat than elsewhere. The irrigated area is most conspicuous in Charotar and East Kadi, but on the whole it forms only 4 per cent of the total area.

**19. Factors of Density**—The above table gives us a series of correlations which are important to remember. We have only space for a few.

(a) *Rainfall and Density*—First let us take rainfall and density. Wherever good rainfall is properly distributed and seasonal it fills the wells and rivers and fertilises the soil. Fertility is chiefly dependent on a good water-supply. Broadly speaking it follows that rainfall favours fertility which in its turn favours density. Ordinarily therefore there should be a close correspondence between density (on

NATURAL AREA	Order according to density on cultivable area	Order according to rainfall
Charotar .. ..	1	8
Rasti .. ..	2	2
Vakal .. ..	3	7
East Kadi ... ..	4	9
Kahn timer .. ..	5	5
Chorashi .. ..	6	4
West Kadi .. ..	7	10
Semi-Rasti .. ..	8	3
Rani .. ..	9	1
Trans-Sabarmati ..	10	6
Sea Coast .. ..	11	11
Middle Block .. ..	12	13
Scattered Area ..	13	12

heavy rainfall may be a blessing in Harij but brings only disaster in Kahn timer."

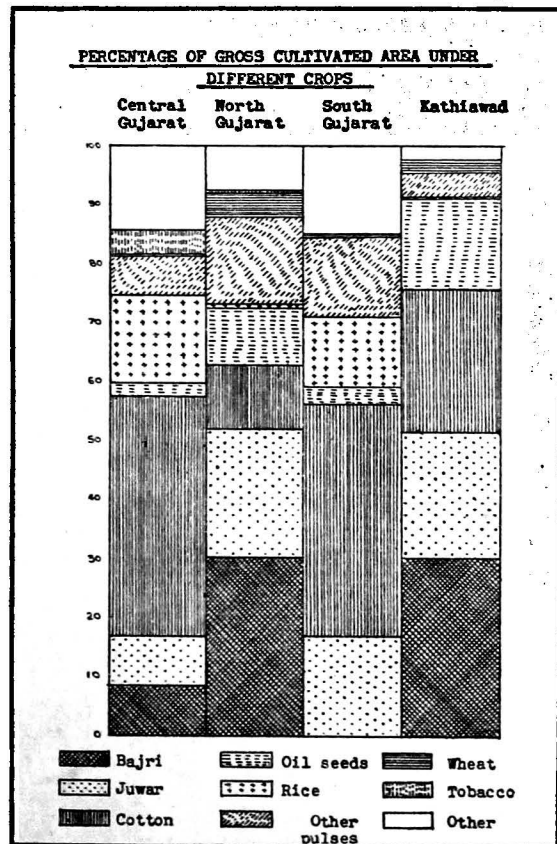
(b) *Agricultural Water-supply and Density*—But rainfall does enter into the question as an essential factor of agricultural water supply. A good monsoon, it is obvious, is always of value ultimately, as it fills the wells and ensures an abundant supply of fodder for cattle, whatever may be its varying effect on the yield of crops. But the incidence of agricultural water-supply can be got at from the

provision of wells found in the different areas, the extent of the irrigated area and the proportion to the gross sown area of crops that are mainly dependent on rainfall. *Bajri, juwar, rice, wheat* and other food grains are the typical food crops that depend on well distributed rainfall. To the proportions of area sown by these crops must be added the irrigated area. But the yield of the different crops differs according to the fertility, the amount of labour, skill and capital employed and various other factors combined with agricultural water-supply. Therefore the proportion of crops has to be weighted in each area according to its approximate yield. Food grains in Rani and Kathiawad are vastly inferior to the Charotar and Rasti variety. Something has to be taken therefore as a standard. Taking Charotar food crops as standard (100), we can consider the Rasti crop as 120, that in Vakal and Kahnarn can be evaluated at 80, East Kadi and Chorashi at 60, West Kadi and Semi-Rasti at 50, Trans-Sabarmati and Kathiawad Middle Block at 40 and Rani, Sea Coast and Scattered areas at 30.

We thus arrive at the marginal table, wherein we find a much closer correspondence. The weights above adopted are suggested in view of the quantity and quality of yield from these crops in the different areas. The divergences that occur (in Chorashi, Trans-Sabarmati and Middle Block) are explained by the climate, facilities of communications and the race composition of their population.

NATURAL AREA	Order according to cultivable area	Proportion of watered area to gross sown area	Weights allowed	Corrected proportion of watered area	Order according to column 5
1	2	3	4	5	6
Charotar ..	1	49.7	100	50.0	1
Rasti ..	2	34.4	120	41.3	3
Vakal ..	3	43.0	80	34.4	4
East Kadi ..	4	75.8	60	45.5	2
Kahnarn ..	5	33.8	80	27.04	7
Chorashi ..	6	34.4	60	20.6	10
West Kadi ..	7	65.4	50	32.7	5
Semi-Rasti ..	8	35.6	60	21.4	9
Rani ..	9	55.4	30	16.6	12
Trans-Sabarmati ..	10	72.4	40	30.5	6
Sea Coast ..	11	62.8	30	18.8	11
Mid-Block ..	12	58.2	40	23.3	8
Scattered Area ..	13	52.2	30	15.7	13

(c) *Luxury Crops and Density*— But the closest correspondence is found when we combine the factor of agricultural water-supply with the incidence of luxury crops in the different natural areas. We take luxury crops to be those which yield a high value in return—wheat and rice among the food grains, and cotton, oil-seeds and tobacco among the rest, may be cited as examples of luxury crops. Wheat depends mainly on irrigation, rice would require a heavy rainfall, while cotton will flourish even with a moderate amount of precipitation and besides, does not require much high paid labour; tobacco on the other hand requires both costly labour and an abundant water supply; but all of these give a high economic return to the producer. Cotton however requires weighting similar to that adopted in respect of watered area crops, for it varies in quality: the Kahnarn and Rasti varieties grown on black soil of high fertility and remarkable depth are much superior to the quality grown in Kathiawad



and North Gujarat. In other respects too, the areas require weighting. Thus

NATURAL AREA	Proportion of luxury crops	Weights	Corrected proportions	Order according to column 4
1	2	3	4	5
Charotar .. ..	34.9	120	41.9	3
Rasti .. ..	61.2	120	73.4	1
Vakal .. ..	57.4	75	43.1	2
East Kadi .. ..	24.0	75	18.0	7
Kahnam .. ..	73.4	100	73.4	1
Chorashi .. ..	71.5	50	35.8	4
West Kadi .. ..	30.7	50	15.3	9
Semi-Rasti .. ..	68.4	50	34.2	5
Rani .. ..	39.0	50	19.5	6
Trans-Sabarmati .. ..	18.9	50	9.5	12
Sea Coast .. ..	35.5	30	10.7	11
Middle Block .. ..	42.7	40	17.1	8
Scattered Area .. ..	50.6	30	15.2	10

Charotar grows the finest tobacco in Gujarat; this fact coupled with the excellence of its soil growing all kinds of crops and the high enterprise of its inhabitants, should give Charotar a higher value, say 120, compared to Kahnam as standard (100). The Rasti cotton and sugar cane are even of better quality than Kahnam and therefore this area should have the same value as Charotar. Vakal comes next to Kahnam; to it may be given 75. Along with it must also go East Kadi, famous for oilseeds, and

growing also a good quality of cotton. West Kadi, Trans-Sabarmati, Chorashi, Rani and Semi-Rasti grow large quantities of cotton, which if not very

NATURAL AREA	Order according to density on cultivable area	Order according to extent of watered area	Order according to extent of luxury crops	Sum of columns 3 and 4	Final order according to columns 3 and 4 combined
1	2	3	4	5	6
Charotar .. ..	1	1	3	4	1
Rasti .. ..	2	3	1	4	
Vakal .. ..	3	4	2	6	2
East Kadi .. ..	4	2	7	9	
Kahnam .. ..	5	7	1	8	3
Chorashi .. ..	6	10	4	14	
West Kadi .. ..	7	5	9	14	5
Semi-Rasti .. ..	8	9	5	14	
Rani .. ..	9	12	6	18	7
Trans-Sabarmati .. ..	10	6	12	18	
Sea Coast .. ..	11	11	11	22	8
Middle Block .. ..	12	8	8	16	
Scattered Areas .. ..	13	13	10	23	9

good is at least highly profitable and the soil there, where it is grown, is excellently suited for the purpose. These might be given 50 marks therefore. The Middle Block—the most fertile portion of Kathiawad—grows a short stapled variety of cotton extensively and has possibilities of wheat which it has so far neglected. It should be given 40, the remaining two Kathiawad areas being credited with 30 only. The result is shown in the first of the two marginal tables attached. We can combine the two factors of agricultural water supply and luxury crops and find as in the second marginal table a final order which corresponds to the order according to density on cultivable area very closely indeed.

(d) *Density and Environment*—We will now attempt briefly following the practice of 1921 a correlation between these agricultural data, and other factors such as climate, natural drainage, facilities of communications, etc., which together form what may be called the environment for each division. Here a detailed consideration per natural area is not called for. We shall only take the natural divisions. In point of climate, Kathiawad stands first, then North Gujarat, Central Gujarat and South Gujarat. In regard to natural drainage a very important consideration—the order of importance would be Central, Southern, Northern and Kathiawad. The order of fertility follows the same. As to railways and other means of communications, taking mileage per square mile of area, the order is thus:—Central, Northern, Kathiawad and South Gujarat. In economic condition, the Central is the most prosperous, South, North and Kathiawad following each other. In regard to luxury crops and agricultural water supply, we can total up the respective orders found in the natural areas

comprised in each of the natural divisions. Thus in Central Gujarat, Charotar is number one in agricultural water supply and luxury crops combined. Vakil is second. Kahnām is similarly third and Chorashi fifth. The sum in respect of luxury crops and watered area in Central Gujarat therefore is 1+2+3+5 or 11. The average is 3. Calculating in this way for the other divisions we find the order of the divisions for these other factors combined. The order according to density on cultivable area is obtainable from column 3 of Subsidiary Table VI given above. We thus get the following Table wherein the final order given in column 10 agrees with column 2:—

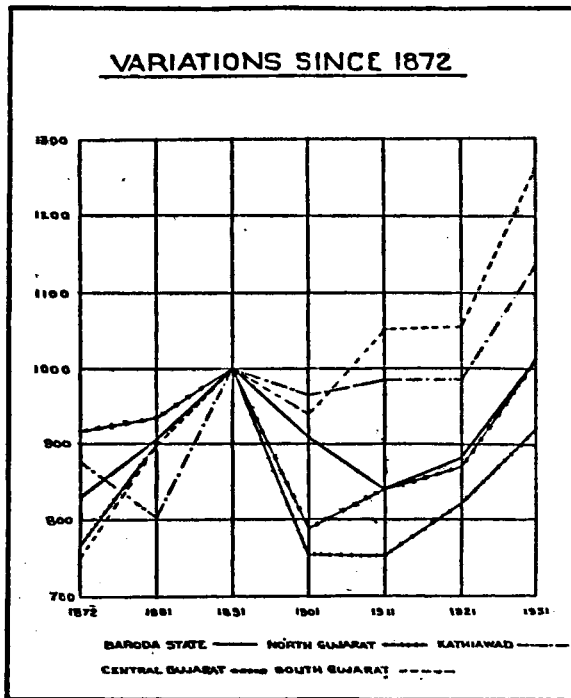
NATURAL DIVISION	ORDER ACCORDING TO								
	Density	Luxury crops and watered area combined	Climate	Fertility	Natural drainage	Railway facilities, etc.	Economic condition	Sum of columns 3-8	Order according to environment (cols. 3-8)
1	2	3	4	5	6	7	8	9	10
Central Gujarat .. ..	1	1	3	1	1	1	1	8	1
South Gujarat .. ..	2	2	4	2	2	4	2	16	2
North Gujarat .. ..	2	3	2	3	3	2	3	16	2
Kathiawad .. ..	3	4	1	4	4	3	4	20	3

This Table only serves to prove the thesis that density is governed largely by environment which is merely the sum of factors that condition the growth of population.

#### § 4. VARIATION IN THE LAST FIFTY YEARS

**20. Census Variations since 1881**—We will now consider the second aspect of the general census returns—the movement of population. “Movement” is the general term applied to the variations in the population from decade to decade. These variations are caused in one of two ways: first by the excess or deficiency amongst births and deaths and secondly by migration. The first is called the natural variation and the second is the balance of migration. In this section we shall consider the general effect of the conjoint influence of these two causes. Fifty years have now elapsed since the second census of this State was taken in 1881. In 1872, the first regular census of the modern type was taken in Baroda, but it was not synchronous with the rest of India. In 1881, the first synchronous census was taken in the State, and the figures then compiled are the earliest comparable for demographical purposes. In 1872 the population returned was 1,997,598. There was an increase of 21.9 per cent in 1891 within

Census Year	Population	Increase or decrease		Variation with 1872 as 1,000
		Actual	Percent	
1872 ..	1,997,598	..	..	1,000
1881 ..	2,182,158	+184,560	+ 9.24	1,092
1891 ..	2,415,396	+233,238	+10.69	1,219
1901 ..	1,952,692	-462,704	-19.15	978
1911 ..	2,032,798	+ 80,106	+ 4.1	1,028
1921 ..	2,126,522	+ 93,724	+ 4.6	1,065
1931 ..	2,443,007	+316,485	+ 14.9	1,223



19 years. But ten years after that, there was a decline of 19.2 per cent. Thus the 1901 figures were actually below those of 1872 by 2.2 per cent. The real decrease was even more, as we have to take into account the fact that the census of 1872 was not accurate and that the omissions in that census were not less than 50,000\*. The real rate of decrease in 1901 was therefore nearly 5 per cent of the corrected figure for 1872. The 1881 census was more accurate, but even then, an error of 24,000 omissions was estimated. From 1891 we begin to have censuses of normal accuracy, The accompanying diagram has been prepared with 1891 figures as 1,000, the preceding and succeeding censuses being proportioned to the population of 1891.

As the diagram shows, the variations in the State do not by any means correspond to the variations in the different

DIVISION	Variation with population of 1891 as 1,000					
	1881	1891	1901	1911	1921	1931
Central Gujarat ..	932	1,000	788	841	866	1,009
North Gujarat ..	900	1,000	759	757	820	919
South Gujarat ..	900	1,000	941	1,050	1,066	1,266
Kathiawad ..	803	1,000	963	989	988	1,134
State .. ..	903	1,000	808	841	886	1,011

divisions. The State on the whole shows only a slight increase of 1.1 per cent on the figures of 1891. South Gujarat however records the greatest advance in these last 40 years, having grown by 26.6 per cent. Kathiawad has increased by 13.4 per cent.

But Central Gujarat has only advanced by about 1 per cent, while North Gujarat is still 8 per cent behind. If the *hijratīs* are excluded from the census total, Central Gujarat would actually show a decline of 1 per cent since 1891 and the increase in South Gujarat is reduced to 23.4 per cent. The State population of 1931 (without the *hijratīs*) becomes 2,416,252 or only 856 more than what the census showed 40 years ago.

## 21. Conditions influencing the Movement of Population—1881-1921—

(a) 1881-1891—Writing in 1891, the Census Superintendent stated that in the preceding decade "there was no famine, there were no unusual epidemics, migration strictly speaking was quite insignificant and the enumeration was fairly accurate". In the 1921 Report an attempt was made to study from the figures the rate of natural increase and the volume of migration for all the decades since 1881.

DECADE	Balance of migration (absolute figures) + = in favour - = against	Rate per mille of natural variation per annum
1881-1891 ..	+ 8,242	+8.75
1891-1900 ..	-84,055	-1.69
1901-1910 ..	+ 8,775	+3.7
1911-1920 ..	+22,408	+3.4

These are collected in the margin for ready reference. The volume of migration is estimated by taking two sets of migrants at each end of the decade from which the progressive rate of variation per unit migrant is calculated for each year as well as for ten years. Then the number of deaths amongst the migrants is calculated by assuming a rate of mortality suitable for this class of people. This figure (*i.e.* the number of deaths amongst migrants in the decade) is deducted from the total figure

\* Baroda Census Report, 1921, page 32.

of migrants at the beginning of the decade and the difference between the remainder and the migrants at the end of the decade is the number of migrants during the ten years. The above process is repeated with immigrants and emigrants separately and the difference between the two results gives the *balance* of migration in the decade. This balance is deducted from, (or added to if the balance is against) the census increase, so that the remainder (or sum as the case may be) is the natural increase due to the excess of births over deaths.\* In the Census Report of 1921, the rate of natural increase found for 1881-1891, which was 8.75 per mille per annum, was taken as the normal rate. This only operated however during the *normal* decade of 1881-1891. The next decade was wholly abnormal as we know. But the decade 1881-1890 was not entirely free from trouble. 1880, the year just preceding the first Regular Census, was one of high mortality in Central Gujarat. In 1885, rainfall was deficient everywhere except in South Gujarat. In 1888, this deficiency was repeated and this time South Gujarat which is usually lucky was not spared. But on the whole the period was a happy one and deaths ruled low.

(b) *1891-1911*—The census of 1891 is as we have seen, statistically important as it marked, until the latest census, the peak of the population curve. Up to 1898 the conditions continued fairly normal, although premonitions of the subsequent calamities were seen in 1894 and 1896, when rainfall was seriously in defect. In 1891, Central and North Gujarat had suffered from deficient rainfall, but generally people had forgotten about famines in Gujarat. In 1898, scarcity conditions were in evidence in all the four districts. But 1899 and 1900 left unforgettable marks on the population through famine and disease. The registered number of deaths which had hitherto averaged at 42,000 annually suddenly rose to 131,261 in 1900, and the mortality curve continued steep throughout 1901, and even in 1902-04. 1907 was also a bad year from the public health point of view. Agricultural prospects seemed to have been blighted after the severe shock of famine and one lean year followed another in gloomy succession. The recorded deaths from plague and cholera alone during 1901-11 was nearly 103,000.

(c) *1911-1921*—This decade was dealt with in detail in the last Census Report. It was on the whole a most unpropitious one. It opened inauspiciously with a frost. Famine conditions ensued, and in Charotar, Chorashi and West Kadi, induced a little movement of population. Serious loss of life amongst the cattle also resulted from the difficulties about fodder. Timely rains in 1912 saved the situation. Agricultural conditions continued to be fairly satisfactory until the monsoon of 1915 when again the shadow of famine crossed the land. The rains held off for three months out of the four, and the deficit in fodder raised the price of grass to five times its normal. Late rains however in October removed the fears of a dire famine. The next year, 1916, was fair, but 1917 saw excessive rains in the three Mainland divisions. The *kharif* was ruined. To add to the troubles plague reappeared in a virulent form, and throughout these years since 1915 the Great War dominated the economic situation. The three years that followed were a dark period of famine and disease. The crops entirely failed in 1918. Influenza followed in the wake of plague, and together these two calamities carried off, it has been estimated, nearly 114,000 lives. I wrote about the famine in the 1921 Report :—

“The cumulative effect of these afflictions as disclosed in the recent census may not look as serious as that of the great famine of 1899-1900, but that this was so was more on account of the greater preparedness of the people, stiffened by a series of misfortunes to bear these sacrifices, their greater foresight and resourcefulness, in a word, to a more organised economic environment, than to anything else. In fact I am inclined to think that in its widespread intensity the distress of 1918 was almost as bad as 1900. That this disastrous year did not have the effect that afflictions of similar magnitude have had on population in previous years shows how scarcity conditions—and even famine—have ceased to have their demological importance of earlier days. The improvement in the means of communications and in the level of general intelligence and of

\* The formula is  $\alpha x \left\{ \frac{R_1 - 1}{R} - 1 \right\}$  where  $\alpha$  is the assumed rate of mortality and  $x$  is the number of migrants at the beginning of the decade.

foresight has led to this that famines have ceased to kill people. They may affect vitality to the extent of causing a little shrinkage in birth-rate and affecting the age-distribution of the people; but they do little else."

In 1919, the monsoon conditions were fairly normal but the rainfall was uneven and the late rains in November spoiled the standing and harvested *kharif* crops. Frost again in January, 1920, began that year unpropitiously and the unfavourable monsoon that followed deepened the people's distress. The rainfall was in serious defect throughout the State, although it fell in sufficient quantities to raise a moderate crop. The prices of foodstuffs which rose to an unbearable height in 1918 still continued high; the shrinkage of labour caused by the epidemics however raised the wage-level of agricultural labourers.

### § 5. THE PAST DECENNIUM

**22. Conditions of the Last Decade: Seasonal Variations**—We now come to the last decade with which we are most concerned. It is necessary to consider first the seasonal conditions, as they affect vitally the movement of an agricultural population. In many respects, the crop conditions and the seasonal rainfall in the last decade offered a relatively happier contrast to those governing the two decades immediately preceding the period under consideration. The decade however opened unfavourably. It is curious that all the decades we have so far considered began with some foreboding of evil.

**23. Agricultural and Seasonal Conditions from Year to Year**—The following account summarised from State Administration Reports gives a succinct review of the seasons and crop returns from year to year.

*1920*—The rainfall conditions were far from satisfactory. The season commenced quite in time and continued to hold out promise of a very successful season upto the end of August, although the intensity of the season regarding quantity was below normal. The practical cessation of the monsoon after August coupled with the small quantity already received, changed the character of the season from one of hopefulness to that of depression. Central Gujarat was perhaps the worst-hit from this sudden collapse of the monsoon, resulting in many cases of rainfall below even 50 per cent of the previous ten years' average. The Northern division somehow managed to have quite a fair rainfall, but the few September showers received in the other parts of the State did not reach here. The results of such a season were bound to be of a depressing character. The pulses and *rabi* maturing crops suffered a serious set-back; for obvious reasons it was not a year suitable for rice conditions; with regard to cotton it turned out to be doubly disappointing. The season was not propitious for a good outturn and the market was even less favourable. The *kharif* crops except paddy gave a fair account of themselves and to this is to be attributed the remarkable staying power shown by the agriculturists. It was a season of general water scarcity and of a pinch in fodder supply. It was a matter of some relief that there was no further harassment of the crop beyond a little trouble from rats in Mangrol, and a slight touch of frost in Mehsana and Harij.

*1921*—The rainfall conditions were quite satisfactory. The monsoon commenced after an anxious period of waiting and suspense. The rains continued for about two months but abruptly disappeared in the middle of September. As the rains however were intensive the rainfall in many cases was over fifty per cent more than the average of the last decade and the season proved to be a wet one and quite congenial to the crops. But the appearance of *katras* (insect pests) in some parts of the Northern district where the pulse crops were specially damaged was reported; while ants and bolls worms in cotton took their usual toll. There was smut in *bajri*, but it was not of a serious nature.

*1922*—The rainfall conditions during the year were below average, more so in Kathiawad than in other parts, although it was in defect almost everywhere. The monsoon set in rather late by about two weeks in the northern parts, but once started kept a fairly good pace except in August, to the deficient rains in which month the low total is mainly due. But

for the reinforced current in September the situation might have been serious. As it was, September brought in copious rains almost in all parts especially in the third week and while this to a certain extent damaged standing crops of *bajri* by levelling them down, it helped the reaping of a decent harvest of late crops like cotton and pulses and the *rabi* season generally. On the whole, the season may be considered satisfactory for the three Mainland divisions and defective and uneven for Kathiawad. No serious insect pest causing damage of a wholesale character appeared. Among diseases, rust in wheat in Northern division did considerable damage.

1923—The seasonal conditions of the year again became distinctly unsatisfactory. The monsoon commenced late nearly everywhere by three weeks, but the point to be noted is that it did so even in the Southern district, where such an occurrence is very unusual. This deficiency was however made up later in that district. In the Central district, the rainfall averaged fifty per cent until a brisk storm towards the third week of September raised this average. Although this storm did considerable damage to crops already mature, it made a decent harvest of the later maturing crops possible. In the Northern district, the condition was still worse, the rainfall received having been even below fifty per cent of the average for many talukas. It was the well irrigation and prices of cotton that made the situation there bearable. In Kathiawad, the distribution of rain reached its height of vagary, adjacent villages having different crop conditions. The dominating feature of the season was the shortage of water supply in wells and tanks even for drinking purposes.

1924—This year the monsoon was fortunately satisfactory on the whole. It commenced rather early by a week particularly for North Gujarat and Kathiawad, but kept an excellent pace specially for the Southern division. The intensity of the wave, however, had considerably diminished so far as the Central district was concerned. In Kathiawad the season commenced extremely well, but there was too long a gap between the next wave reaching this part; conditions improved in the later part of August with the setting in of a strong monsoon current; similar waves having followed in the second and fourth week of September, the whole outlook of the season changed from almost a failure to a slightly sub-normal one. Okhamandal, however, remained sub-normal throughout. The late September rains in Central Gujarat did considerable damage to mature standing crops, but improved the prospects of the cold weather crops considerably. The season thus closed with an excellent harvest for South Gujarat and a fair one for all the rest of the territory.

1925—The season commenced with a pre-monsoon storm accompanied by rain running over Kathiawad and part of North Gujarat. In Kathiawad where scarcity of water was being acutely felt, the rain storm was naturally welcome. The disturbance, however, occasioned delay in the establishment of the regular monsoon to such an extent as to cause real anxiety with regard to the character of the whole season until the Arabian current established itself in right earnest during the last days of June and extended in the interior in the first part of July, when a greater part of the Central district received enough rains to start agricultural operations. Sowing commenced early in North Gujarat and Kathiawad, where however a setback was recorded in Kodinar which received phenomenal rains in July. Heavy rain followed generally particularly in South Gujarat, during the whole of August and early September. Sowing was hindered in consequence, and the last September rains damaged *bajri* in Kathiawad and North Gujarat. Wet monsoon conditions set in although the wells and waterways were full. In black soil these conditions showed themselves in a pronounced manner. In South Gujarat the low prices of cotton hit the producers the most. A record depression in this respect was reached before the season commenced in the next year.

1926—The distinguishing features of the monsoon of 1926 were the pre-monsoon activity and the lateness of the regular current. Once started, however, it kept a good length, the last rains being received in the latter part of September 1927. These showers were particularly heavy in North Gujarat and Kathiawad where they caused some damage to standing crops, though they benefited the *rabi* harvest. August and September proved very wet months and interfered with sowings and the growth of semi-*rabi* crops in North Gujarat and of cotton in parts of South Gujarat. The season on the whole, was a wet one, giving an increase of from 40 to 60 per cent over the average in Central Gujarat, North Gujarat and Kathiawad and from 15 to 20 per cent in South Gujarat. A rainfall of over 90 inches in Kodinar and 20 inches in Okha are points worth recording concerning the season of 1926-27. These happenings were followed by successive waves of frost in North and Central Gujarat, which affected the *rabi* crops, cotton and castor in particular, and the periodical visits of the migratory locust in parts of North Gujarat and some part of Kathiawad added to the difficulties of the agriculturists. On the whole, however, the loss on account of the locust was not heavy. Speaking generally,



the season was an extremely good one for South Gujarat, especially for rice, good for Baroda and fair for North Gujarat and Kathiawad. The abundant rainfall helped to raise the water level in parts of the State like Kathiawad and North Gujarat which had had a succession of years of more or less inadequate rainfall.

1927—The season of 1927 will long be remembered in Gujarat. The unprecedented heavy rainfall in Gujarat from Itola to Ahmedabad which later extended as far north as Mount Abu, resulted in heavy floods which caused enormous damage. It commenced earlier than usual by about two weeks and it continued wet when from 24th July to 28th July 1927 occurred the cyclonic disturbance in the course of which rainfall varying from 20 to 60 inches was registered over the affected area, Vaghodia (in Central Gujarat) receiving the highest, its total standing at the close of the season at 113 inches. The weather continued persistently wet in North Gujarat and damage was caused in portions of the district by continuous rainfall. Agriculturally these flood conditions had varying effects on the soil. The *gorat* sections suffered more than the black soil, parts of which hoped to have an abundant harvest. In the Northern district the parts contiguous to Ahmedabad like Dehgam, Kadi, Kalol and other talukas suffered more than others. But while this was the case in North and Central Gujarat, South Gujarat and Kathiawad, felt the want of rain, especially for the rice crop in the South Gujarat. The late September rains however saved the situation every where. The floods did considerable damage to the first sowings. The actual loss of life due to this cause was only 15 in North Gujarat and 52 in Central. But the damage to property and loss of cattle was stupendous. The number of houses which collapsed or were damaged in Central Gujarat including the City was 43,822 or 28 per cent of the inhabited houses according to the Census of 1921. In the Northern district the number destroyed or partially damaged was 45,163 or 22 per cent of inhabited houses; (according to the 1921 figures). With regard to this *prant*, it is however to be noted that the proportion of entirely damaged or fallen houses was smaller than either in the City or Central Gujarat. Apart from the damage from floods the season was one of the worst for losses caused to the wheat crop by rust. They were particularly heavy in Kathiawad and quite serious in North Gujarat.

1928—As the unprecedented floods were the dominant feature of the season of 1927-28, so the cold spell of January 1929 causing severe frost and damage to crops was the outstanding feature of the season of 1928-29. The season started early but failed to maintain its strength in the earlier part. At one time serious anxiety was occasioned regarding crop prospects in Kathiawad but the late August rains relieved the tension. Rains in September were also useful for rice and the *rabi* harvest in general, although as usual, it affected adversely the standing crops which were almost mature. The post-monsoon storms in October and November were bad on the whole for crops specially for cotton in Kathiawad as they blew the ripe crop down on the soil. A very good *rabi* harvest was anticipated when the cold of 30th and 31st January 1929, caused great damage to the *rabi* crops. On the whole the *kharif* harvest was excellent for South and Central Gujarat and fair for Kathiawad and North Gujarat. Cotton and wheat however suffered and the resulting damage hit the farmers hard, so that nowhere could the season be said to have been good. Fortunately there was no serious insect pest or plant disease. Agriculture relief in the shape of remissions and suspensions of revenue and *tagari* loans had to be given to the extent of 23 lacs.

1929—The year began, as we have related, with calamity of the frost but the actual monsoon commenced in the middle of June. The total rainfall for the season was 32 to 59 inches. The distribution however was very unequal; most of the rain fell between the second fortnight of June and the first fortnight of July. In August the rain was confined to the first and last weeks. No rain fell in September. This absence affected also the crop yield in the North Gujarat, South Gujarat and Kathiawad to a greater extent than in the Central district. The *kharif* crops at some places in Kathiawad required to be irrigated. Some parts of the State also suffered severely from swarms of locusts. Remissions and suspensions had again to be given to the tune of 8 lacs of rupees.

1930—The season of 1930 was hardly better: the rainfall was not well distributed, and some parts of the State again suffered from attacks of locusts. July gave the largest precipitation with a long break in August. An unusually heavy storm in October damaged the tobacco and cotton crops in Central Gujarat. Kathiawad had rather a heavy downpour at first but a long break in August compelled farmers, wherever they could, to irrigate their *kharif*. In North Gujarat, the rains although begun early were in serious defect and crops were affected adversely. Towards the end of the decade, in the few months previous to the census date, a combination of world factors forced on the agriculturists a sudden and even calamitous fall in prices, particularly in *juwar*, *tuver* (pulse) and rice.

**24. Variations of the Seasons**—The above record can be summarised in the following way. If we take the seasons from the point of view of the combined influence of yield and value of crops, the nature and distribution of rainfall and the presence or the otherwise of disturbing factors, we can give marks to each by natural divisions, on the marginally noted scale, which is fairly comprehensive. A table has been prepared with the help of the Director of Agriculture (Mr. C. V. Sane) showing year by year the fluctuations of the seasons and their economic reactions on the different districts :—

(a) Excellent	..	9	Marks
(b) Very good	..	8	"
(c) Good	..	7	"
(d) Satisfactory	..	6	"
(e) Fair	..	5	"
(f) Sub-normal	..	4	"
(g) Bad	..	3	"
(h) Very bad	..	1	Mark

**SUBSIDIARY TABLE VII**  
**FLUCTUATIONS OF THE SEASONS**

YEAR	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
1	2	3	4	5
1921 .. ..	4	5	5	5
1922 .. ..	7	7	7	6
1923 .. ..	5	5	7	4
1924 .. ..	5	3	7	3
1925 .. ..	5	5	9	5
1926 .. ..	5	4	5	3
1927 .. ..	7	5	8	5
1928 .. ..	7	6	8	6
1929 .. ..	7	5	7	4
1930 .. ..	7	5	7	4
<b>TOTAL</b> ..	<b>59</b>	<b>50</b>	<b>70</b>	<b>45</b>
<b>Average</b> ..	<b>5.9</b>	<b>5</b>	<b>7</b>	<b>4.5</b>

The average of the decade shows that conditions were nearly “satisfactory” in Central Gujarat, “fair” in Northern, “good” in South Gujarat and between “Sub-normal” and “Fair” in Kathiawad.

**25. Rainfall, Prices and Births**—We can now correlate the deviations of rainfall (from the decennial average) with the similar deviations from the normal prices current of different food stuffs (taken collectively and averaged) and from the decennial mean of recorded births in each year in each of the four divisions. The following Tables must be studied :—

**SUBSIDIARY TABLE VIII**  
**DEVIATIONS FROM THE DECENNIAL AVERAGE OF RAINFALL**  
**(CONSIDERED AS 100)**

MONSOON SEASON OF YEAR	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
1	2	3	4	5
1920 .. ..	65	78	77	118
1921 .. ..	126	128	134	124
1922 .. ..	80	99	118	76
1923 .. ..	53	58	88	56
1924 .. ..	71	80	109	75
1925 .. ..	82	52	73	67
1926 .. ..	123	160	131	217
1927 .. ..	210	196	91	97
1928 .. ..	111	86	81	93
1929 .. ..	80	68	98	77
Decennial Average (Index) ..	100	100	100	100
Decennial Average (Absolute Figures)	(34.81)	(26.53)	(50.28)	(18.44)
	Inches	Inches	Inches	Inches

## SUBSIDIARY TABLE IX

DEVIATIONS FROM THE DECENNIAL AVERAGE OF RECORDED BIRTHS  
(AS 100)

YEAR	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
1	2	3	4	5
From 1921 March .. .. .	99	91	97	100
" 1922 " .. .. .	94	91	91	90
" 1923 " .. .. .	103	103	86	97
" 1924 " .. .. .	102	100	104	94
" 1925 " .. .. .	98	99	103	96
" 1926 " .. .. .	96	99	101	98
" 1927 " .. .. .	103	95	104	100
" 1928 " .. .. .	91	92	104	104
" 1929 " .. .. .	102	110	103	109
" 1930 " .. .. .	113	119	108	112
Decennial Average (Index) .. ..	100	100	100	100
Decennial Average (Absolute Figures)	(20,456) Births	(21,304) Births	(10,420) Births	(6,074) Births

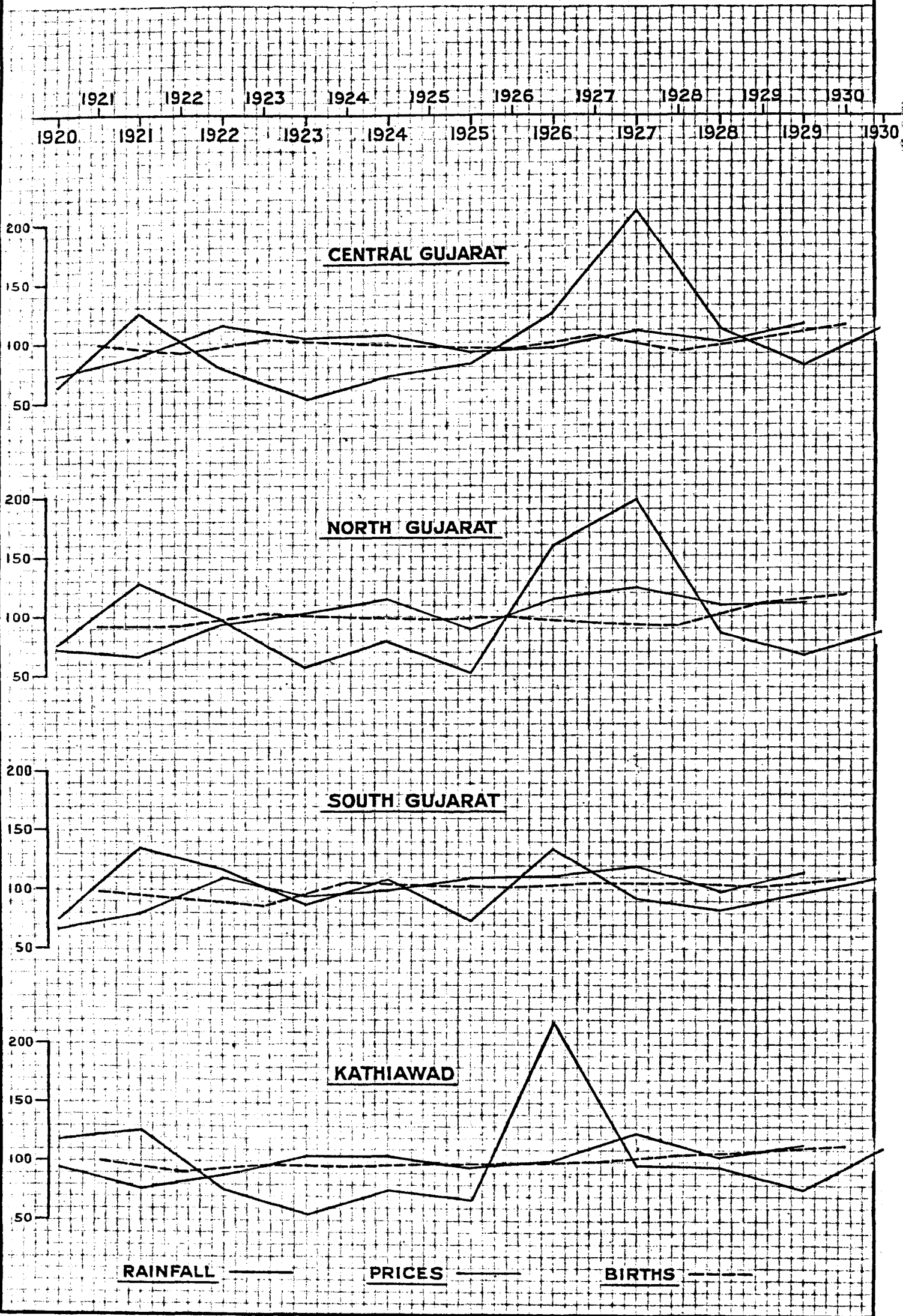
## SUBSIDIARY TABLE X

DEVIATIONS FROM THE DECENNIAL AVERAGE OF PRICES CURRENT OF PRINCIPAL  
FOOD STUFFS (COLLECTIVELY TAKEN AS 100)

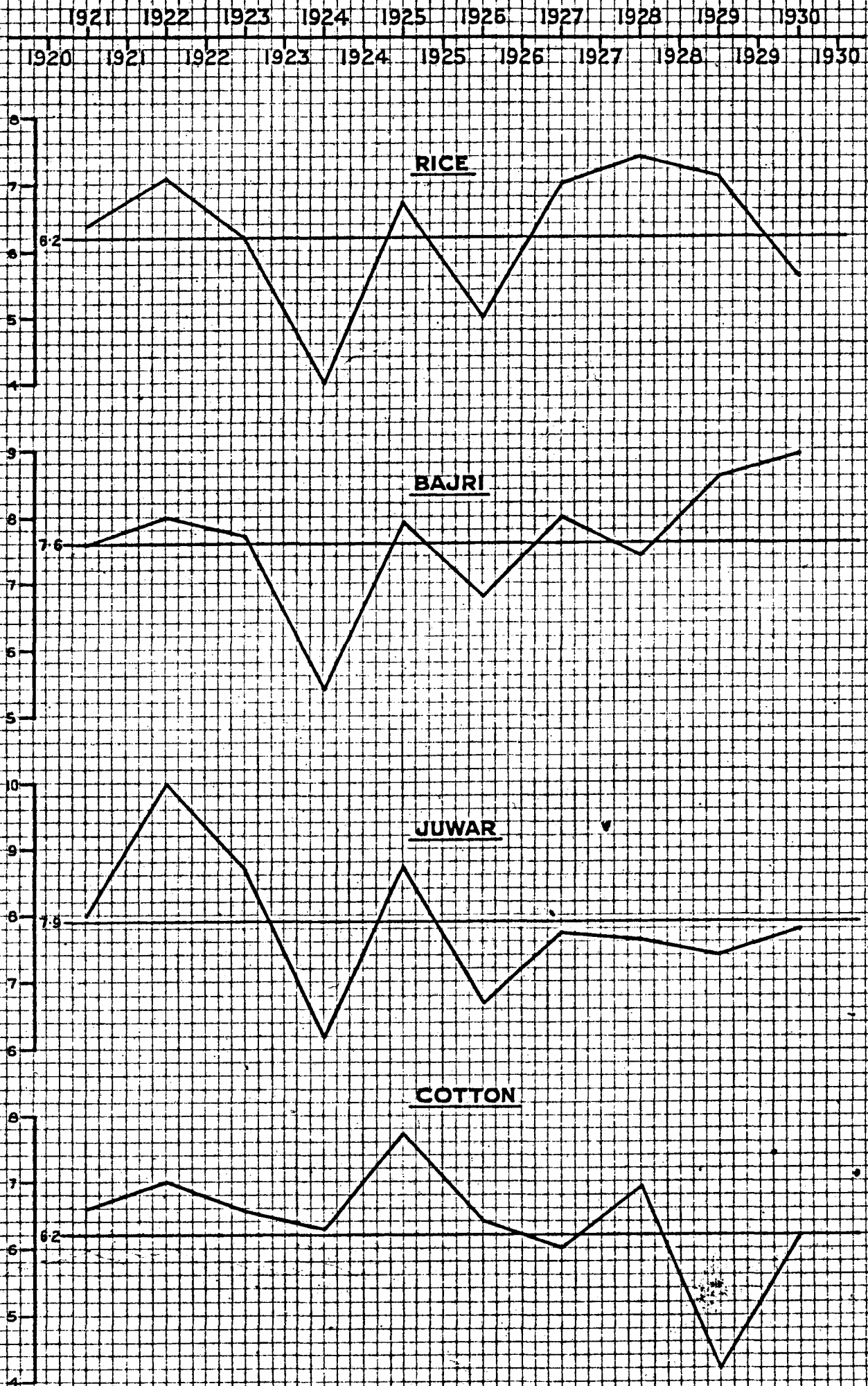
YEAR ENDING JULY	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
1	2	3	4	5
1921 .. .. .	74	74	69	95
1922 .. .. .	91	67	77	77
1923 .. .. .	116	93	110	91
1924 .. .. .	103	102	94	102
1925 .. .. .	107	114	99	102
1926 .. .. .	91	90	110	93
1927 .. .. .	96	114	110	100
1928 .. .. .	110	125	119	123
1929 .. .. .	99	111	97	105
1930 .. .. .	114	111	114	111
Decennial Average (Index) .. ..	100	100	100	100
Decennial Average (Absolute Figures)	(41.3) In annas per maund	(39.8) In annas per maund	(36.2) In annas per maund	(42.1) In annas per maund

26. **Subsidiary Tables VIII—X considered**—From these data we are able to plot the accompanying diagram. It is to be noted that the curve of deviations of annual recorded births in each division is plotted forward, a six months, *i.e.*, halfway between the annual verticals of the other two curves. This

**PERCENTAGE DEVIATIONS OF RAINFALL, PRICES  
CURRENT AND ANNUAL RECORDED BIRTHS  
FROM THEIR MEANS IN THE DECADE**



# DIAGRAM SHOWING YIELD DATA OF PRINCIPAL CROPS



is because any influence of rainfall or prices on births will necessarily take some time to have effect. Of course, to have an exacter appreciation of any possible correlation between these data, one must not rely merely on absolute figures of rainfall but obtain the real volume of *effective* rainfall. If these could be accurately measured, it is possible to obtain a real correspondence between rainfall and birth-rate. But the recorded birth-rate itself is as we shall see presently an entirely faulty criterion. Births are far less accurately registered than deaths; but in the matter of record there is discernible a progressive improvement in registration, so that an increase in the volume of recorded births, and therefore in the birth-rate, is no real indication whether cognate, social and physical phenomena such as changes in the rainfall and prices are having their anticipated effect on the natural rate of variation. We shall presently show a device whereby the decennial average of recorded births could be tested and the true volume of births in the decade can be accurately estimated. But there is no possibility from this measure to deduce the number of actual births happening year after year, unless we assume that the deviations above recorded (in Subsidiary Table IX) are true deviations affected by real causes and not due to defects merely in the machinery of vital registration. On the whole therefore in view of the above circumstances, the curves plotted fail to give us any idea of close correlation between these phenomena. But even then it is possible to infer that the bad seasons of 1920, 1924 and 1925 made themselves felt in the lowered birth-rate of 1921, 1925 and 1926. The excessive floods of 1927 with consequent losses in house property and cattle did not however result in a diminished birth-rate in Central and North Gujarat. The deficiency in births in South Gujarat in 1923 must be put down to defective registration. In respect of prices also it must be remembered, as Mr. Sedgwick pointed out in the Bombay Census Report of 1921:—

“In an agricultural country like India, a general rise in the values of agricultural produce, if caused by actual deficient production of the same, causes acute distress; but if caused by external influences without any diminution in production the effect is unequal on the different classes. The producers benefit: all labourers and all persons, even in the higher classes on fixed salaries or incomes suffer.”

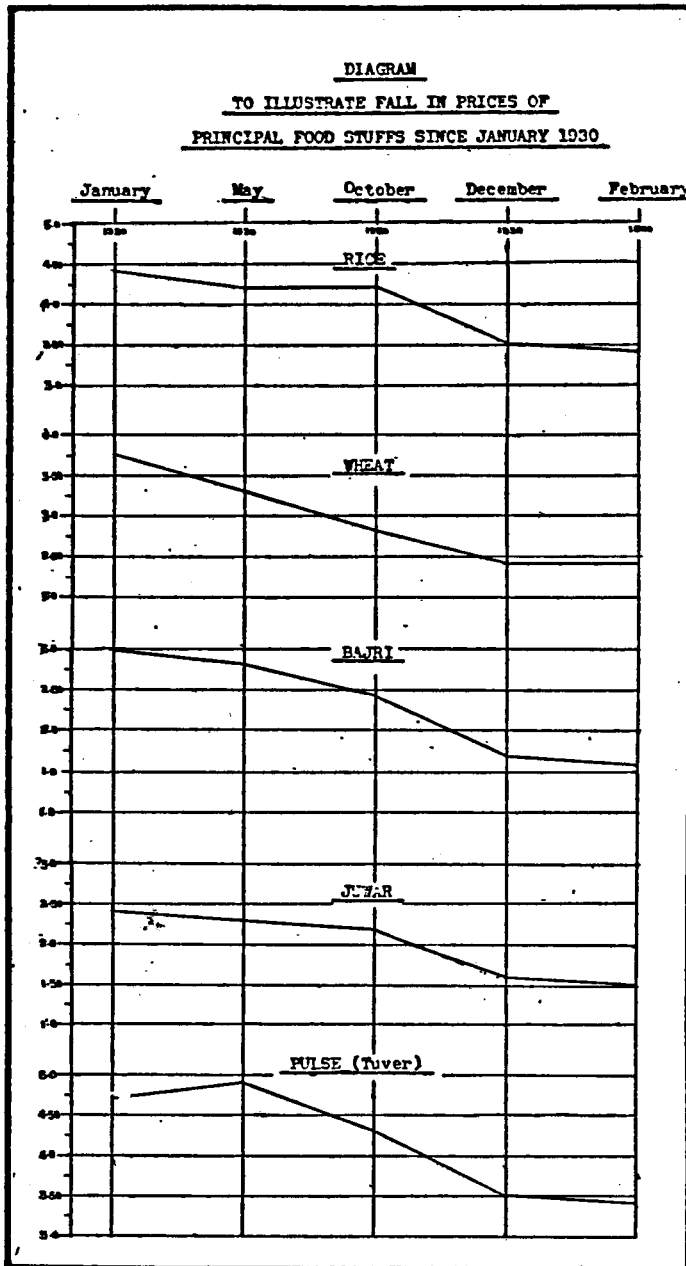
During the decennium, we shall have to find out the years when the yield was greater than the decade's average, while the prices also ruled equally high. For this purpose, we have prepared another marginal table in which prices current (a) as compared to 1913-14 as standard and (b) as compared to the decennial average are placed side by side with the annual yield of the principal crops—*bajri*, *juwar*, rice and cotton. The outturn

of all the four crops has been taken collectively and the yield is first compared to the standard sixteen annas as 100, and then proportioned each year to the decennial average. We find that in not a single year of the decade did the yield exceed 50 per cent of the standard expected. The average for the whole period was only 7 annas in the rupee; and this average was exceeded only in 1921-23, 1925, 1927-28 and 1930. The yield figures in the four principal crops are plotted in the accom-

YEAR	Price Index		General Average yield with	
	With 1913-14 as 100	With decennial average as 100	Standard as 100	With decennial average as 100
1921 .. ..	169	116	45	103
1922 .. ..	186	128	50	114
1923 .. ..	134	92	48	109
1924 .. ..	131	90	34	79
1925 .. ..	136	93	50	114
1926 .. ..	145	99	39	89
1927 .. ..	147	101	45	103
1928 .. ..	139	95	46	104
1929 .. ..	137	94	43	97
1930 .. ..	134	92	39	89

panying diagram. Now if we compare the yield data with the prices, we find that the price curve is steep only in 1921-1922 but not in 1923, although the yield in that year was high. The yield rose in 1925, but the prices remained low. There was however a serious contraction in production in the next year and the prices rose. 1927-28 were again years of high prices with large yields. But the close of the decade saw a contraction both in prices and yields. From these facts, one would

surmise an increase to happen in the birth-rate in the years 1923, 1927 and 1929-30. Sure enough there was an increase in the birth-rate in Central and North Gujarat in the first named year. In 1927, the birth-rate rose significantly in Central and South Gujarat, while the last two years recorded a general increase in births all over the State. Thus we see that the fluctuations in prices did have an effect

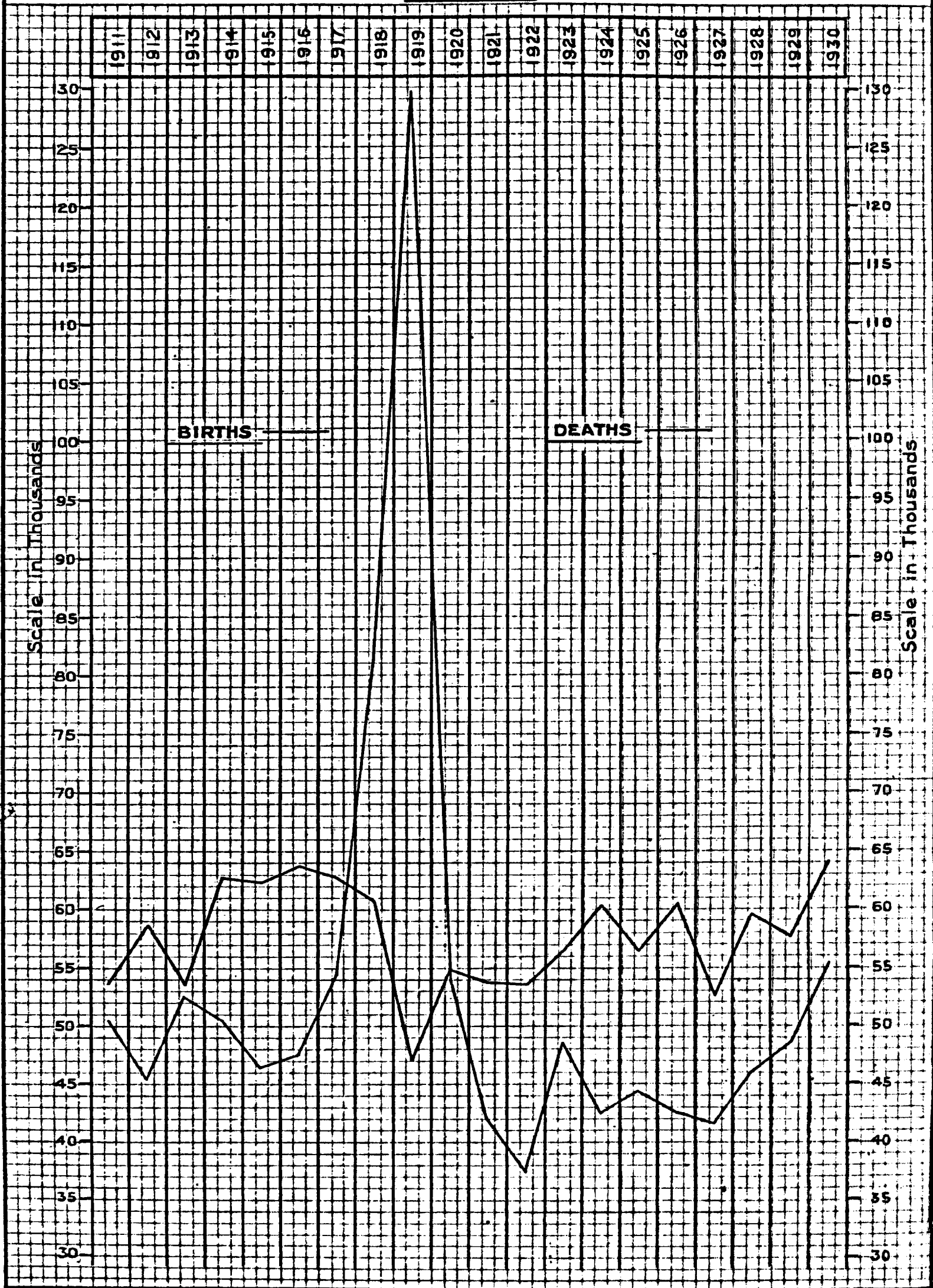


however slight in contracting or increasing the birth-rate. The downward tendency in the prices in the last years of the decade was accentuated in the last few months in a very noticeable manner. We have already pointed this out. Particularly was the fall in prices noticeable in respect of wheat, pulse (*tuvar*), *bajri* and *juwar*. The fall became operative somewhere about January 1930 and in the diagram below the prices current of typical months (January, May, October, December and February) of rice, wheat, *bajri*, *juwar* and pulse (*tuver*) have been plotted from official data available.

**27. Public Health in the Decade**—We have hitherto been concerned with the recital of conditions that affect the growth of an agricultural people. We shall now consider how the public health conditions fared during the decade. In that respect, it is a relief to turn from the doleful tale of lean years following one after the other to the story of a healthy period in which births kept well above the limit of deaths and the State was spared from any visitations of epidemics. Cholera and plague were practically innocuous

visitants. The incidence of small-pox compared favourably with other years, except in 1929-30, when it appeared in epidemic form particularly in North Gujarat, and claimed 8,616 deaths. "Fever"—the commonest cause of death ascribed—claimed only an annual average of 35,000 recorded deaths as against a corresponding average of 38,000 in the previous decade. The total number of deaths registered amounted to 446,906 or 21 per cent of the population of 1921. The births registered in the decade amounted to 582,578 or 27.4 per cent of the population of 1921. If the births and deaths as registered are taken as accurate, then out of the total census increase of 316,485 (less 26,755 *hijratis*), only 135,672, or over 46 per cent are due to natural increase, leaving 154,058 or well over half of the total real increase in population to be accounted for by gain through migration. Our usual gain through migration in previous decades has been never more than 22,408. So the balance of migration (after excluding *hijratis*) cannot be so large as 154,058. It is necessary therefore to isolate in the first place the incidence of deaths in the decade and then find out the volume of migration, excluding the *hijrat* movement. Before this is done, we can here insert Subsidiary Table XI for ready reference :

**DIAGRAM**  
**SHOWING BIRTHS AND DEATHS**  
**IN THE BARODA STATE**  
**1911-1930**





## SUBSIDIARY TABLE XI

## COMPARISON WITH VITAL STATISTICS

NATURAL DIVISION	1921(March) to 1931 (February) Total number of		Number per cent of population of 1921 of		Excess (+) or deficiency (-) of births over deaths	Increase (+) or Decrease (-) of population of 1931 compared with 1921	
	Births	Deaths	Births	Deaths		Natural Population	Actual Population
1	2	3	4	5	6	7	8
Baroda State .. ..	582,578	446,906	27.4	21.0	+ 135,672	+ 198,254	+ 287,735
Baroda City .. ..	33,537	30,611	36.5	33.3	+ 2,926	+ 44,634	+ 17,044
Central Gujarat.. ..	171,058	136,352	27.9	22.2	+ 34,706	+ 24,740	+ 83,367
Kathiawad .. ..	60,739	41,018	34.1	23.0	+ 19,721	+ 95,017	+ 26,075
North Gujarat .. ..	213,042	168,338	23.7	18.7	+ 44,704	+ 33,863	+ 107,724
South Gujarat .. ..	104,202	70,587	30.6	20.7	+ 33,615	+ 53,525	+ 53,525

NOTE.—The floating population, the population of the Baroda Camp and of all the stations belonging to foreign railways have been excluded from this Table, as these are not included within the State registrable area. Also the *Ajratīs* are deducted from the population of various divisions. The total population of the State within the registrable area is thus 2,402,884. In 1921, the population of the corresponding area was 2,115,149.

**28. Volume of Deaths in the Decade**—We shall defer for the moment the estimate of the volume of migration in the last ten years, but in the meantime it is important to estimate at once the total number of deaths in the decade. For estimating the actual balance of survival we may adopt one of the many methods of calculating the true figure of deaths. The most famous is Sir George Hardy's : it consists in deducting the population aged 10 and over of one census ( $P_1$ ) from the total recorded population of the previous census ( $P_2$ ) and assuming the difference to be the deaths in the  $P_2$  population, aged on an average 5 years and over. From the census figure of 1931, we must, at the outset, deduct the political immigrants (numbering 26,755); thus we get the true population figure for 1931. This population, less persons aged 0—10, should be now deducted from 2,126,522, the population total of 1921. The difference is 377,559 and represents the deaths in the 1921 population aged on an average 5 and over. But the recorded number of deaths of persons aged 5 and over is only 261,474. This gives us the margin of error (which is 30.7 per cent of the truth) in the record of deaths amongst persons aged 5 and over. The recorded number of deaths below these ages, *i.e.*, 185,432, must have a much larger margin of error than 30.7. The deaths amongst infants, it is notorious, are most often omitted from the record. For instance the recorded annual average of infant mortality (9,298) is 14.77 per cent of the infant population while in the Life Table as actuarially worked out by Prof. A. C. Mukherji, (*vide* Part II of Chapter IV of this Report—Table D thereunder). The mortality per cent of persons living at age 0 is 25.76. The corrected annual average of infant deaths is thus raised to 16,216.41. The deaths under one year for the ten years are therefore 162,164. With regard to the deaths between 1 and 4 years, the annual recorded average of which was 9,245, let us apply the same corrective proportion as for recorded deaths amongst persons aged 5 and over. Thus  $9,245 \times \frac{377,559}{261,474}$  will give 13,349.4 as the corrected annual figure of deaths in the age-period 1-5. The total for the decade is thus 133,494. Totalling up these estimates for the different age periods, we get as under :—

(i) Deaths amongst population aged 5 and over ..	377,559
(ii) Deaths amongst children aged 1 to 5 .. ..	133,494
(iii) Deaths amongst the infant population .. ..	162,164
Total Number of deaths ..	<u>673,217</u>

The above figure, 673,217, represents the total number of deaths in the last decade on the basis of 1921 population. But that is not all. To be more correct, the number of deaths amongst the immigrants will have to be added. As these belong

mostly to adult ages (5 and over) a mortality rate of not more than 25 per mille per annum will be enough. The mean figure of immigrants (from the birthplace returns of the last two censuses) is, less the *hijratis*, 265,159. The deaths on the 25 per mille per annum basis for ten years are 53,032. Of these, 46,499 will have to be taken out as being the deaths in the immigrant population of the census of 1921, already included in the total estimate of deaths above. Thus only 6,533 deaths will have to be added as being deaths amongst immigrants (excluding *hijratis*) within the last ten years. The total number of deaths is 679,750 (or 680,000 in round numbers)\* for the whole period or 68,000 per year. The registered average of deaths for each year is only 44,691. The margin of error therefore is 32.8 per cent of the truth. The final estimate of deaths in the decade preceding the Census of 1921 was 826,744 which gave a margin of error of 25.98 on the recorded figures. Thus we see that on the mean populations of the two decades the true death rate has declined from 39.8 per mille to 30.1 per mille per annum. The normal expectation of life after graduation of the mortality experiences of three decades has been found in the Life Table to be 27.66 years. Thus the normal mortality rate per mille per annum is 36.15.¶ As the last decade was from all points of view a healthy one, the estimate of deaths above suggested for the period may be accepted as the correct one. Assuming that the same mortality rate will persist through the next decade, the annual average of deaths expected should not be more than 77,250. A diagram is attached facing this paragraph, which plots the absolute figures of recorded births and deaths since 1911 showing how happily contrasted the last decade was in respect of balance of survival as compared to its predecessor.

**29. Facilities for Relief and Indications of Progress**—The story so far unfolded discloses a decade which though happy from relative freedom from disease was continually disfigured by vagaries of rainfall, a series of natural calamities and great economic strain. Notwithstanding all these buffetings of fortune, the processes of peace continued unabated. The State persevered in its enlightened policy of multiplying the facilities for rural relief and other amenities of civilisation. Co-operative societies rose from 491 in 1920 to 1,045 in 1930 (including four apex banks and two banking unions). Their membership and capital similarly grew from 15,800 persons and 24 lacs of rupees to 39,210 and 71.4 lacs in 1930. Occupied area increased from 3.78 million acres in 1920 to 3.92 million acres in 1930. Road mileage has now increased from 752 in 1920 to 405 metalled, 532 unmetalled and 129 (local board), altogether 1,066 miles. The railways have penetrated the farthest corners of the State—there being now 795 miles of railway (583 of which are owned by His Highness's Government) within the limits of the State. In 1911 there were only 504 miles of railway. In 1921, the mileage grew to 775. In agriculture, the tendency to concentrate on cotton did not increase, perhaps because it was a crop on which the farmer could no longer build as of yore for handsome returns. Indeed, the proportion of cotton to the gross sown area declined slightly from 25.6 in 1920 to 25.2 per cent in 1930. On the other hand there was no inclination observable on the part of the people to return to food crops, as the proportion of food crops to total cultivated area was more or less stationary (from 55.9 in 1920 to 56.4 per cent in 1930). The farmers tended more and more to irrigation as the one insurance against the vagaries of rainfall. 11 lacs of rupees were distributed by the State as *tagavi* to agriculturists during the decade, for wells and irrigation generally; 9.7 lacs were similarly given for maintenance, purchase of seeds and the like, and 7.7 lacs as relief for special calamities like the floods and frost. The number of *pucca* wells for irrigation increased from 60,433 in 1921 to 63,775 in 1930. Institutions for medical relief increased throughout the State in pursuance of a generous policy which aimed at opening at least one dispensary within a five mile radius. This meant a total of 104 possible places where such institutions would be required. In 1920 there were 67 hospitals and dispensaries in 54 towns and villages in the State. In 1930, there were 90 such institutions in 67 towns and villages. An efficient child welfare organisation in the City conducted baby clinics in different wards and was

\* "Some Results of the Census" showed 660,000, but this estimate had not the advantage of the Life Table data before it.

¶ That is, by dividing 1000 by 27.66.

instrumental in bringing down the incidence of infant mortality. Baby-week exhibitions and anti-malarial campaigns are now a regular feature of the programme of the State Sanitation department.

§ 6. VARIATIONS SINCE 1921

**30. Variations in Absolute Figures**—We now have in the data given in the preceding paragraph an adequate idea of the circumstances influencing the movement of population in the last decade. On the one side, the absence of epidemics and of severe famine conditions such as scarred the life of the people from 1901 to 1921, had prepared the way for a large increase of population. Always there happens, a decade after, as one of the inevitable *sequelae* of famine and death, something which can be described in general terms as an outburst of fertility. High infant mortality also acts as a prelude to an increase in births. It was therefore not surprising at all that after the disasters of 1918-20, an increase in population would result in the present census which would be well over the average. The normal rate of natural increase is, as we have pointed out, 8.75 per mille per annum. The census increase in 1931 resulted in an addition of 316,485 persons, or 14.9 per cent on the population of 1921. The divisional variations will be presently studied but in the meantime the constituent elements of this census increase should be first analysed. We have already discovered one element of this increase—the temporary one contributed by the *hijratis*. Their total, 26,755, has to be deducted from the census increase, for obtaining the net variation in the population and estimating the real rate of movement in the decade. The net increase in population therefore is 289,730 or 13.6 per cent.

**31. Variation in the Registrable Area**—The total population enumerated in this census consists (a) of the population within the area of the State in which registration of vital occurrences is done under the State authorities, (b) of the population of the Camp and of Railway Areas outside the State administration but included within the population of the State, (c) of the *hijratis*, and (d) of the floating population—in boats and ships touching at ports, running trains and platforms, and homeless vagrants and passing travellers. Besides the *hijratis* (26,755), a further deduction of 13,368 has to be made on account of (b) and (d). Thus we get 2,402,884, as the population of the registrable area. The corresponding population within the registrable area in 1921 was 2,115,149. The difference is an increase of 287,735 or 13.6 per cent. Thus the rate of movement here is the same as the true rate for the whole State, as shown in the above paragraph.

**32. Population in the Intercensal Years and Forecast for the next Ten Years**—The census only records the population every ten years, but the estimates of population for the intercensal years as well as for the next ten years are often required for purposes of the administration and also for students and other workers in economic investigations. In the margin are given the estimates for these years on the basis of the rate of movement of the whole decade on the registrable area. The principle of calculation adopted is that of geometrical progression. Calculations by the method of arithmetical progression are not found so closely accurate as those by the other method. So long as our vital registration continues to be so sadly defective as it is now, these estimates will, it is trusted, be found very helpful. In 1941, at the present rate of movement, the population would rise to 2.73 millions.

YEAR	Census and estimated population
1921 ..	2,115,149
1922 ..	2,142,300
1923 ..	2,169,800
1924 ..	2,197,700
1925 ..	2,225,900
1926 ..	2,254,400
1927 ..	2,283,400
1928 ..	2,312,700
1929 ..	2,342,400
1930 ..	2,372,400
1931 ..	2,402,884
1932 ..	2,433,800
1933 ..	2,465,000
1934 ..	2,496,700
1935 ..	2,528,700
1936 ..	2,561,200
1937 ..	2,594,100
1938 ..	2,627,400
1939 ..	2,661,100
1940 ..	2,695,300
1941 ..	2,729,900

**33. Constituents of the Census Increase**—The census increase in population is 316,485. What are the factors that contribute to this increase? The *hijratis'* contribution forms 8.4 per cent of it. Of the rest, 289,730, we have to find how much of it is due to natural increase and how much to migration. We have already estimated the volume of deaths in the last decade. If we can estimate

the exact number of births in the decade, then from the difference between births and deaths, we can find the extent of the natural increase. The total number of registered births from March 1921 till March 1931 is 582,578. If we assume that the margin of error in respect of births is the same as that of deaths, *i.e.* 32.8 per cent, then the correct figure for the ten years' births is raised to 859,260. But we know that births are sometimes less accurately registered than deaths: that birth registration is notoriously defective is obvious from the fact that the annual average of primary vaccinations amongst infants is 62,950, while the recorded births average only at 58,258 per year; and the mean infant population aged 0-1 of the decade is 77,740 corrected from the census figure. It is very essential therefore that the number of births in the decade should be estimated. This can be done in one of two ways. We know the number of deaths. There is the indirect method by which we can estimate the number of immigrants and emigrants during the decade, subtract the difference, if the balance is in favour of the State (or add if the balance is against) from the census increase and then add the result to number of deaths, for deducing therefrom the number of births. The second method is to attempt directly to estimate from the corrected age-returns at the age-period 0-1 (mean of the decade) the number of births for the preceding twelve months to arrive at the annual average of births by that means. This direct method is described in detail in Appendix I and need not be here repeated. Briefly the method consists in taking the corrected mean population of infants aged 0-1 in the decade, and calculating therefrom the average number of births per annum. This calculation is based on the hypothesis that the births in the twelve months before the census date in any normal year bear a fairly constant ratio. This ratio can be calculated on certain assumed rates of risk in the different months of the year, the first three months after birth being exposed to a greater mortality rate than the next quarter and so on. On this hypothesis, which is based on established mortality experiences of India and Europe, it is found that of 10,000 births occurring in the course of the year, 8,693.4 survive on the census date. There are difficulties attendant on each method of calculation. In the first place migration figures are obtained only from the birthplace returns of the census. No one is asked directly in the Census Schedule as to when he came to reside in the place in which he was enumerated and how long he is to stay there. There are no exact returns of immigrants and emigrants in the State. But from the birthplace returns of different censuses a method is devised by which the number of immigrants and emigrants within the decade can be estimated. This method has been briefly described already (*vide* para 21 above). But it is not exact, in so far as it is based on an assumed rate of mortality which may not always apply. The method detailed in Appendix I for calculating births directly is also open to the criticism that it assumes risks of mortality for different periods of an infant's life, which are somewhat arbitrary and may no longer be true with the extension of medical relief and child clinics and improved methods of midwifery in the State. As it will appear from the Appendix, the standard to be taken has had to be modified in view of the decrease in infant mortality.

**34. Volume of Migration estimated**—The number of persons enumerated in 1931 in the State, who were born outside, was 324,579 as against 232,494 in 1921. Part of this large increase was due to the influx of 26,755 *hijratis*. Deducting these and applying the Baroda formula,  $ax \frac{(R^{10}-1)}{(R-1)}$ , we find the number of immigrants in the decade to be 130,401. The method as we have explained assumes a rate of mortality suitable for migrants, which is for this decade, 25 per mille per annum. In 1921, we assumed a higher rate of 35 per mille, because the previous decade was much more unhealthy than the present one. Migrants are usually of adult ages, *i.e.*, 5 and over, the corrected death-rate for which is about 21 per mille per annum. The rate of deduction for migrants must be reckoned a little higher than this, as many having come to a place, return to their homes or migrate to another. It is safe to assume therefore a rate of mortality or rather deduction of 25 per mille per annum. The estimate arrived at above—130,401—is based on this rate of mortality. There is one other method of calculation associated with the name of the well-known statistician, Dr. Longstaff, which

is somewhat less elaborate but less accurate than the Baroda formula.\* It takes the average of figures of migrants of two censuses, applies to it some assumed rate of mortality and adds the result to the census increase in migrants. Thus applying 25 per mille per annum (or 25 per cent for the decade to the mean figure of immigrants (which is 265,159 less *hijratis*) and adding the result to the census increase amongst immigrants we get 65,330+66,290 or 131,620, which is the estimated number of immigrants, according to the Longstaff process. Whatever formula we apply we thus get very near results. Taking the mean of the two results, our estimate of true immigrants is 131,010. The number of immigrants estimated for the previous decade in 1921 was 100,593. Coming to emigrants (Baroda-born enumerated outside the State), the number was found to be 221,602 in 1921. As against this figure, only 195,446 Baroda-born persons were enumerated in the Provinces and States of India. 10 persons in the State were recorded in the Ceylon and Rhodesian censuses. There is thus a large decline in numbers of the Baroda-born found elsewhere; the Bombay Presidency figures (British territory) alone show a decline from 138,838 to 111,846, although Western India and other contiguous states show an increase of the Baroda-born from 76,443 to 78,471. Making similar assumptions as to the rate of mortality we deduce from these figures that a movement of 25,230† emigrants must have happened during the decade. Besides these we have to add the number of persons who have left the State to other countries outside India for which no census figures are available. Taluka statistics were however compiled in this census as in 1921 and we find that in the place of 5,410 persons reported to be residing abroad in 1921, there were now 10,490. Here we must apply a lower rate of mortality, say 20 per mille, and calculating on that rate by the Longstaff process, we must add to the above total of 23,640, an additional number of 6,670 on account of this overseas movement. This gives a total of 31,900 emigrants. The balance of migration apart from *hijratis* therefore is 131,010—31,900 or 99,110.

**35. Extent of Natural Increase estimated**—This leaves out of the total census increase of 316,485, a balance of 190,620 which must be credited to natural increase. Now the deaths we know amount to 680,000. The decade's births have been calculated in Appendix I to be 860,000. To it the reader must refer for details how this is worked out. This gives a natural increase of 180,000. Either way, we get fairly near results, but I am inclined to accept 190,620 (the higher figure) as the more accurate one. The direct way of estimating births runs the risk of under-estimating births, as the age-return of infants however correctly smoothed cannot remedy the error of omission of record. In the census returns, persons in this age-group are most liable to be omitted, so much so indeed that Mr. Meikle, the Government Actuary at the last Indian Census, was strongly of opinion that the shortage at infant ages was due partly to non-enumeration. The total estimate of births should therefore be raised to 870,620. We thus arrive at the following chief elements of the census increase :—

ELEMENT OF INCREASE	Number	Per cent of 1921	Per cent of the Increase
1. Natural increase .. .. .	190,620†	8.96	60.2
2. The Hijrati element .. .. .	26,755	1.26	8.4
3. Increase due to balance of normal migration.	99,110	4.66	31.4
<b>Total .. ..</b>	<b>316,485</b>	<b>14.88</b>	<b>100</b>

**36. Variation in Natural Population**—Before we proceed to the discussion of variations in proportionate figures, we must dispose of one other item

\* Vide Longstaff, *Studies in Statistics*, page 41.

† This figure is arrived at by calculating separately by the Baroda formula and the Longstaff method and taking the mean of the two results. The Longstaff method gives 25,975.

‡ The estimates given in "Some Results" (page 8) have now to be modified in view of fuller data. The estimate of births given therein is too large, as the index used is based on the 1921 rate of infant mortality. The balance of migration was only a surmise, as the figures of emigrants from Bombay Presidency had not then arrived.

connected with absolute figures, which is natural population. "Natural" population is that which consists only of persons born in any given area, irrespective of his place of enumeration. It differs from the "Normal" population which regards *domicile* as apart from *birthplace* as the test of record. In the margin we give the comparative figures of natural population since 1901, with increases shown as proportions of 1901 compared to similar proportions of the increases in the censused population. Thus we see that the natural population is growing at a slower rate than the censused population. Even if we deduct the *hijratis* from the censused

Census Year	Natural Population	Proportion of natural population in each census (1901 figures as 1,000)	Proportion of censused population to 1901 census as 1,000
1901 ..	1,982,031	1,000	1,000
1911 ..	2,051,874	1,035	1,041
1921 ..	2,115,630	1,068	1,089
1931 ..	2,313,884	1,167	1,251

figure of 1931, the proportion is only reduced from 1,251 to 1,237. This points to two conclusions (i) that immigrants have increased at a faster rate than the native population, and (ii) the native born are going out of the State in less numbers than before. The net variation in natural population since 1921 is only an increase of 9.4 per cent, while the census increase we know is much larger (14.9). A Subsidiary Table is here subjoined in which the natural population is distributed in the divisions. Figures of emigrants are not usually compiled in other census units in India by the administrative divisions of this State but it is easy enough to distribute them, as the bulk of the population exchanges of the State are with the contiguous districts of British India and adjacent Indian States, and we can readily assign the Baroda-born enumerated in these districts to their proper homes in the State. In 1921, the Bombay Superintendent readily acceded to our request to record Baroda figures by districts of the State, but in 1931 presumably from motives of economy this was not done.

### SUBSIDIARY TABLE XII

#### VARIATION IN NATURAL POPULATION

NATURAL DIVISION	POPULATION IN 1931				POPULATION IN 1921				Variation per cent (1921-31) in Natural Population Increase (+) Decrease (-)
	Actual Population	Immigrants	Emigrants	Natural Population	Actual Population	Immigrants	Emigrants	Natural Population	
1	2	3	4	5	6	7	8	9	10
Baroda State	2,443,007	324,579	195,456	2,313,884	2,126,522	232,494	221,602	2,115,630	+ 9.4
Central Gujarat including City ..	824,341	148,550	80,528	756,329	707,512	102,743	106,926	711,695	+ 6.3
Kathiawad ..	204,282	40,780	18,709	182,211	178,060	34,930	14,341	157,471	+ 15.7
North Gujarat ..	1,010,007	75,450	81,070	1,015,627	900,578	59,613	79,645	920,610	+ 10.3
South Gujarat ..	404,377	74,390	29,730	359,717	340,372	47,986	33,468	325,854	+ 10.4

NOTE.—As the Provinces and States where the emigrants were enumerated, did not supply the emigrant figures by districts of this State, they were distributed as under:—

- (i) Population of contiguous areas was assigned to the district contiguous to those areas, and
- (ii) Non-contiguous figures (males and females) were distributed *pro rata* among districts according to the proportion of the enumerated population.

**37. Variation in Relation to Density: Subsidiary Table XIII**—We now come to comparison of densities in different censuses. We have seen how far natural conditions have influenced density in different areas. We give below Subsidiary Table XIII in which the percentages of variation in each division are given since 1881 and compared with the mean variations in density per square

mile for the last six censuses. As the real area of the State since 1881 has practically remained unchanged, the density figures have been revised according to the latest figures of area. The net variation in the State since 1881 is 12 per cent or 32 more to the square mile. But South Gujarat alone shows the highest increase of 41 per cent or 64 more persons to the square mile than fifty years ago. North Gujarat has hardly progressed at all during the period. Even Kathiawad, which has had more than its share of ill luck in agricultural seasons and crop-yields, shows a much more progressive rate of proportionate increase than either North or Central Gujarat. The increase there in absolute figures (41.3 per cent since 1881) has to be discounted however on the score of better enumeration, as the census machinery in that remote area had not yet attained in 1881 the organisation of other parts. The proportionate increase in Central Gujarat during the fifty years has been only 32 to the square mile, principally because in 1881, it had already attained the high density of 394 which approached even then the critical point for an agricultural population.

SUBSIDIARY TABLE XIII

VARIATION IN RELATION TO DENSITY SINCE 1881

NATURAL DIVISION	Percentage of Variation: increase (+) decrease (-)					Net Variation 1881 to 1931	Mean density per square mile					
	1921 to 1931	1911 to 1921	1901 to 1911	1891 to 1901	1881 to 1891		1931	1921	1911	1901	1891	1881
1	2	3	4	5	6	7	8	9	10	11	12	13
<b>Baroda State</b>	+14.90	+4.60	+4.10	-19.15	+10.68	+11.95	299	260	249	239	296	257
<i>Central Gujarat including City..</i>	+15.79	+3.00	+6.65	-21.17	+7.89	+8.25	426	366	355	333	423	394
Charotar ..	+18.31	-.95	..	..	..	..	748	632	..	..	..	..
Vakal ..	+16.11	-.53	..	..	..	..	642	553	..	..	..	..
Kahnām ..	+15.67	+2.20	..	..	..	..	291	251	..	..	..	..
Chorashi ..	+15.91	+17.17	..	..	..	..	254	219	..	..	..	..
<b>North Gujarat</b> ..	+12.1	+8.22	-.31	-24.01	+11.15	+2.18	329	294	271	272	358	322
East Kadi ..	+13.30	+7.36	..	..	..	..	396	350	..	..	..	..
West Kadi ..	+13.67	+12.06	..	..	..	..	277	243	..	..	..	..
Trans-Sabarmati Area ..	+11.72	+1.10	..	..	..	..	220	196	..	..	..	..
<b>South Gujarat</b> ..	+18.8	+1.46	+11.66	-5.94	+11.09	+40.62	223	188	185	166	176	159
Rasti ..	+15.77	+4.97	..	..	..	..	451	390	..	..	..	..
Semi-Rasti ..	+26.93	-2.95	..	..	..	..	202	159	..	..	..	..
Rani ..	+17.42	-.44	..	..	..	..	129	110	..	..	..	..
<b>Kathiawad</b> ..	+14.72	-.12	+2.8	-3.74	+24.59	+41.29	151	132	132	128	133	107
Mid-Block ..	+13.70	-1.85	..	..	..	..	152	133	..	..	..	..
Scattered area ..	+6.09	-6.42	..	..	..	..	142	134	..	..	..	..
Sea Coast area..	+19.48	+5.32	..	..	..	..	154	129	..	..	..	..

NOTE.—The Density figures previous to 1931 have been revised according to the latest figures for area.

38. **Variation in Areality and Proximity**—Density is one way of studying figures of population by proportioning them to the square mile. There are other ways by which the pressure of population from the point of view of crowding as apart from means of subsistence can be gauged. "Areality" is the calculation of area commanded by each person, house or any other unit considered: "proximity" is similarly the measurement of distance between

each such unit on the assumption of equal distribution which can be calculated on the formula:  $d^2 = \frac{200}{n\sqrt{3}}$  (when  $d$  is the distance between any unit and  $n$  is the number of such units in 100 square miles). The variations in the areality and proximity of persons are noted below:—

SUBSIDIARY TABLE XIV  
AREALITY AND PROXIMITY

DIVISION	Areality in Acres			Proximity in Yards	
	1931	1921	1911	1931	1921
1	2	3	4	5	6
State .. .. .	2.14	2.45	2.56	109	117
Central Gujarat .. .. .	1.50	1.74	1.79	92	99
North Gujarat .. .. .	1.94	2.16	2.34	104	110
South Gujarat .. .. .	2.87	3.40	3.45	127	138
Kathiawad .. .. .	4.24	4.86	4.85	154	165

These figures may seem artificial but they are useful for showing how the pressure of space is becoming an increasing problem. In 1901, the proximity of an individual person was 122 yards. It is now 109. Of course these calculations are made on present area. The changes in area are so slight that it was not thought worthwhile revising the figures of other years.

**39. Divisional Variations: Baroda Prant**—We shall now take up the analysis of variations by administrative divisions and see how far the influences have varied in their operation in the different *prants*; as before we shall begin with the metropolitan district first. We shall start with the Famine census of

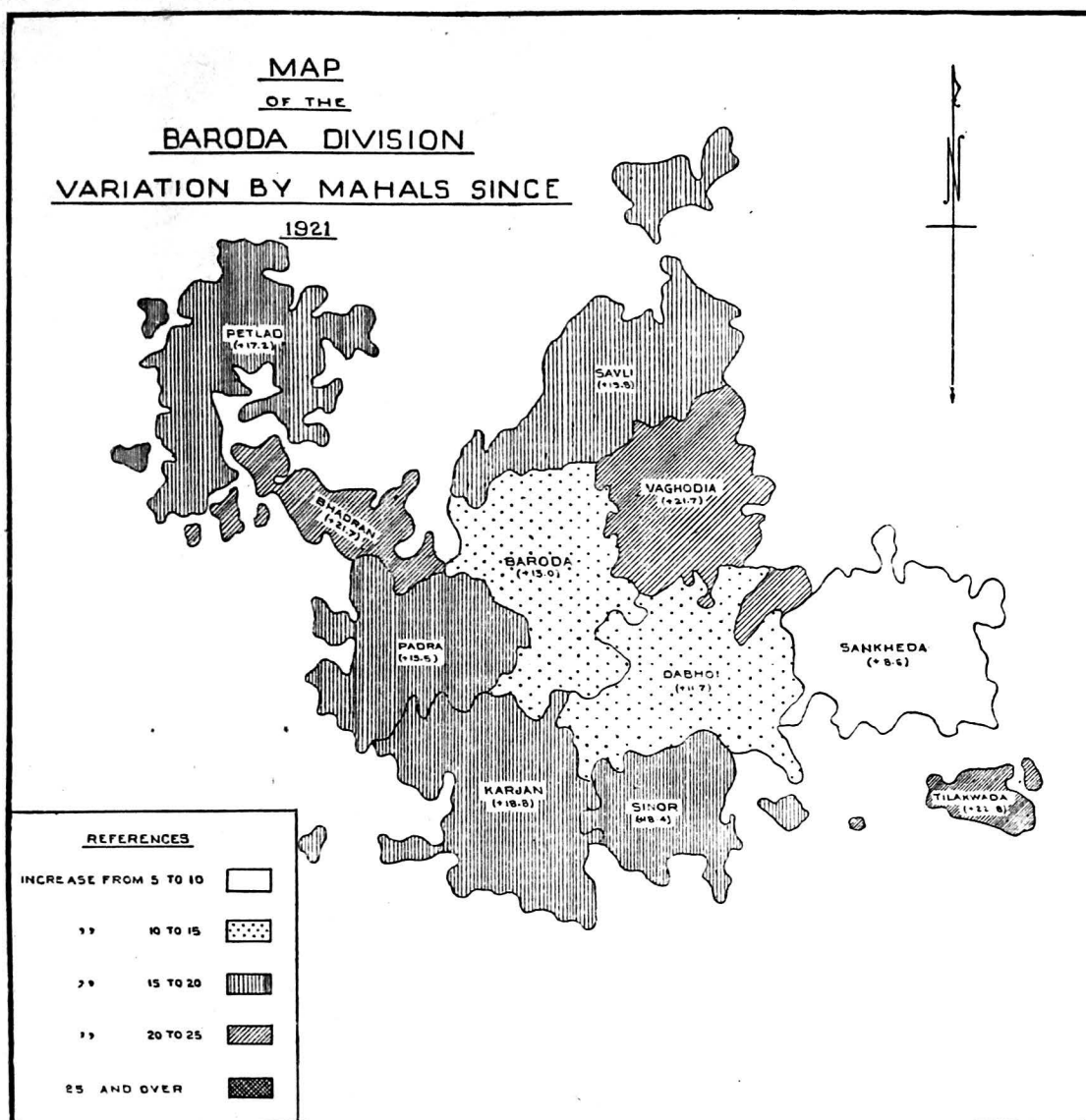
NATURAL AREA	Popula- tion in 1931	Percentage of variation		
		1921 to 1931	1911 to 1921	1901 to 1911
Divisional Total ..	824,341	+15.8	+ 3.0	+ 6.7
Charotar .. .. .	201,194	+18.3	— 1.0	— 4.0
Vakal .. .. .	291,577	+16.1	— 0.5	+ 2.4
Kahnarn .. .. .	170,853	+15.7	+ 2.2	+14.0
Chorashi .. .. .	160,717	+15.9	+17.2	+27.0

1901. The immediate results of the famine were most acutely felt in Chorashi more than anywhere else, and the 1901 Census showed a decrease of 36 per cent. Since then there has been a rebound which has been kept up continuously for the last three censuses. The release of large grass reserves in these areas led to

an influx of farming settlers from the congested villages in the Trans-Mahi country. In 1921, there were one additional village and at least 83 new hamlets in this tract. Since then the number of hamlets has not increased but the tendency is for the new settlers to get acclimatised to their surroundings and amalgamate the hamlets to the revenue villages to which they are affiliated. In Kahnarn also, where the next highest increase is recorded, the tendency to incorporate hamlets is seen in the reduction of their number from 37 to 33. Charotar's position is peculiar; this census, it shows the highest rate of increase indeed, but as most of the *hijrat*s were concentrated there, the real increase (which is 10.6 per cent) can be got at only by their exclusion. Even then this rate of increase seems large in spite of its very high density, and in view of its practically stationary population before this census. The reason must be sought in the industrial expansion of this area—the rise of mills and factories in Petlad and other towns. The Charotar rural area (excluding *hijrat*s) only shows an increase of 4.9 per cent. Next to Charotar, Kahnarn recovered the least from the famine of 1900 until this census. Vakal similarly shows signs of late recovery, but its low rate of progress until this census



was entirely due to the progressive decline in the City population (which is included in it) since 1891; the City has revived in this census; excluding the City, the Vakal rate of variation reads thus :—1901-11 (+7.3 per cent), 1911-21 (+2.2) and 1921-31 (+14.2). The trend of population eastward has continued although not to the same extent as before. The region of largest increase is still towards



the north-east, although there is an unbroken chain of talukas to the south and west, which have each received an increase of at least 15 per cent. Generally the district, although hard pressed by economic depression and agricultural adversities, has suffered less than the other parts of the State, except South Gujarat. Industrial establishments in the district (as apart from the City) increased from 49 to 102; and the total labour force employed (including directional and managerial staff) increased from 4,622 to 8,625. The survival rate from registered records of vital occurrences rose from a deficit of 2.9 per cent in 1911-20 to a surplus of 5.4 per cent in 1921-30. The natural population, as it appears from the marginal table, has increased at a much slower pace than the general population: the rate of increase is only a little more than the natural rate but that is because emigrants have declined in numbers. The volume of immigration however increased from 25,304 in 1911-21 to 75,269.\* Even without the

POPULATION	1931	1921	Variation since 1921
Actual Population ..	824,341	707,512	+15.8
Immigrants .. ..	148,550	102,743	+44.6
Emigrants .. ..	80,528	106,926	-24.7
Natural Population ..	756,329	711,695	+ 9.4

\* These figures are obtained by the Longstaff method.

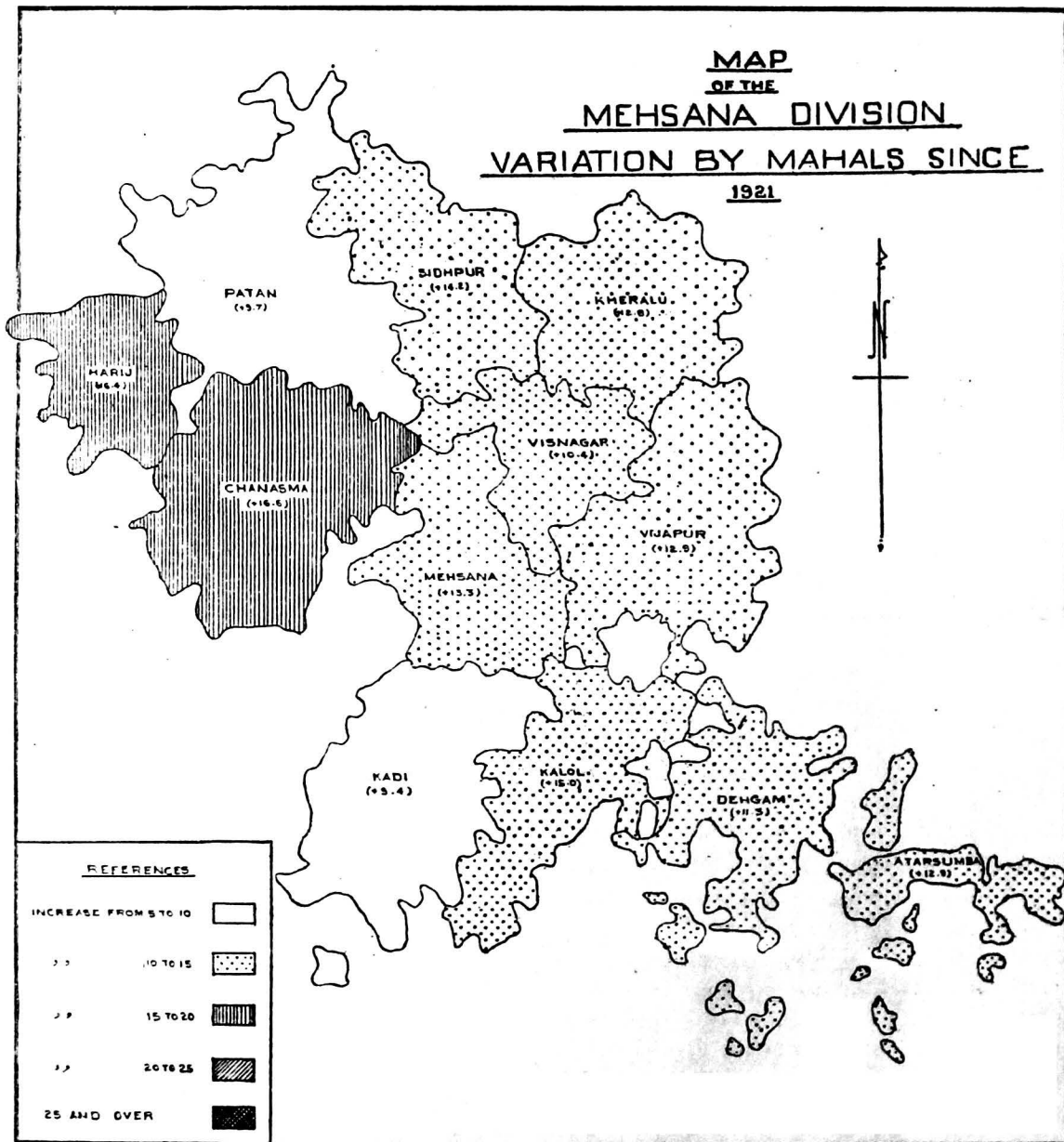
*hijratis*, the increase is more than double. Nearly three-quarters of the census increase in this division is due, it is estimated, to gain by migration.

**40. Mehsana Prant**—Coming to the largest district with the largest population, we find that

NATURAL AREA	Population in 1931	Percentage of Variation		
		1921 to 1931	1911 to 1921	1901 to 1911
<b>Divisional Total</b> ..	<b>1,010,007</b>	<b>+12.1</b>	<b>+ 8.2</b>	<b>+ 0.3</b>
East Kadi .. ..	594,987	+13.3	+ 7.3	- 4.0
West Kadi .. ..	329,879	+13.7	+12.0	+ 5.0
Trans-Sabarmati ..	85,141	+11.7	+ 0.1	+11.0

the increases since 1901 have been more or less uniform. Between 1901-1910 the recovery was uniformly slow except in the Trans-Sabarmati area. In the next decade, when the rest of the district progressed well, the growth in Trans-Sabarmati was the least. In the present census, the increases have ranged round about 12.1

per cent which is the divisional rate of variation. As the map shows the highest



increases are recorded in the westernmost talukas of West Kadi. The rest of the district except Kadi taluka shows a uniform rate of progress between 10 to 15

per cent. Mehsana and Sidhpur show the most growth, due to the increasing population of its urban areas ; but agriculturally the fertile and well-wooded parts towards the East shows the highest rate of increase. Kalol's progress is due to the presence of mills, which started at the time of the industrial boom after the war but have not so far made good. Part of the agricultural progress of this area is due to the opening of new lands for cultivation and the establishment of new *paras* (hamlets) since 1921. These hamlets owe their existence to immigration. In 1921, a large movement from Jhalawad accounted for a considerable proportion of the census increase in the district. In the present decade, a movement of some strength was discernible from across the petty chiefships of the Mahikantha (Mansa in particular). East Kadi therefore records a large accession of these hamlets—of which Sidhpur, Vijapur and Visnagar show the largest number. This accession is remarkable in view of the fact that this district is usually a giver in the matter of migration and not a gainer. The natural population has gained as in other parts at a less rate than the general population. The number of immigrants in the decade was 32,620 (by the Longstaff method) as against 31,750 in 1911-21. But as the emigrants here have also increased the bulk of the census increase in this division in 1931 must be put down to natural causes.

HAMLETS	Number in	
	1931	1921
West Kadi ... ..	62	57
East Kadi .. .. .	114	59
Trans-Sabarmati ..	90	77

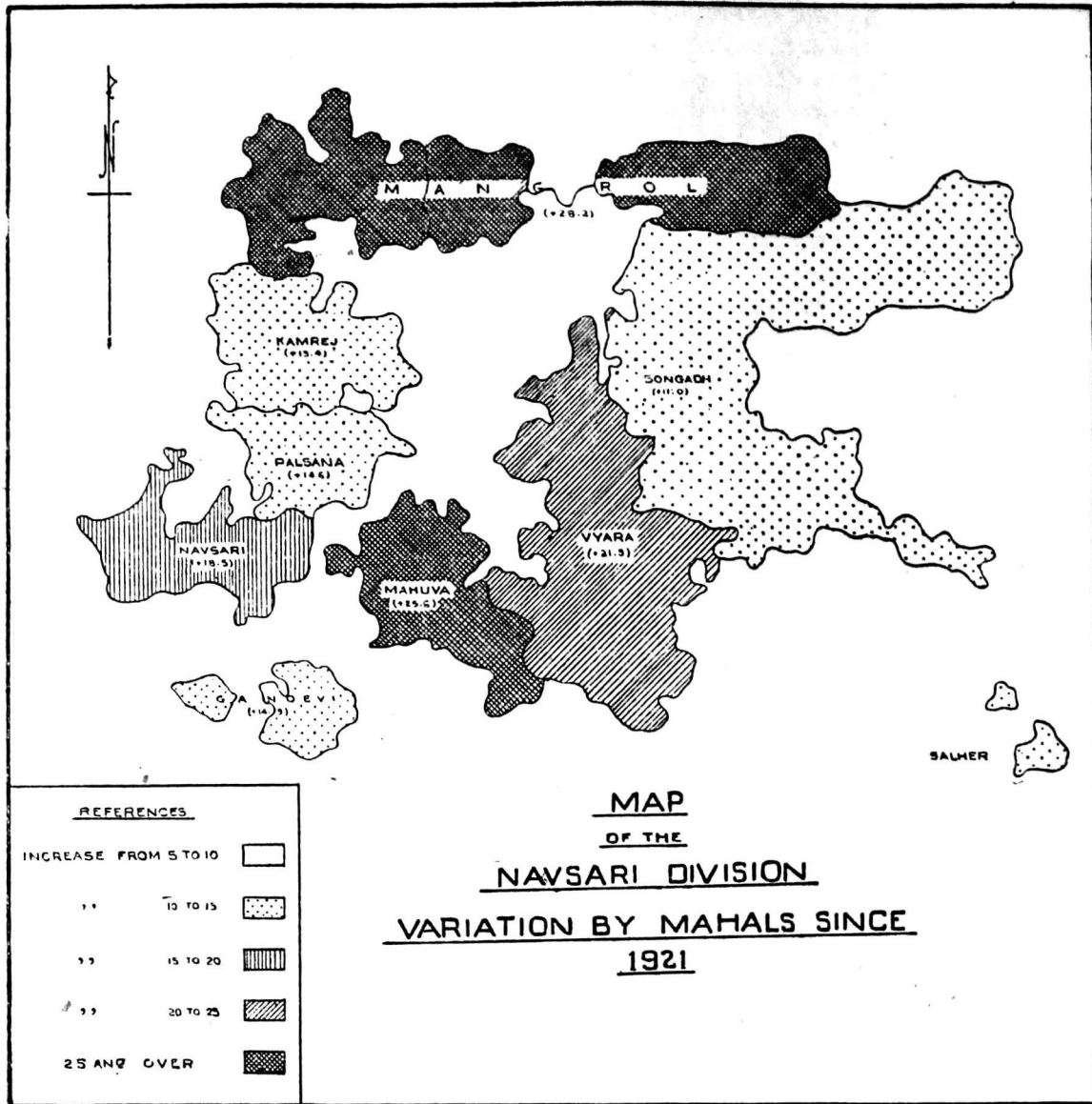
POPULATION	1931	1921	Variation since 1921
Actual Population ..	1,010,007	900,578	+12.1
Immigrants .. .. .	75,450	59,613	+26.6
Emigrants .. .. .	81,070	79,645	+ 1.8
Natural Population..	1,015,627	920,610	+10.3

**41. Navsari Prant**—The Southern district in point of population is the most fortunately circumstanced. As Subsidiary Table XIII shows it evidenced less sign of distress from the famine of 1900 than the other two mainland divisions. The Rani was most afflicted by it and suffered a decrease of 14 per cent on that account in 1901. In 1911, there was a rebound in that region of 31 per cent. But 1921 showed exhaustion and an actual decline was recorded. Influenza was severest in this tract and the Raniparaj people were more affected by it than the other sections. In

NATURAL AREA	Population in 1931	Percentage of Variation		
		1921 to 1931	1911 to 1921	1901 to 1911
<b>Divisional Total ..</b>	<b>404,377</b>	<b>+18.8</b>	<b>+1.5</b>	<b>+12.0</b>
Rasti .. .. .	188,606	+15.8	+5.0	— 1.4
Semi-Rasti .. ..	98,958	+26.9	—3.0	+20.8
Rani .. .. .	116,813	+17.4	—0.4	+31.0

this census, all the three natural areas comprised in this division register large increases. But part of this growth must be ascribed to the *hijrat* movement which affected in varying degrees all the three areas of the division. Without the *hijrat*s, the increases in Rasti, Semi-Rasti and Rani are reduced respectively to 13.2, 12.7 and 15.4 per cent since 1921 while the mean rate of increase for the whole district becomes, by eliminating these people, 15.8 per cent instead of 18.8. The balance of migration turned sharply in favour of this district during the decade. By the Longstaff method, we find there were (without *hijrat*s) 30,240 immigrants and 4,290 emigrants, the balance being 25,950 in favour. In 1911-21, the balance (calculating by the same method) was only 4,579. The natural increase in the latest decade was therefore only 8.2 per cent and

POPULATION	1931	1921	1911
Actual Population ..	404,377	340,372	335,467
Immigrants .. .. .	74,390	47,986	50,229
Emigrants .. .. .	29,730	33,321	35,014
Natural Population ..	359,717	325,707	320,252

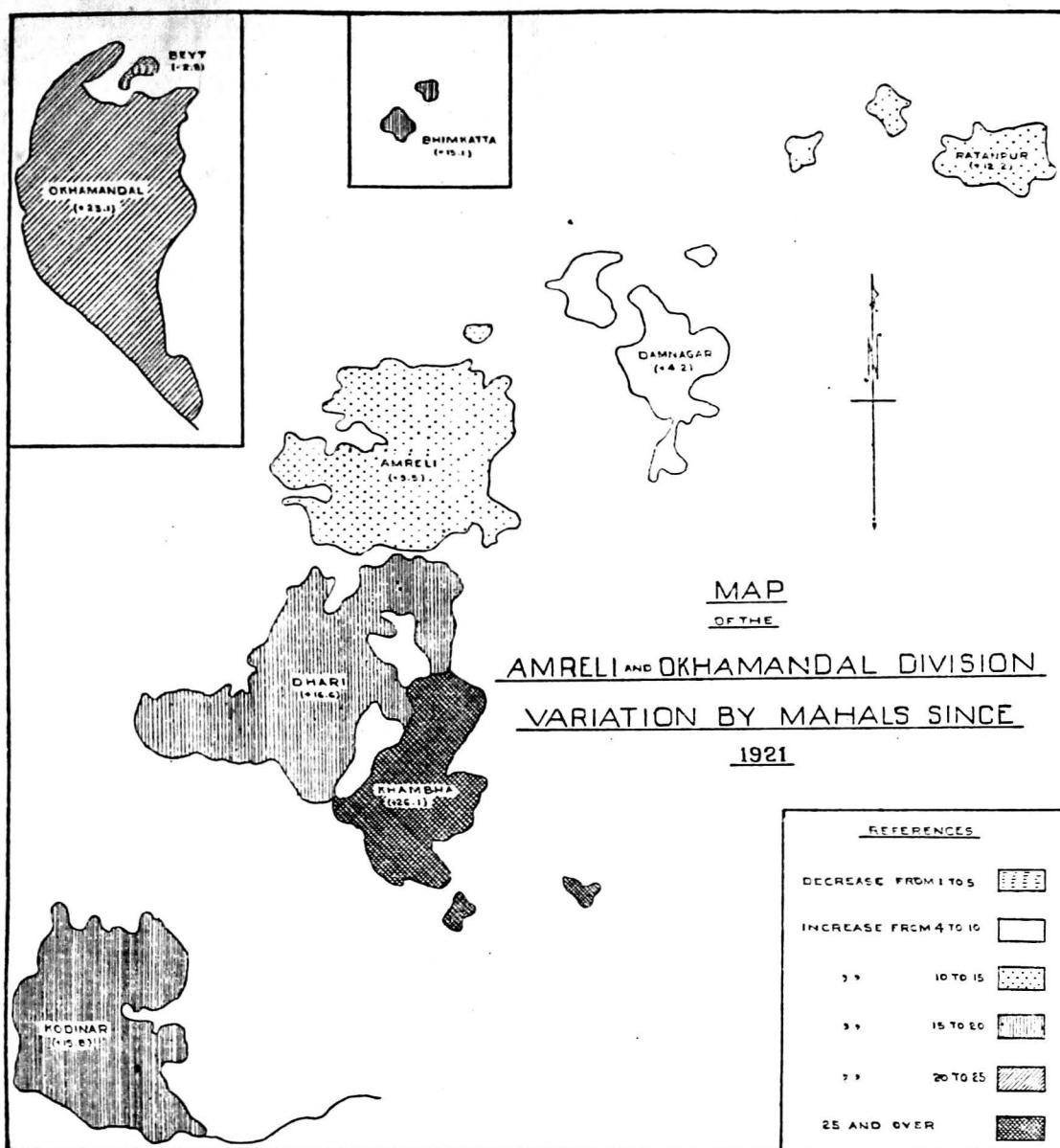


the increase due to real migration was 7.6 per cent (as against 4.7 per cent the general rate of migration increase in the whole State). The greatest increase in the district is in the northern part in Mangrol taluka (28.2 per cent). Of the Rasti talukas, Navsari shows the highest increase. The rural area also has shared in this all round growth (14.3 per cent).

**42. Amreli and Okhamandal**—It is convenient to treat these two units together. Okhamandal may be briefly dismissed. From 1891 to 1901, the population in rural areas in this remote mahal decreased by over a thousand or 4 per cent. The next decade was still more unfavourable, the decline registered being 7 per cent.

NATURAL AREA	Population in 1931	Percentage of Variation		
		1921 to 1931	1911 to 1921	1901 to 1911
Divisional Total ..	204,282	+14.7	-0.12	+3.0
Mid-Block ..	105,673	+13.7	-2.0	+6.0
Scattered Area ..	24,525	+6.1	-6.4	+1.4
Sea Coast Area ..	74,084	+19.5	+5.3	-1.5

In 1911-1921, the population was almost stationary, but excluding urban areas, there was a decrease of over 4 per cent. In the present census, there is indeed an increase of 23.1 per cent, which is confined to the rural areas entirely; this is due to the opening of the Port of Okha and the consequent increase in population of the neighbouring villages. Coming to the Amreli *prant* proper, we find the largest increases in Khambha (26 per cent), Kodinar (19.8), Dhari (16.6 per cent). The Scattered areas show the least progress. Surrounded by other states and with their trade



and industry crippled by the stranglehold of customs cordons, there is little wonder if people of these parts find it more profitable to leave their homes and seek fortunes elsewhere. Part of the increase in Middle Block is due to this emigration from the Scattered areas. Generally the gain in natural population shows a slightly higher rate than in the actual population. The gain through migration is slight—only 6,813 in the last ten years, but in the preceding decade, it was more—about 8,200. More people have apparently now left the district than they did in 1911-1921. The present decade was exceptionally healthy and the bulk of the variation is ascribable to this circumstance.

POPULATION	1931	1921	1911
Actual Population ..	204,282	178,060	178,269
Immigrants .. ..	40,780	34,930	34,931
Emigrants .. ..	18,709	14,341	14,206
Natural Population ..	182,211	157,471	157,544

**43. Summary: General Trend of Population**—We shall now summarise the general results of the discussion on movement. The general increase of 14.9 per cent in the population is largely due to natural increase; but Central and South Gujarat owe their present strength mainly to immigration, while in North Gujarat and Kathiawad, it is almost entirely due to natural causes. The rate of natural increase operative during the decade came up almost to the normal, but the gain through migration was the largest achieved since 1881. The age constitution of the people showed little difference in the two censuses, except that the child population is slightly less and the aged slightly more than in 1921. The reason why

AGE GROUPS	Percentage in total population	
	1931	1921
0-15 .. ..	39	40
15-50 .. ..	50	51
50 and over ..	11	9

this is so is that the havoc caused by influenza and plague in 1918-19 thinned out the ranks of the child population, which the high rate of births of subsequent years has not been able adequately to fill. The volume of births (according to our estimates) declined from 898,060 in 1911-21 to 870,620, but owing to healthier conditions of living, the number of survivors increased from 71,316\* to 190,620. The next decade may therefore see an increase

in the volume of births if the years turn out to be normal without any epidemics or other calamities. Generally the process of recuperation since the famine of 1900 has now completed itself. It would have been complete in 1921, had it not been for the retarding effects of epidemics, economic stringency and general agricultural depression. This last *malaise* has continued unabated, but the spectre of disease has held off. The increase has been general everywhere but the rate of progress has been lower in the settled and fertile portions than in drier and more backward areas where there is presumably more scope of expansion.

**44. Variation by Talukas classified according to Density**—This leads us to the question of the possibilities of future expansion. We have already anticipated that at the present rate of movement, the 1941 Census should show a population of 2.73 millions. We subjoin here a Subsidiary Table in two parts which give materials for affording a measure whereby we can find out the areas in which an expansion is possible.

### SUBSIDIARY TABLE XV

#### VARIATION BY TALUKAS CLASSIFIED ACCORDING TO DENSITY

##### (a) Actual Variation

NATURAL DIVISION	Decade	Variation in talukas with a population per square mlie at commencement of decade of							
		Under 150	150 to 300	300 to 450	450 to 600	600 to 750	750 to 900	900 to 1,050	Over 1,050
1	2	3	4	5	6	7	8	9	10
BARODA STATE ..	1901-1911 ..	- 44,062	+ 221,212	- 27,564	- 59,666	- 4,412	..	+ 3,658	- 9,060
	1911-1921 ..	- 24,724	+ 8,602	+ 54,796	+ 59,086	- 34,343	+ 34,630	+ 310	- 4,638
	1921-1931 ..	+ 9,570	- 218,856	+ 460,455	- 32,350	- 74,074	+ 153,700	- 108	+ 18,146
Central Gujarat with City	1901-1911 ..	- 26,082	+ 69,280	+ 10,408	+ 209	- 6,550	..	..	- 4,445
	1911-1921 ..	- 24,269	+ 47,760	+ 3,382	- 343	- 1,285	..	..	- 4,633
	1921-1931 ..	..	- 74,054	+ 141,591	- 43,327	- 74,074	+ 148,545	..	+ 18,146
North Gujarat ..	1901-1911 ..	+ 3,442	+ 87,218	- 93,242	..	..	..	..	..
	1911-1921 ..	+ 3,279	- 41,547	+ 106,684	..	..	..	..	..
	1921-1931 ..	- 19,226	- 63,469	+ 192,124	..	..	..	..	..
South Gujarat ..	1901-1911 ..	- 26,117	+ 63,610	+ 55,270	- 59,875	+ 2,138	..	..	..
	1911-1921 ..	- 2,316	+ 1,490	- 55,270	+ 59,429	- 33,058	+ 34,630	..	..
	1921-1931 ..	+ 15,672	- 94,539	+ 120,740	+ 10,977	..	+ 5,155	..	..
Kathlawad ..	1901-1911 ..	+ 4,695	+ 1,095	..	..	..	..	+ 3,058	- 4,615
	1911-1921 ..	- 1,418	+ 899	..	..	..	..	+ 310	..
	1921-1931 ..	+ 13,124	+ 13,206	..	..	..	..	- 108	..

\* Baroda Census Report, 1921, para 58.

## (b) Proportional Variation

NATURAL DIVISION	Decade	Variation in talukas with a population per square mile at commencement of decade of							
		Under 150	150 to 300	300 to 450	450 to 600	600 to 750	750 to 900	900 to 1,050	Over 1,050
1	2	3	4	5	6	7	8	9	10
BARODA STATE .. ..	1901-1911 ..	-18.8	-32.2	+4.21	-57.7	- 2.7	..	+100.0	-8.4
	1911-1921 ..	-13.0	+ .946	+8.74	+135.0	- 21.3	+100.0	+ 8.5	-4.7
	1921-1931 ..	+5.8	-23.4	+67.5	-31.5	- 58.4	+444.0	- 2.72	+19.1
Central Gujarat with City	1901-1911 ..	-51.8	+40.9	+ .07	+ .5	- 4.9	..	..	-4.3
	1911-1921 ..	-100.0	+20.0	+ .02	- .8	- 1.0	..	..	-4.7
	1921-1931 ..	..	-25.8	+ .9	-100.0	- 58.4	+100.0	..	+19.1
North Gujarat .. ..	1901-1911 ..	+27.5	+28.1	-18.2	..	..	..	..	..
	1911-1921 ..	+20.6	-20.5	+25.4	..	..	..	..	..
	1921-1931 ..	-100.0	-17.8	+36.5	..	..	..	..	..
South Gujarat .. ..	1901-1911 ..	-23.9	+63.3	+100.0	-100.0	+ 6.9	..	..	..
	1911-1921 ..	- 2.8	+ 0.9	-100.0	+100.0	-100.0	+100.0	..	..
	1921-1931 ..	+19.4	-57.1	+100.0	+ 18.4	..	+ 14.8	..	..
Kathiawad .. ..	1901-1911 ..	+7.6	+ 1.0	..	..	..	..	+100.0	-100.0
	1911-1921 ..	-2.1	+ 0.8	..	..	..	..	+ 8.5	..
	1921-1931 ..	+20.2	+12.1	..	..	..	..	+ 2.72	..

45. **Consideration of the above Table**—It must be premised about this Table that the rather sudden fluctuations it reveals is due to regrouping of talukas according to class of density from census to census. The class of "under 150" had suffered no change of this kind until this census when Harij went up to the next higher class. But the class of "150-300" has suffered regroupings from time to time. For instance Vyara and Savli were below it in 1901 and travelled up to this class in the subsequent years. Vaghodia was out of it both in 1901 and 1911 but its rapid growth since has now placed it high up in this class. Talukas like Dabhoi, Sinor, Tilakwada, Chanasma, Palsana, Kamrej, and Mahuva have now left this class and joined the class above (of 300-450). This last named class however has not hitherto suffered any defections to the higher class 450-600. There is thus a slower rate of increase from 450 upwards everywhere. The very high density classes (excepting the urban areas), are 750-900, 600-750 and 450-600. To the first named Petlad and Gandevi belong. Even if we exclude the *hijratis*, these two talukas still retain their position in this class. In the second class Bhadrans alone is included; and Navsari belongs to the third class. These four talukas are the highest density areas in the State, and excluding the *hijratis*, they have grown by 12.1 per cent since 1921. But the bulk of the increase recorded is limited to urban areas, as the variation in rural areas of these four talukas (always excluding *hijratis*) is only 7.5 per cent. Thus agriculture has very little to do with the growth of these highly populated areas. Coming to the class of 300 to 450, there are only Padra (in Central Gujarat), and Kalol, Vijapur, Visnagar, Mehsana and Sidhpur (in North Gujarat), that have permanently retained their place in it since 1901. The talukas with a density between 400 and 450 now number three—Padra, Vijapur and Sidhpur.

46. **Possibilities of Expansion**—From these materials, the general conclusion seems to be that room for expansion can only be within areas which have a density of 150 to 450. The talukas below this limit have indeed shown uniform progress, in spite of their having high density on cultivable area. But this progress is merely the completion of the process of rebound after the famine of 1900. At the next census, one would expect these areas not to show much progress unless extraordinary improvements are undertaken in respect of soil, climate and the condition of the people residing there. These low density areas are now 1,697 square miles in extent; on the other hand the upper limit of 450 marks "the critical point beyond which a population mainly subsisting on

agriculture cannot advance at least in this State without a serious deterioration in the standards of life."\* It may be said that these standards vary from place to place and that even within the same area there are as many gradations as there are strata of society. But these gradations notwithstanding, even the small increase of 7.5 per cent which the rural areas in talukas of highest density have so far shown could not have been effected without an appreciable lowering in the standards of comfort and even of subsistence.

**47. Areas with a Density of 150-450**—As to the areas with a density of 150 to 450, a test was devised in 1921, by which wherever the difference between the densities on cultivated and cultivable areas was larger than 100 per square mile, there it was expected that population would expand normally. By this means, certain talukas were marked off as indicating where such an expansion could be looked for.

TALUKA	Density on cultivable area in 1921	Difference between densities on cultivated and cultivable area in 1921	Increase since 1921
Dabhoi .. ..	333	117	11.7
Savli .. ..	264	137	19.8
Kadi .. ..	296	103	9.4
Vijapur .. ..	433	383	12.9
Mehsana .. ..	378	119	13.3
Palsana .. ..	335	150	14.6
Kamrej .. ..	311	116	13.4
Vyara .. ..	318	130	21.9
Mahuva .. ..	328	217	25.6

density on cultivable area should not be more than 450. On this basis, as shown in the inset only the Semi-Rasti, the Rani tracts and the Sea Coast

NATURAL AREA	Density of cultivable area	Density on cultivated area	Difference between the two densities
Charotar .. ..	827	877	50
Rasti .. ..	532	729	197
Vakal (excluding City)	487	560	73
East Kadi .. ..	454	522	68
Kahnani .. ..	340	420	80
West Kadi .. ..	318	398	80
Semi-Rasti .. ..	304	434	130
Chorashi .. ..	313	348	35
Rani .. ..	297	418	121
Trans-Sabarmati .. ..	296	352	56
Sea Coast .. ..	202	331	129
Mid-Block .. ..	188	254	66
Scattered areas .. ..	157	228	71
State .. ..	378	471	93

region together forming 1,875 square miles or about 23 per cent of the State area point to the directions where we can hope for some future increase in population. In the Rani area, however, until the malarial problem is taken in hand seriously, no large increase in population is possible. In the Scattered areas in Amreli also, the poverty of the inhabitants and the peculiar geographical situation of certain talukas like Damnagar, Ratanpur and Bhimkatta, hemmed in by neighbouring states, have so far prevented progress and are likely to continue to do so in the near future. The Sea-coast mahals indeed show a comparatively low proportion of net cultivated area, but the lands included under cultivable there contain large areas of salt, which can only be called "cultivable" in a very limited sense. Similar is the case with Rasti where the whole sea-coast in Navsari and Gandevi talukas is unfit for cultivation under normal conditions and can only be cultivable after large expenditure of capital, which is beyond the present capacity of agriculturists. In the Rasti also, the very high degree of density on cultivable land militates against any future expansion on an agricultural basis. Kahnani has a comparatively low density, but its principal crop is cotton, which requires not much labour, and its cultivated portion has so increased that only marginal areas are now available. Charotar

These talukas have been collected in the margin and they all show increase in this census, but where the density on cultivable area was high in 1921, there the rate of growth has been slower. Kathiawad was not in the list, but it was confidently expected that Kodinar would show a large increase, which it has done (19.8 per cent). On this occasion we may apply the same test, confining ourselves however only to the thirteen natural areas. Subsidiary Table VI (*vide* para 18 *supra*) may be again referred to. The margin gives the requisite figures. But the test above stated has been modified a little by the further condition that the



has reached the most critical point in its agriculture. In other parts, the tale is more or less the same. Thus the pressure of population on the land combined with other factors holds out little promise of any large growth of population, unless industrialisation sets in on a large scale.

**48. Possibilities of Agriculture**—The above conclusions may sound doleful. In 1921 I wrote :—

“ Enough has been indicated above to show that a period of intense devotion of national energies to agriculture is now fast giving place to another in which the people driven by their misfortunes from their passionate attachment to the soil will strive to seek more and more in a varied industrial life the requisite relief for the pressure of an increasing population on their means of subsistence.”

Ten years are too short a period for these tendencies to work themselves out in the life of masses of people. But there can be no doubt that with an ever increasing population, the soil has ceased to bring its expected return. Progressively the size of the agricultural holdings is becoming less and less economic: as the inset table shows, the proportion of small sized holdings has grown even more rapidly than the variation in the population. With the increase of the sown area year after year—from 4,247 square miles (in 1891-1900) to 4,351 (in 1910-20) and 5,175 square miles in the latest decade,—the marginal lands are taken more and more into cultivation. Newer and more thriftless classes have been driven to the land, where through economic competition, they have been left only with the more uneconomic holdings. The cultivable area is now 6,462 square miles, and the occupied is 6,135

YEAR	Holdings of 5 bighas and over	
	Number	Proportion
1930 ..	106,484	120
1920 ..	94,747	107
1910 ..	88,397	100

square miles, leaving only a residuum of 327 square miles which is barely fit for cultivation. A marginal table is here given showing comparative variations in population and

	1901	1911	1921	1931
Variation in occupied area .. ..	100.	104.45	110.7	114.9
Variation in population .. ..	100.	104.1	108.9	125.1
Average size of holding in bighas ..	17.75 (1905)	19.9	19.52	18.7
Percentage of registered holders to inhabited houses .. ..	Not available	60.8	64.0	63.5

occupied area since 1901 and also the average size of holdings for selected years since 1905: The percentages of registered holders of land to inhabited houses however are shown since 1911, for it is from that date that the definition of a “ house ” has been altered to make it identical with a commensal family. These figures show how population has begun to outpace the means of subsistence on agriculture. The size of holdings has become progressively smaller; the proportion therefore, it is needless to add, of registered holders to number of inhabited houses has become less than 1921. There is little scope for further increase in the occupied area. Figures of yield already given (as proportions of the standard) prove that even in good years, agricultural returns are only a fraction of the best possible—and this is the case in Gujarat, which is the home perhaps of the most industrious and the most intelligent peasantry in India. The stage is set therefore in this country as perhaps in other parts of India for a general industrialisation which should have set in much earlier than now, were it not for the whirlpool of outside factors which has riddled the economic life of the people and retarded its growth.

§ 7. HOUSES AND FAMILIES

**49. Houses and Families**—Before we leave this general discussion of census figures and turn to a detailed analysis in other chapters, we must refer here briefly to statistics regarding houses. There are two main definitions of

“house” in use in the Indian Census: the structural and the social. The social definition has been adopted in the Baroda Census ever since 1911. The structural definition, which laid down that a house should be a dwelling place of one or more families, “having a separate entrance whether the entrance be from a public road, compound, corridor, balcony, gallery or otherwise”, was the basis of the censuses of 1901 and previous years. So any comparison with the figures of inhabited houses before 1911 is useless. In 1911, the definition was that a house consisted “of the buildings one or many, inhabited by one family, that is, by a number of persons living and eating together of food cooked on one *chulah* (hearth) or in one mess, with their resident dependents such as mother, widowed sisters, younger brothers, etc., and their servants who reside in the house, in other words, the unit is the commensal family and not the homestead or enclosure.” This definition was continued for subsequent censuses as the basis of the enumeration. The above definition was well understood by the people and ordinarily gave rise to no difficulty. Exceptions to the standard definition were allowed in certain cases. For instance, even if more than one family resided in a one-room tenement, only one number was given. Again, although the definition implies that if a commensal family possessed more than one structure, only one number was to be given, municipal bodies, with their eye on the house-tax insisted on numbering all these structures individually. Sometimes their zeal outran their discretion. They did not spare in the City of Baroda even the fowl houses of high officials in their work of house-numbering. Otherwise the definition worked well. It did lead to overnumbering but as the census only took account of inhabited houses, such surplus houses were left out as uninhabited, and there was not much error involved in taking the number of inhabited houses as identical with the total of commensal families. But in spite of all precautions, even this clearly worded definition ran the risk of peculiar interpretation at the hands of local workers. The intention was to number all commensal families, the presumption being that each had a separate *chulah*: there were numerous houses where separate families resided in distinct tenements but from motives of economy had a common kitchen; sometimes the practice was observed of giving them only one number. But such cases were exceptional and wherever found they were corrected.

**50. Persons per House and Houses per Square Mile**—With these preliminary observations, we subjoin Subsidiary Table XVI.

SUBSIDIARY TABLE XVI

## PERSONS PER INHABITED HOUSE AND INHABITED HOUSES PER SQUARE MILE

NATURAL DIVISION	Average number of persons per house						Average number of houses per square mile					
	1931	1921	1911	1901	1891	1881	1931	1921	1911	1901	1891	1881
1	2	3	4	5	6	7	8	9	10	11	12	13
Baroda State .. ..	4.34	4.14	4.01	3.98	4.48	4.56	68.94	62.82	62.03	60.01	66.02	58.75
Baroda City .. ..	3.75	3.52	3.47	3.32	3.63	3.64	2,738.18	2,442.73	2,600.27	2,840.91	2,912.45	2,645.45
Central Gujarat Exclusive of Baroda City .. ..	4.23	3.98	3.91	3.82	4.31	4.30	87.47	80.02	78.18	73.48	82.38	75.63
Charotar .. ..	3.89	3.63	..	..	..	..	192.11	173.02	..	..	..	..
Vakal .. ..	4.13	3.84	..	..	..	..	97.61	91.84	..	..	..	..
Kahnem .. ..	4.48	4.22	..	..	..	..	64.84	60.59	..	..	..	..
Chorashi .. ..	4.65	4.40	..	..	..	..	55.47	49.88	..	..	..	..
North Gujarat .. ..	4.19	4.02	3.79	3.82	4.40	4.50	78.58	72.96	71.70	71.15	81.44	71.45
East Kadi .. ..	4.17	4.01	..	..	..	..	95.06	87.29	..	..	..	..
West Kadi .. ..	4.39	4.08	..	..	..	..	62.99	59.59	..	..	..	..
Trans Sabarmati Area ..	4.04	3.89	..	..	..	..	62.07	57.95	..	..	..	..
South Gujarat .. ..	5.04	4.94	4.93	5.01	5.25	5.27	44.27	38.06	37.58	33.05	33.61	30.23
Rastri .. ..	4.62	4.5	..	..	..	..	97.66	86.60	..	..	..	..
Semi Rastri .. ..	5.33	5.24	..	..	..	..	40.57	30.68	..	..	..	..
Bani .. ..	5.61	5.58	..	..	..	..	23.05	19.76	..	..	..	..
Kathiawad .. ..	4.72	4.52	4.52	4.41	4.68	4.73	32.03	29.13	29.14	29.09	28.48	23.02
Mid-Block .. ..	4.79	4.51	..	..	..	..	50.20	46.81	..	..	..	..
Scattered Area .. ..	4.63	4.55	..	..	..	..	30.61	29.36	..	..	..	..
Sea Coast Area .. ..	4.65	4.59	..	..	..	..	33.05	28.47	..	..	..	..

NOTE.—The figures for density of houses per square mile for 1921 and previous years have been calculated on the latest figures for area.

**51. Consideration of Subsidiary Table XVI**—The above table gives proportionate figures since 1881, but as pointed out already, owing to change of definition, comparison is only possible from 1911 onwards.\* As the business of numbering of houses is now left with the municipal authorities, the tendency to over-number is on the whole on the increase. Bearing this in mind, the increase in the size of household from 4.01 to 4.34 has to be considered. The number of inhabited houses increased by 1.3 per cent in 1921 and by 9.7 per cent in 1931. Part of this increase in 1931 is suspect, particularly in Central and North Gujarat where the destruction caused by the floods of 1927 was too recent for people to have repaired or re-built their homes completely before the Census of 1931. The increase of houses per square mile, as disclosed by the census is 295 in the City, 7 in Central Gujarat and 6 in North Gujarat. In the previous decade there was actually a decline in the density of inhabited houses in the City. The marginal table above has been prepared from absolute figures of houses for three censuses and shows how the population is beginning to outpace accommodation. This feature of "overcrowding" appears in all parts of the State, but Kathiawad figures show a roomier space per individual household and a less proportionate increase in their number per square mile than in the other divisions. Charotar is the most overcrowded part of the State. The size of the "household" is largest in South Gujarat particularly with the Raniparaj, whose dispersed huts round the parent roof tree are a feature of their domestic organisation.

Number of occupied houses		Population increase
Year	Proportionate figure	Proportionate figure
1911 ..	100	100
1921 ..	101.3	104.6
1931 ..	111.2	120.2

**52. Building Site Area and Population**—We shall now consider how far population changes are pressing on space, as apart from means of subsistence. For this purpose, the exact area of the space occupied by tenement sites within the State has to be ascertained. This is not difficult in Baroda, or for that matter in Gujarat generally, as the village sites are marked off fairly clearly from cultivated fields and even the hamlets have fixed areas. Only in the Rani area, where isolated huts within individual farms are numerous, the matter of obtaining the area of the space covered by the tenements was difficult. But against omissions in this respect may be set off the area included within village sites of roads and open spaces for pastures, cattle rests, dung heaps, brick kilns and the like. The collected data give us the total inhabited area. On this may be calculated the density of Normal Population as arrived at in para 12 above. We get thereby the following Table :—

SUBSIDIARY TABLE XVII  
DENSITY OF NORMAL POPULATION PER INHABITED AREA

NATURAL DIVISION	Area of inhabited sites		Normally Resident Population	Density	
	In bighas	In square miles		Per bigha	Per square mile
1	2	3	4	5	6
State .. .. .	112,388	103.2	2,404,847	21.4	23,302.8
Central Gujarat including City ..	41,808	38.4	807,649	19.3	21,032.5
North Gujarat .. .. .	41,149	37.8	1,002,275	24.3	26,515.2
South Gujarat .. .. .	20,555	18.9	391,446	19.0	20,658.2
Kathiawad .. .. .	8,876	8.1	203,477	22.9	24,814.3

The above table is very remarkable. Out of a total area of 8,164 square miles, only 103 or one-eightieth are inhabited, the remaining portion being open spaces and cultivated fields. Within this cramped space, the State houses its normal

\* What difference in figures the change in definition makes is apparent from the figures in the City, where both the definitions were worked out. (Vide Chapter II under the City Tenement Census.)

population. For the whole State, the density per square mile of inhabited area is 23,303. The City by itself is not so overcrowded, as the State. Within an area of 11 square miles, it finds room for nearly 11,000 persons per square mile. The rest of the population of Central Gujarat is accommodated within 27.4 square miles. North Gujarat is even more congested; while, strangest of all, the whole population of Kathiawad is accommodated within an area smaller than that of the Capital City.

**53. Break-up of Joint Family**—Apart from overcrowding, the question is often asked how far the census return of houses is an indication of the well-known modern tendency of the breaking up of joint families. In the 1921 Census Report of the State, two tests were laid down. In the first place, the variations in the total of married females aged 15 and over and of bachelors and widowers aged 25 and over were compared to variations in inhabited houses. Where the correspondence was close, there the joint family system would appear to have succumbed seriously to disruptive influences. It is the combination of both these factors that leads towards breaking up of the joint establishments. Young married women who have become mothers and begun to feel the leading strings of the mother-in-law irksome in the extreme feel inclined to set up separate houses. Similarly grown up bachelors or widowers of 25 and upwards do likewise, for it is about that age that a man irrespective of his civil condition begins to set about earning his livelihood

away from his parent home. The second test was to take the variations in the number of *khatedars* (registered holders of land) and correlate them similarly to inhabited houses. The figures of *khatedars* are interesting as affording a clue to another factor of disruption. As soon as a member of a joint family begins to earn independently as a farmer, his tendency is to separate from the parent home and set up an establishment of his own. The margin compares the variations in these two cases with the variations in inhabited houses. The second test does not operate so effectually as the first, in whose case the correspondence

Year	Proportion of		
	Married females (15 and over) and bachelors and widowers (25 and over)	Registered holders of land	Inhabited houses
1911 ..	100	100	100
1921 ..	101.4	108.6	101.3
1931 ..	114.0	116.1	111.2

is close; but in the latest census, the number of houses has not kept pace with the increase of married families and of bachelors and widowers. The phenomenal destruction of houses in 1927 must have had the effect of retarding the break-up of joint families. Economic stress and agricultural depression also combined in this direction.

## APPENDIX I

## A METHOD TO TEST THE ACCURACY OF BIRTH REGISTRATION

**1. Assumptions involved in the Method**—The following method is suggested for estimating the number of births in any given year from the corrected Census Return for the age period 0-1. The method assumes, in the first place, that there is a constant ratio between the census return at that age and the number of births in the 12 months preceding; and this relation enables us to compute to a high degree of accuracy the number of births in any one year and to estimate the births of the decade. So long as the registration of vital occurrences continues to be defective, some such method is necessary. The census return, however, in the age period 0-1 is very rarely accurate, because very often numbers of unweaned infants over 1 are included in the earlier age period. In this census we have adopted a procedure of smoothing, which, unlike the method of Bloxam's, does take into account the age period 0-1.

**2. Construction of the Vitality Table: Varying Risks of Mortality**—The next point is how to construct a table showing the number of deaths in each batch of 100 births per month from 1st March 1930 to the census date. With a view to do this, it is necessary for us to assume that infant mortality proceeds more or less on the basis of a law. It is a universal experience that it decreases in force as the infant grows and this decrease is perceptible from month to month and even from week to week. It is the first weeks and the first three months that constitute the most critical period in the infant's life. The more accurate vital experiences of European statisticians may serve as a guide. From the general experience of mortuary returns for 1881-90 of England and also from the death figures for three rural counties, five manufacturing counties and three selected towns (*vide* Newsholme's *Vital Statistics*, page 182) it has been observed that the proportion of mortality in the first three months after birth varies from 41 per cent to 49 per cent of the total infant deaths during the year. Notter and Firth (*vide* their *Practical Hygiene*) observe as their experience that out of a total of 121.1 infants dying within a year no less than 66.6 die in the first three months and a further 24.7 die within the next three months. The Life Table of General Census of England and Wales states that 73 per cent of infant deaths happen within 6 months after birth.

**3. Assumptions modified for the State**—Now taking these results, we may fairly assume for this state and India generally, 60 per cent to be the proportion of infant deaths occurring within the first quarter, 20 per cent in the second quarter, 12 per cent in the third quarter and 8 per cent in the last quarter of the year. These assumptions are necessary because at the census date the infant population would be existing at varying "risks," the largest amount of average risk being  $11\frac{1}{2}$  months for those born between March and April 1930 and the smallest average risk being  $\frac{1}{2}$  a month of those born in February-March 1931. Between these two batches of births, the mortality varies in intensity inversely to the lapse of months. Children born in March-April 1930 and living on the census date will have escaped the full intensity of infant mortality of the first six months and survived into the healthier portion of their first year life. Children born in the later months will be progressively subjected to a higher rate of mortality month by month than those born earlier. Therefore, starting with a normal rate of mortality, we have progressively to weight it according as the intensity grows stronger.

**4. What should be the Normal Mortality Rate for Infants?**—Now what should be the normal rate of mortality for infants calculated on the total amount of births (*i.e.*, of those living at age 0). Professor Vaidyanathan in his life table for Baroda for 1921 assumes a rate of 29.7 per cent for those living at age 0 in order to keep alive a stationary population. Mr. Ackland in his life table for 1911 for all-India assumed for the Bombay Presidency males similar mortality rate of 29.7 per cent on births. The actual recorded rate of mortality amongst infants in Baroda State is only 170 per mille. This rate is wholly false, because in Madras, for example, the recorded rate is no less than 203 per mille. In the City of Baroda itself, where the record of infant deaths is the most accurate and where facilities for maternity welfare are effective, the recorded rate of infant mortality (per 1,000 births) in 1921-31 was no less than 26.22. How far out of the truth the recorded rate of infant mortality for Baroda State is, can be also gathered from the fact that if we exclude the average annual number of infant deaths from the average annual number of births, we get an average annual number of surviving infants below 1 of 49,230; while the actual figure recorded in the census at the age period 0-1 is 87,439. Therefore, we can well start with the assumption of 30 per cent to be the normal rate of infant mortality.

5. **How is the Mortality Rate to be weighted Month by Month?**—The question now remains how the mortality rate is to be weighted month by month. The March-April born are subjected to  $11\frac{1}{2}$  months' risk on an average. Therefore, they yield  $\frac{30 \times 11.5}{12}$  or 28.75 deaths per 100 births. The June-July born will have  $8\frac{1}{2}$  months' risk and should have, according to our assumptions, 92 per cent of 28.75 or 26.00 deaths. Those born in September-October 1930 will be subjected to  $5\frac{1}{2}$  months' risk and should, therefore, yield according to our assumptions, 80 per cent of 28.75 or 23.00 deaths. Those born in December-January will have  $2\frac{1}{2}$  months' risk and should, therefore, suffer 60 per cent of 28.75 or 17.25 deaths. Of these 17.25 deaths the first month after birth should absorb the largest number, as it is in that period the infant is liable to the greatest risk.

6. **Interpolation for Intervening Months**—From these data we have now to work up the rates of intervening months; for this purpose we should take as our guide the Hamburg City Vitality experience for 1911 and 1912 (quoted in Whipple, *Vital Statistics*, page 342) perhaps the completest record of births and infant deaths. We find the specific mortality rate or infants for that city from that table to be 15 per cent for each of those years. As we have taken 30 per cent to be our rate, the Hamburg Record may well be taken as our basis. From that table, the monthly records of deaths among births may be averaged, so also the monthly record of births; and from the proportion between them our deaths may be distributed month by month and the monthly mortality rates deduced thereupon. Thus we get the following tables (corrected to three decimals):—

TABLE I

YEAR AND MONTH	Births	Died before Census Day	Survived on Census Day
March-April 1930 .. .. .	100	$\frac{30}{12} \times 11.5$ or 28.750	$100 - 28.750 = 71.250$
April-May 1930 .. .. .	100	$\frac{32.31}{12} \times 10.5$ or 28.268	$100 - 28.268 = 71.732$
May-June 1930 .. .. .	100	$\frac{34.63}{12} \times 9.5$ or 27.413	$100 - 27.413 = 72.587$
June-July 1930 .. .. .	100	$\frac{37.34}{12} \times 8.5$ or 26.450	$100 - 26.450 = 73.550$
July-August 1930 .. .. .	100	$\frac{40.79}{12} \times 7.5$ or 25.492	$100 - 25.492 = 74.508$
August-September 1930 .. .. .	100	$\frac{45.02}{12} \times 6.5$ or 24.388	$100 - 24.388 = 75.612$
September-October 1930 .. .. .	100	$\frac{50.18}{12} \times 5.5$ or 23.000	$100 - 23.000 = 77.000$
October-November 1930 .. .. .	100	$\frac{57.6}{12} \times 4.5$ or 21.600	$100 - 21.600 = 78.400$
November-December 1930 .. .. .	100	$\frac{67.28}{12} \times 3.5$ or 19.623	$100 - 19.623 = 80.377$
December 1930-January 1931 .. .. .	100	$\frac{82.8}{12} \times 2.5$ or 17.250	$100 - 17.250 = 82.750$
January-February 1931 .. .. .	100	$\frac{111.47}{12} \times 1.5$ or 13.934	$100 - 13.934 = 86.066$
February-March 1931 .. .. .	100	$\frac{218.71}{12} \times .5$ or 9.113	$100 - 9.113 = 90.887$
Sum ..	1,200	265.281	934.719

TABLE II

YEAR AND MONTH	Died from March 1, 1930 to February 28, 1931, before reaching the age of one year													
	Births	March-April	April-May	May-June	June-July	July-Aug.	Aug-Sept.	Sept-Oct.	Oct-Nov.	Nov-Dec.	Dec-Jan.	Jan-Feb.	Feb-March	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
March-April ..	100	9.113	4.821	3.316	2.373	1.977	1.400	1.388	1.104	.958	.963	.855	.482	28.750
April-May ..	100	..	9.113	4.821	3.316	2.373	1.977	1.400	1.388	1.104	.958	.963	.855	28.268
May-June ..	100	..	..	9.113	4.821	3.316	2.373	1.977	1.400	1.388	1.104	.958	.963	27.413
June-July ..	100	..	..	..	9.113	4.821	3.316	2.373	1.977	1.400	1.388	1.104	.958	26.450
July-Aug. ..	100	..	..	..	..	9.113	4.821	3.316	2.373	1.977	1.400	1.388	1.104	25.492
Aug.-Sept. ..	100	..	..	..	..	..	9.113	4.821	3.316	2.373	1.977	1.400	1.388	24.388
Sept.-Oct. ..	100	..	..	..	..	..	..	9.113	4.821	3.316	2.373	1.977	1.400	23.000
Oct.-Nov. ..	100	..	..	..	..	..	..	..	9.113	4.821	3.316	2.373	1.977	21.600
Nov.-Dec. ..	100	..	..	..	..	..	..	..	..	9.113	4.821	3.316	2.373	19.623
Dec.-Jan. ..	100	..	..	..	..	..	..	..	..	..	9.113	4.821	3.316	17.250
Jan.-Feb. ..	100	..	..	..	..	..	..	..	..	..	..	9.113	4.821	13.934
Feb.-March ..	100	..	..	..	..	..	..	..	..	..	..	..	9.113	9.113
Sum ..	1200	9.113	13.934	17.250	19.623	21.600	23.000	24.388	25.492	26.450	27.413	28.268	28.750	265.281

7. Final Results—Thus an enumeration of 934,719 infants on the census day accounts for 1,200,000 births that have taken place within twelve months before that date. Or in other words  $\frac{934,719}{1,200,000}$  or 77.893 per cent of the children born in the course of just one year preceding the census are enumerated on the census date, and this ratio worked out on the mid-decade population of 0-1 (calculated on the principle of geometric variation from the corrected data of two censuses) would give the average annual number of births or the total of the decade, on the assumption that of a thousand children born a twelve months before the census date, 28.75 per cent die before that date. This assumption has to be a little modified for this decade. A Life Table has been prepared for this State, in which after careful actuarial analysis, Prof. A. C. Mukherji has found out that the normal infant mortality rate should not be more than 25.76 per cent of 100 born. Thus the above factor of 77.893 has to be raised by  $\frac{28.75}{25.76}$  to be useful for our calculations for the past decade and the next one. This becomes 86.934 per cent so that for the purposes of this decade, and the succeeding one, the annual average of births should be  $\frac{100}{86.934}$  of the corrected return in age 0-1. The mean corrected number of persons living in that age period in the decade has been found to be 33,035 per million. For the mean population of the last decade within the registrable area, which is 2,259,016, the strength of the infant population is therefore 74,740. The annual average number of births is therefore  $\frac{74,740 \times 100}{86.934}$  or 85,973. The total births for the last decade ought to have been therefore 859,730\* instead of the registered total of 582,578. The margin of error therefore is 32.24 per cent. For the next decade 1931-41, taking the mean population at 2,556,392, the annual average of births should be  $2,556,392 \times \frac{3,308.5}{100,000} \times \frac{100}{86.934}$  or 97.675. In 1921, on a higher rate of infant mortality, the annual average of births for the decade 1911-21 was fixed (striking a mean of various estimates) at 898,060. This gave a margin of error of 36 per cent.

\* This is raised to 870,620 in para 35.

## APPENDIX II

## HOUSES AND HOUSE ROOM

1. **Classification of Homesteads according to Standards of House Room**—In the body of the chapter, we considered various aspects of density in so far as it affected means of subsistence or space. There is another way in which density in general and the problem of overcrowding in particular can be studied from the point of view of the standard of comfort, namely their relation to house room. The classification of homesteads according to house room was a special enquiry initiated in 1921 and it has been continued in this census also. Along with the house list, and between the columns for the census of livestock and those for the name of the head of the household and the number of the house, additional columns were provided for eliciting information regarding the amount of room space per unit of population. Homesteads can be classified, as pointed out in the Report of 1921, in a variety of ways: according to extent for instance as shown by the number of rooms and floors; according to quality of structure as shown by the materials with which it is built; and lastly according to accommodation, as shown by the number of individuals inhabiting per unit of space. As the "house" meant the family, the house room per unit individual was calculated on the actual number of adult persons residing, children under ten being excluded from the calculation. Where house room to the extent of two rooms per each such adult person was *actually in use*, that house would come into the first class or "Above comfort;" where only a third of a room was available for an adult individual, such house or tenement came to the third class or "Below comfort;" all other tenements went to the second class or "In comfort." A special exception was made in the case of bungalows with compounds: where it had at least four living rooms, it was put in the first class straightway whether it was inhabited or not: in all other cases only inhabited houses were to be classed. These instructions, although clear, were not always properly grasped. Mistakes were numerous, and the work had to be redone in many talukas and

NATURAL DIVISION	Proportion of 1st and 2nd Class to 1,000 houses classed			
	1931		1921	
	Urban	Total	Urban	Total
City .. .. .	777	..	799	..
Charotar .. .. .	616	641	365	269
Kahnām .. .. .	678	554	535	351
Vakāl .. .. .	731	300	441	150
Chorashi .. .. .	513	264	461	153
Rasti .. .. .	419	249	468	220
Semi-Rasti .. .. .	493	129	..	119
Rani .. .. .	350	66	402	65
East Kadi .. .. .	379	172	323	148
West Kadi .. .. .	357	161	388	130
Trans-Sabarmati .. .. .	328	151	220	94
Mid-Block .. .. .	156	15	65	96
Scattered areas .. .. .	112	65	257	53
Sea Coast .. .. .	503	274	158	75

towns. The marginal table compares the proportions of first and second class houses to 1,000 houses classed in the two censuses. The total number of houses classed was 583,342. The number of adults (aged 10 and over) is 1,748,963 (less *hijratis*). Thus there were three adults to each household. 29,323 households were "above comfort" with at least two rooms apiece. On an average of 3 rooms for this class of house, there were only 264,000 rooms for 88,000 adults in the first class. Thus only 5 per cent of adults resided in such homesteads. In the second class with an average of only a room and three twentieth part of a room per adult, there were nearly 418,000 rooms for 411,000 adults. In the third class, 1.25 million adults or over 71 per cent resided in 416,370 households. In 1921, there were 1,556,841 adults for 522,219 households or about 3 per household. Below comfort, there used to be 418,499 houses in 1921. The proportion of "below comfort," therefore, has declined from 810 per mille to 714 per mille in the decade. Charotar shows the most spacious

comfort relatively to other parts of the State. The urban areas generally have more roomy houses than in rural areas, but in Charotar, owing to overcrowding in Pij and Nar, the spatial accommodation is actually less in urban areas than in the whole taluka. In Baroda City, the room space index is shown by 777 per mille of its houses belonging to the first and second categories. In 1921, the corresponding figure was 799, showing that the havoc of the floods of 1927 is still in evidence.



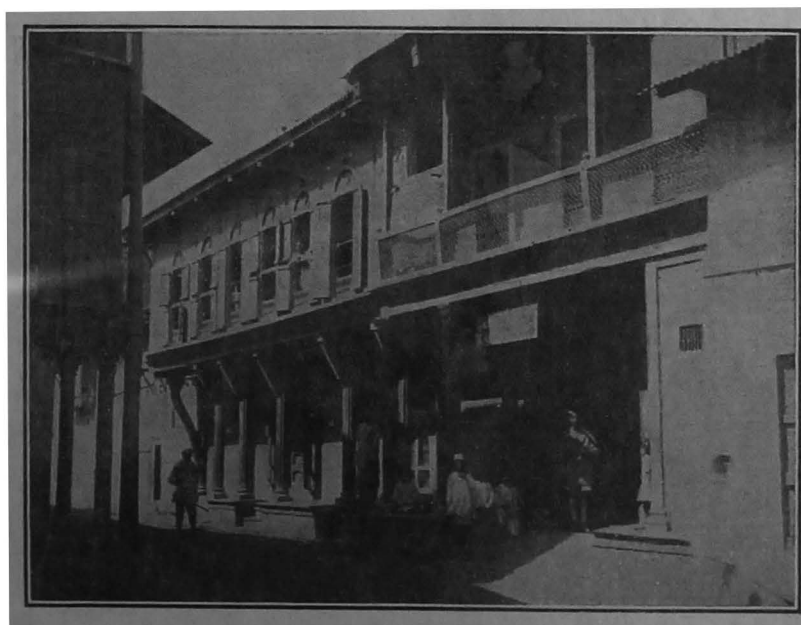
2. **Summary Table**—For further details, the reader is referred to State Table XII in four parts, of which a summary is detailed below:—

NATURAL DIVISION	CLASSIFICATION OF HOUSES			Total number of houses classed
	Above comfort	In comfort	Below comfort	
1	2	3	4	5
<b>Baroda State</b> .. .. .	<b>29,323</b>	<b>137,649</b>	<b>416,370</b>	<b>583,342</b>
<i>Baroda State excluding City</i> .. .. .	<i>22,127</i>	<i>120,012</i>	<i>409,227</i>	<i>551,366</i>
Rural Area .. .. .	10,696	81,933	346,754	439,383
Urban Area .. .. .	11,431	38,079	62,473	111,983
<i>Baroda City</i> .. .. .	<i>7,196</i>	<i>17,637</i>	<i>7,143</i>	<i>31,976</i>
<i>Central Gujarat excluding City</i> .. .. .	<i>12,598</i>	<i>66,038</i>	<i>93,995</i>	<i>172,631</i>
Rural Area .. .. .	7,111	50,883	81,491	139,485
Urban Area .. .. .	5,487	15,155	12,504	33,146
<i>North Gujarat</i> .. .. .	<i>5,970</i>	<i>36,253</i>	<i>211,056</i>	<i>253,279</i>
Rural Area .. .. .	2,043	20,506	177,527	200,076
Urban Area .. .. .	3,927	15,747	33,529	53,203
<i>South Gujarat</i> .. .. .	<i>2,736</i>	<i>11,452</i>	<i>67,078</i>	<i>81,266</i>
Rural Area .. .. .	1,284	6,873	58,396	66,553
Urban Area .. .. .	1,452	4,579	8,682	14,713
<i>Kathiawad</i> .. .. .	<i>823</i>	<i>6,269</i>	<i>37,098</i>	<i>44,190</i>
Rural Area .. .. .	258	3,671	29,340	33,269
Urban Area .. .. .	565	2,598	7,758	10,921

3. **Kind of Houses**—While on the question of houses, it will be of use to give here a general description of different types of houses in the State. For convenience' sake, the houses will be described according to the religion of the inhabitants. The following description of houses is summarised from the Gujarat Population Volume of the Bombay Gazetteer. Speaking generally, a house is an inevitable concomitant of a Hindu family. It is the goal of his ambition to have a house of his own. As the saying gives "A woman can get on without a husband, but no man can get on without a house."

4. **Dwellings of Hindus**—For purposes of description, the dwellings of Gujarat Hindus are broadly divided into urban and rural tenements. Town-houses of the better class with

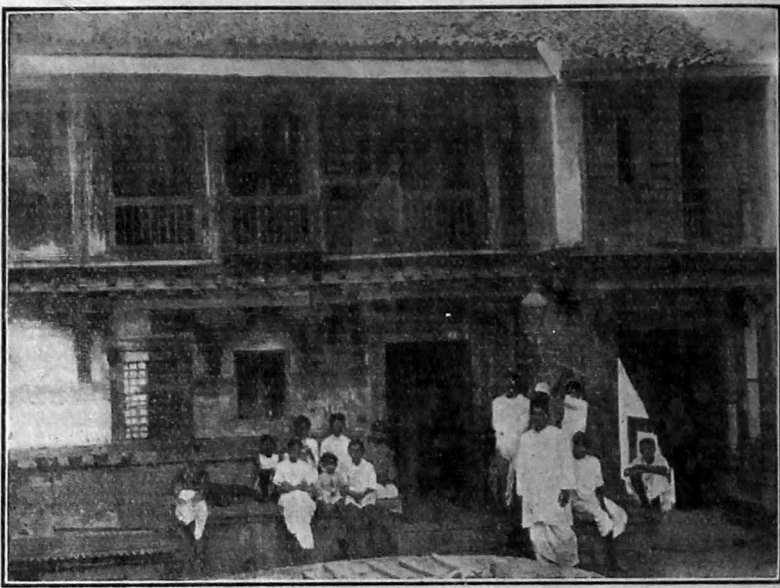
tilled roofs are generally built on a slightly raised plinth. This plinth is reached by two or three steps, usually built of stone and almost always set parallel to the line of the street. Along the outer edge of the plinth, is a row of wooden pillars set on stone pedestals with their capitals let into a heavy cross-beam that supports the upper storey. Behind the row of wooden pillars and under the projecting part of the upper storey is an open terrace from two to four feet wide. In the early morning the people of the house sit on this terrace, clean



House of a Petlad Nagar illustrating outside entrance of a Gujarati town House

their teeth or converse. During the rainy weather it is a welcome shelter to beggars and other stragglers. At the back of the terrace runs the front wall of the lower part of the house with an entrance in the middle furnished generally with a strong wooden-barred door.

**5. General Scheme of Town Houses**—The house consists of a front and a back part separated by a small open court on each side of which is a passage, and in the upper storey



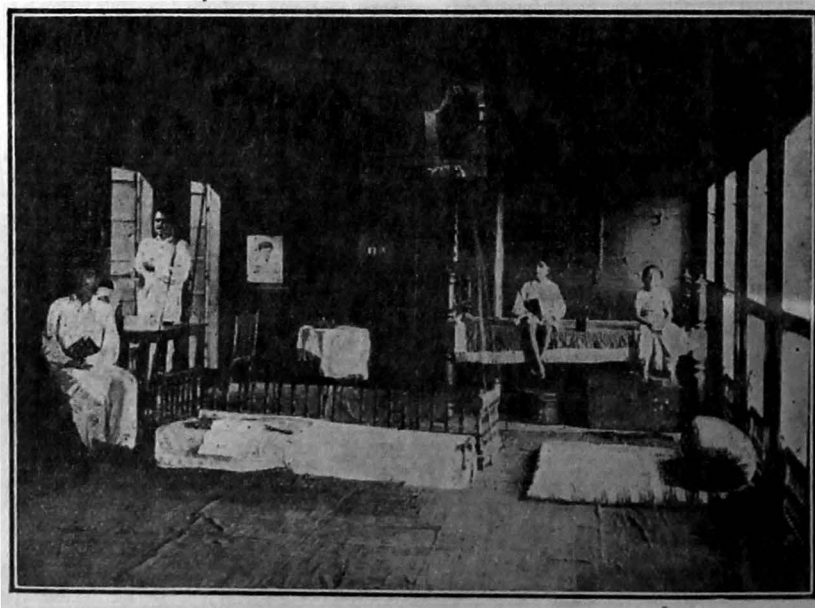
House of a Patan Vania

an open terrace connecting the front and back parts of the house. This plan of house is popular because when children have grown up and sons have families of their own they can share the same house and yet to some extent each family can live apart.

**6. Different Portions of the House**—The different portions of the house are named thus: entering from the street the first room is called the *parsal*. It is generally without furniture and is in some cases used as a store or lumber room. Occasionally it is used as a public room (*kacheri*), or as a workshop

if the owner of the house is an artizan. When not used as a public room the women sometimes sit in the *parsal*, and it is to this place that the dying member of the family is brought and laid out an hour or two before death. The *parsal* leads to a small court or *chok*. The floor of this court is paved with stone or lined with cement and is used as a bathing place. Except for a framework of iron bars thrown across overhead at the level of the upper floor this court is open to the sky. The passages on either side of the court are used as rooms. The space on one side is taken up partly by the cooking room (*rasodu*) and partly by the water-room (*paniaru*), where large brass pots filled with water always stand. A store of well-burnished brass vessels is generally arranged on shelves near the large water pots. On the other side the space is divided into two rooms, one set apart as the chamber of the household gods and the other containing a well or cistern from which water is drawn for bathing purposes. Besides the well every better class house contains a cistern in which rain water is collected and used for drinking purposes. Behind the court and opposite the entrance room there are generally one or two chambers (*orda*), which are usually dark and used as store for grain and firewood and even as bedrooms for the women of the house. In a strong box in this

room the family ornaments are sometimes placed. In a house built on the court or *chok* plan the distribution of rooms is not always the same. But so far they are alike that the builder must set apart on the ground floor places for cooking, dining, worshipping, bathing, grainstoring, and business-transacting. Most town houses are provided with a water-closet which is generally at one end of the verandah.

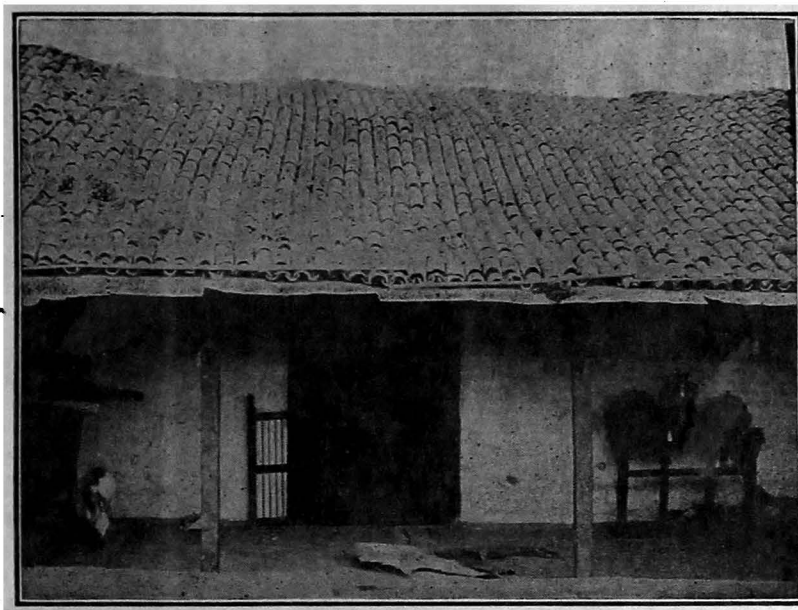


Inside of a Petlad Nagar's house showing typical furniture

**7. Arrangements on the Upper Floor**—To get to the upper floor there is generally in one

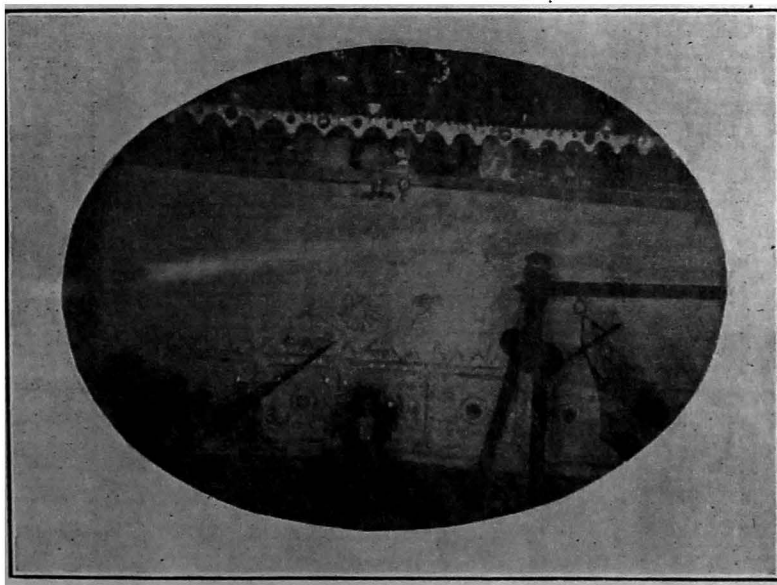
corner of the entrance room a wooden stair almost like a ladder, with a rope hung from the floor of the room above to help in going up and down. The front room in the upper storey above the *parsal* called the *medi* or parlour is the room for receiving guests (*divankhanu*). Except for a carpet and a row of cushions propped against the walls, some lamps hung from the ceiling, and perhaps a mirror or two, this room in the house of a man who keeps to old customs is almost bare of furniture. In some cases a swing-cot or bed will be found, for the head of the family generally sleeps in the *medi* at night. Among those who adopt new ways this room is furnished with tables, etc., in Western fashion. At the back of the public room and round the opening above the court is a terrace used in the fair season for drying grain and vegetables. The roofs of the house slope inwards towards the terrace, and in the rains the water that runs off the roofs on to the floor of the terrace is collected in a pipe and carried to the cistern in the ground floor. The back rooms opposite the upper sitting room called the *pachhali medi* are used as bedrooms by the sons of the family. The family clothing and sometimes the jewels are stored in these rooms in strong boxes called *petara*.

**8. Dwellings of Artisans and Poorer Classes**—The above description of house also applies to dwellings of artisans except that they are generally without an upper storey, and are a room or two less. The entrance room for such classes is also used as a workshop.



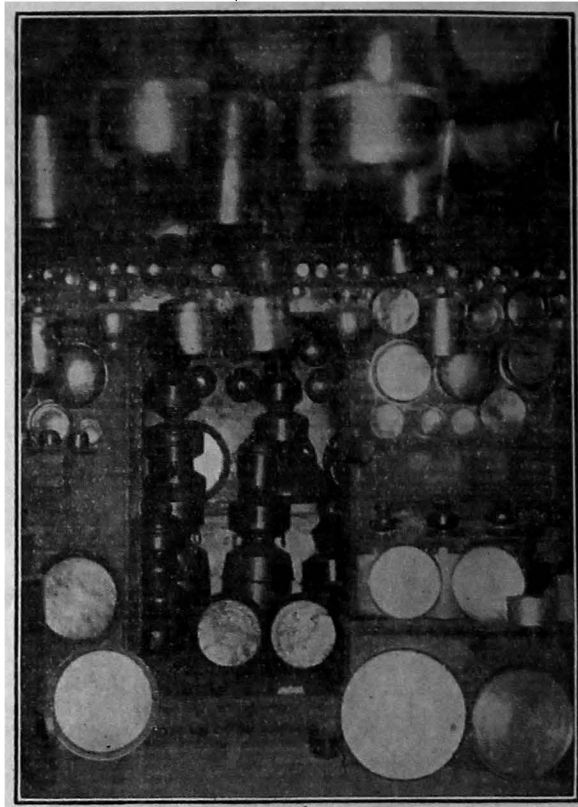
A Dhed's house in Amreli—Exterior

The dwellings of the poorest classes are little better than huts, the roofs being of tile or thatch and the walls of reed daubed with mud. The space enclosed is sometimes divided into two by a partition of millet stalks, but in many cases the house has but one room.



Interior of a Dhed's house in Amreli

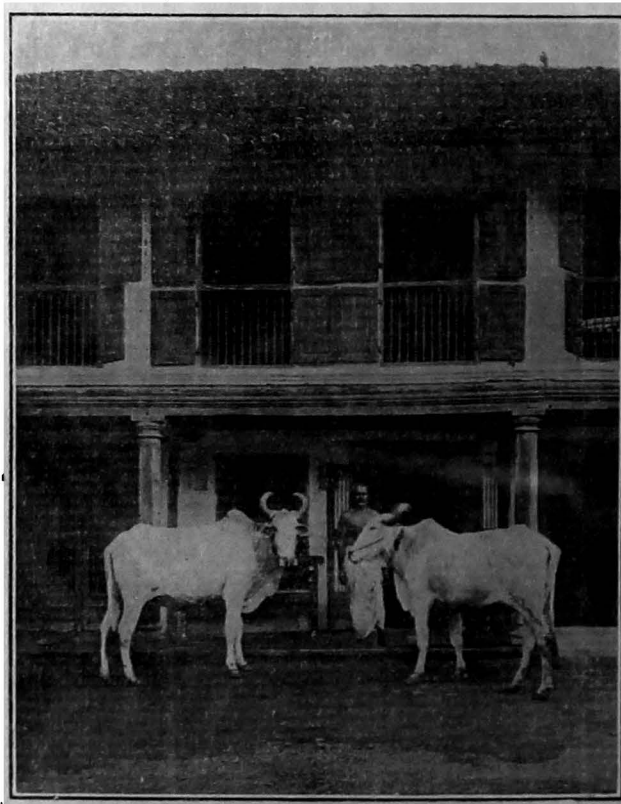
**9. Furniture of a Town House**—In urban areas, a trader's house generally contains cots or *palang* including a swing cot, cupboards, couches, boxes, carpets, quilts and mattresses. Except among younger men, some of whom have begun to furnish their rooms after European fashion, almost nothing is spent even by rich Hindus on wooden furniture. By way of house ornaments, the chief pride in a Hindu family is to be able to exhibit a store of well-polished



Interior showing furniture of a Patan Vania House

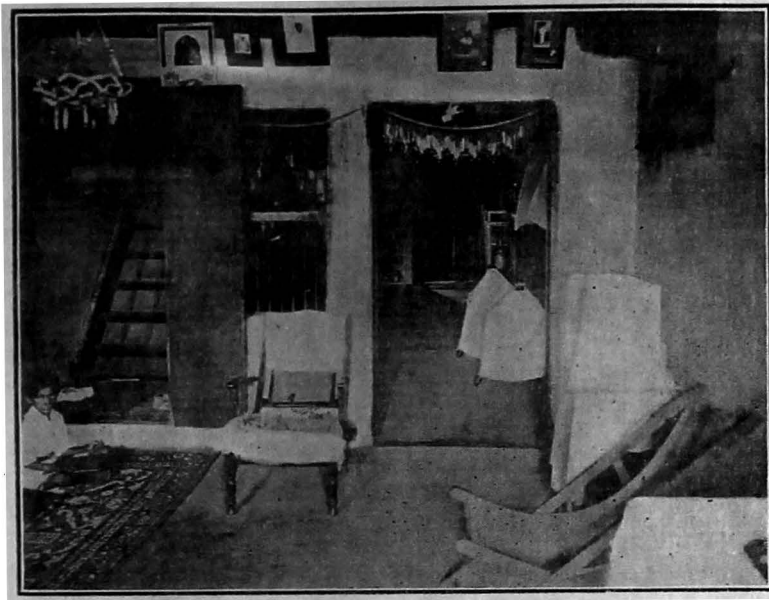
brass and copper vessels. The furniture of an artisan in middling circumstances consists of one or two quilts or *godadas*, a cot (*khatlo*), two or three beds, and cooking and drinking pots. A poor labourer possesses only a few earthen jars and one or two quilts (*godadas*).

**10. General Type of Rural Houses**—The houses in rural areas as a general rule, are most substantial and roomy than those of the townspeople. The walls of the houses are made of burnt bricks and mortar or mud and the wood work of solid timber. The roof is tiled and in



Outside of an Anavala house in Navsari

some cases there is an upper storey. Unlike the urban, the rural house has no plinth but is raised a little above the surface level. About the middle of the front wall of the house is the doorway, used both by the inmates and their cattle, though in case of houses of the better sort, there is usually near one end of the front wall a separate entrance leading



Interior of an Anavala's House, Navsari

direct to the stable. Passing through the central door, the first part of the house is the entrance room or *parsal* where the head of the family receives visitors and transacts business.

In the inner wall of the entrance room and opposite the opening of the street is a second door leading to the interior of the house, which consists of a central space (*orda*), walled off on one side and the other opening into a stable and cowhouse (*kohodiu*). Between the central room and the cowhouse, there is no partition. To keep the full-grown animals in their quarters, a bar of wood is drawn across the front of the stable about three feet from the ground and from the stable the wall that limits the central place on this side has three doors leading into separate rooms each about 10 feet square. Of these rooms that next the front of the house is used as a store room for clothes, ornaments and grain, and the middle room is generally the cooking room and that next the back of the house, the water room. In the central space (*orda*), the family take their meals, and in the rainy months some sleep there; others sleep in the *parsal* or upper storey if there is one. In the fair weather they generally sleep in the open air outside the street door. In the back wall of the house, is a door leading into the yard (*vado*) of considerable extent, sometimes as much as the fourth part of an acre. This back-yard is used for storing crops and grass and raising temporary sheds for cattle in winter and summer; during the rains, a few vegetables are also grown there. The houses of cultivators in middling circumstances are built on the same plan but on a smaller scale.

**11. Lower Class Rural Houses**—Houses of the lower classes and the dwellings of the so-called impure castes are generally situated on the outskirts of the village. They are small huts thatched with grass or palm leaves, the walls of earth or of split bamboo smeared with mud and enclosing a space about 12 feet square, divided in some cases into two rooms by a partition consisting of split stalks, the inner being used for cooking and the outer for sleeping, though in many cases the whole of the interior forms but one chamber.

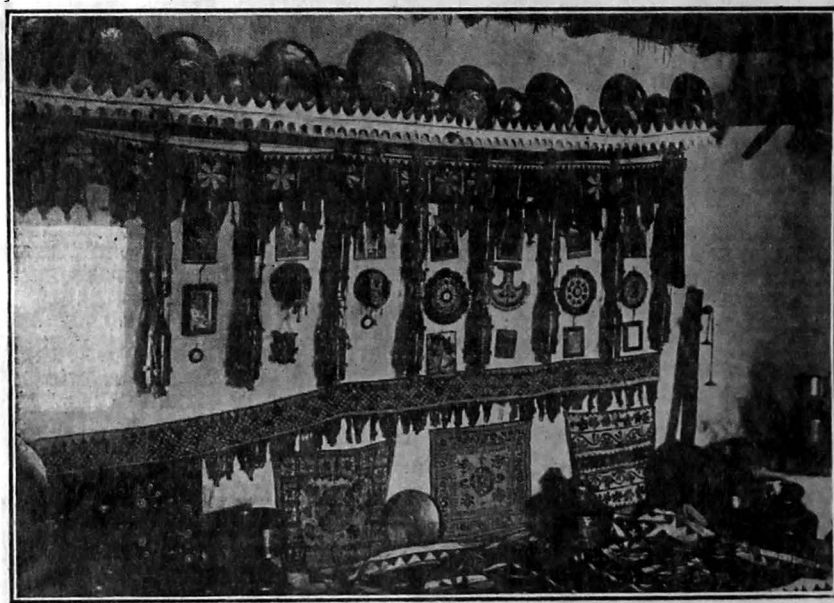
**12. Furniture in a Rural House**—The furniture of a well-to-do cultivator consists of one or two boxes (*petara*) for holding jewels or clothes, three or four wooden bedsteads, one or two swing cots, mattresses, cotton carpets, about 15 to 20 coverlets and brass cooking pots. The furniture of a cultivator in middling circumstances or of a village artisan consists of one or two bedsteads, an equal number of coverlets, a *petara*, and copper and brass vessels. The poor labourers have no furniture except a mattress and a few earthen jars.

13. Houses in Kathiawad—In Central, South and North Gujarat, the houses are



Exterior of a Vagher's House in Okhamandal

a village or town. The houses of the better class are solid and comfortable and are often ornamented with rich wood carving. The houses of the poorer classes do not however much differ from those of their kind in other parts of the State.



Interior of a Vagher's House, Okhamandal

wash. Passing up a flight of three or four stone or cement steps and entering by a massive door, is the square (*dalan*), with, in some houses, a well or a cistern for drinking water. Off this court, on one side, is a room for receiving chance visitors. On the other side, is a store room, and in houses where hired cooks are kept, the cookroom is close by. From one of the side rooms rises a staircase, which in houses of recent construction is generally made of wood and in old houses of lime brick and in some cases of masonry. The staircase is, except in the houses of very rich, often little better than a ladder. The upper storey is divided into four or five rooms. The room above the entrance door is the public room (*divankhanah*), another is the sitting room (*bairhak*), in some cases used also as a sleeping room. The remaining two rooms are set apart for the ladies of the house—one for sleeping, the other for sitting. If the house has three storeys, the two rooms on the second floor are both used as sitting rooms for the ladies and the sleeping room is in the top storey. Some rich houses are provided with bath rooms, but each has its water room (*abdurkhanah*).

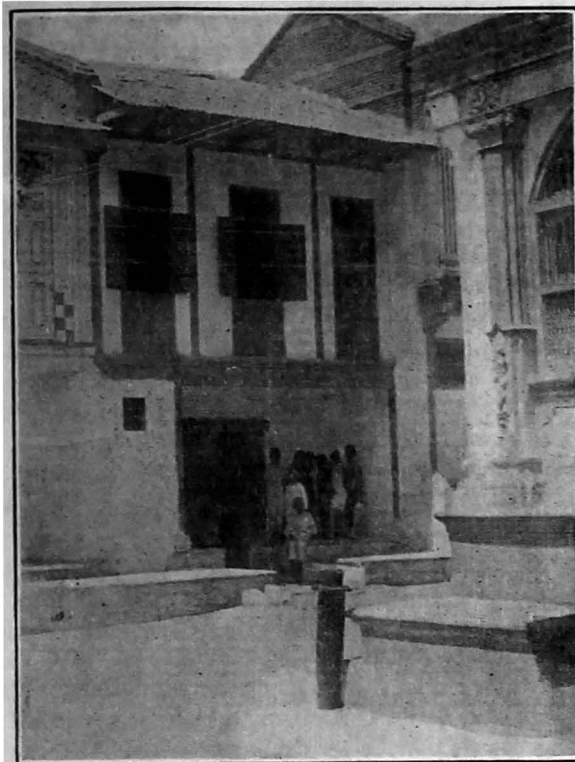
14. Muslim Houses—Richer Class—The house of a rich Musalman is generally two or three storeys high, the walls of brick and mortar and the roof of tile. Raising from a plinth three to six feet above the level of the ground, the outer walls are covered with a white, yellow, blue or rose

15. Muslim Houses in North Gujarat—In North Gujarat, the houses are much less large and roomy and are generally two storeys high. Through fear of being robbed, the old houses had fewer windows than the houses of South Gujarat. But in new houses this peculiarity has been given up. In front is a verandah about six feet wide. Within it is the entrance-room (*deodi*), about twelve feet square and ten high. From this a passage leads to an open cement-lined courtyard with a well and cistern, the mouths of both raised two or three feet above the

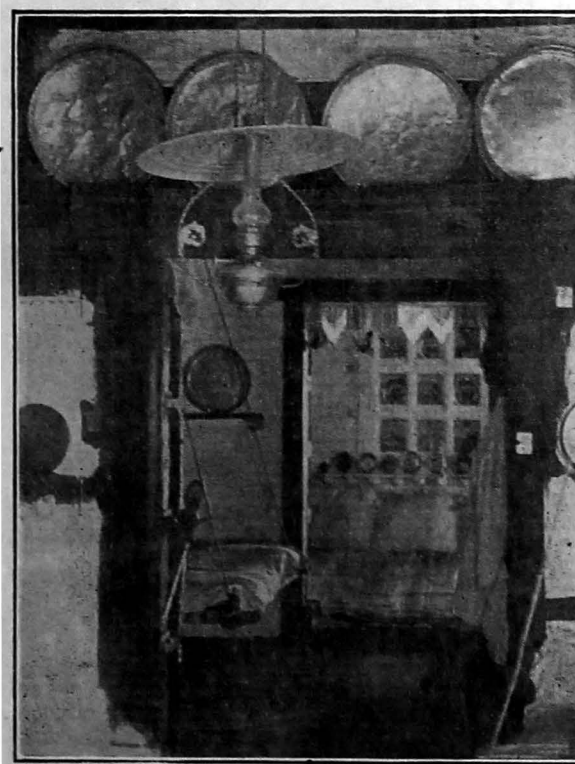
level of the ground. On one side of the court is the cook-room with an open space above the ceiling for storing fuel. On the other side is the water-place with its stone shelf and earthen water jars. Across the court, *i.e.*, opposite the entrance passage, with a small chamber on each side of it, is the public room used for sitting or dining, and if there is no bedroom near, for sleeping. From the lower to the upper storey are generally two stairs, one near the entrance door leading to the two front rooms, the other a back stair leading to the two rooms behind the court. Of the front rooms, the largest, is used as the public room; the other front rooms and the two back rooms are bedrooms.

#### 16. Furniture in a Rich Musalman's House

—Except that there is a larger supply and that articles of European manufacture are commoner, the furniture in South Gujarat does not differ from that in the North of the province. The men's public room (*mardanah*) has its walls coloured generally with a brown or chocolate wash, with arabesqued scrolls from the *kuraan* and doveshaped monograms or *maddis* picked out in black and white as a border and cornice. The flat surface of the wall is broken by niches and recesses. The chief of these, in the middle of the wall, is the *naukhanah* or nine chambers. This as well as the smaller niches are filled with ornaments, most of them china plates and bowls. The blank spaces on the walls are hung with pictures, chiefly landscapes though of late years the practice of hanging up family photographs has become common. The floor is covered with a country made carpet, and on the carpet opposite the middle of one of the walls is spread a Persian rug called *ghalichah*. On this again is laid a cushion or mattress and on the mattress near the wall a pillow. Ranged along the wall on either side of the pillows are sofas, chairs or easy-chairs. In the middle of the room is a table with clocks, musical boxes and other ornaments, and against one of the walls a glass doored cabinet with articles of European glass or chinaware and other nicknacks. From each corner of the ceilings hangs a glass lamp, from its middle a chandelier, and if space allows, a gaily cushioned cot (*jhula*), swinging on bars of polished brass. The walls of the women's room, especially of the room set apart for the mistress of the house, are of plain white. Sometimes there are niches or recesses and sometimes none. But always about six feet from the ground a shelf runs round the room furnished with china, glass and other ornaments. From the ceiling hangs a glass lamp and swinging-cot (*jhula*). The floor is carpeted and on the carpet against the middle of one of the walls are set a mattress and cushion. A cot with legs of green and gold, one or two stool-like seats (*pidi*), and if there is a child a cradle (*palna*), of red and yellow or blue lacquer-work, and in a corner of the room a brass lamp (*filsoz*) complete the furniture. Except when their walls are filled with copper pots and plates ranged on shelves most of the other rooms have little but a carpet or mat on the floor and against the wall on one side a cushion or mattress.



Exterior of a Vohra's House, Sidhpur



Interior of a Vohra's House

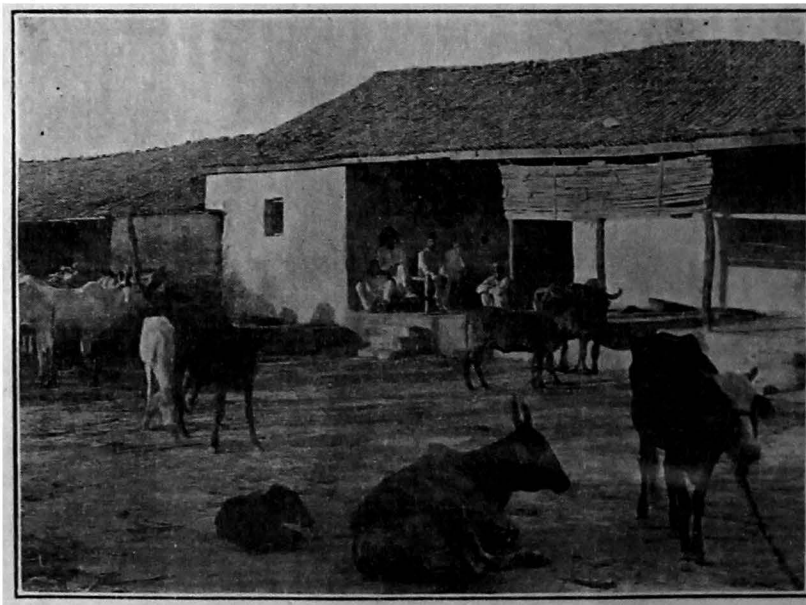
A cot with legs of green and gold, one or two stool-like seats (*pidi*), and if there is a child a cradle (*palna*), of red and yellow or blue lacquer-work, and in a corner of the room a brass lamp (*filsoz*) complete the furniture. Except when their walls are filled with copper pots and plates ranged on shelves most of the other rooms have little but a carpet or mat on the floor and against the wall on one side a cushion or mattress.

**17. Middle Class Muslim Houses**—As is the case with the dwellings of the rich, the houses of middle class Musalmans in South Gujarat differ from those in the North. In North Gujarat the houses are generally one-storeyed and walls of bricks and mortar and the roof of tiles. Entering from the street through a door in the centre of a wall about seven feet high is an enclosed yard from twenty to forty feet square with a well or cistern and in one corner a shed for cooking. The side walls slope upwards towards the back of the enclosure where from a wall from thirty to forty feet high a roof slopes forwards over the yard, the space covered by the roof is generally divided into three or five rooms with a centre hall (*divankhanah*), having on either side one or two rooms serving as bed, sitting, and store rooms.

**18. Middle Class Houses in South Gujarat**—In South Gujarat the houses of middle class Musalmans are larger and better built. They are seldom more than two storeys high. The walls for about 10 feet are of brick and above that of wood. The roof is tiled. Each floor has generally four rooms. But unless the family is very large the ground floor rooms are seldom used. The stair is generally steep, little easier to mount than a ladder. The first room in the upper storey is the men's room (*mardanah*). Besides the men's room there are three others, a kitchen and storeroom, a ladies' room, and a sitting room. The floors are of wood or cowdunged earth, and the ceiling of cloth or wood. Each room has as at least two windows covered with green or red blinds of coloured bamboo. The more used rooms have the floor covered with mats and carpets, the less used with mats only.

**19. Furniture in Middle Class Musalman Houses**—In the houses of the middle class Muhammadans of Charotar and North Gujarat there is sometimes an inconvenient lack of furniture. In the open hall there is nothing but a swinging cot or two, a cushion and a pillow, a bedstead, and a Persian rug (*ghalichah*). In South Gujarat besides several chairs, a table and a cupboard, the shelves are ornamented with small bright trays and other glass or china ware. The water shelf too is bright with a well polished pile of brass and copper pots, and in different parts of the house are handsome brass bound boxes. The floor of the women's room is matted. Besides a swinging cot it contains a bedstead with a carpet laid down before it, coat, and a brass lamp (*filsoz*). In the kitchen cooking vessels and pots are arranged and on the floor is a small handmill worked by the kitchen maid.

**20. Poor Musalman Houses**—The houses of the poor Musalmans in North Gujarat are made of common clay and brick. The framework of the roof is of bamboo. If there happens to be an upper storey there are two rooms; if not there is only one with, up the middle, a wattle

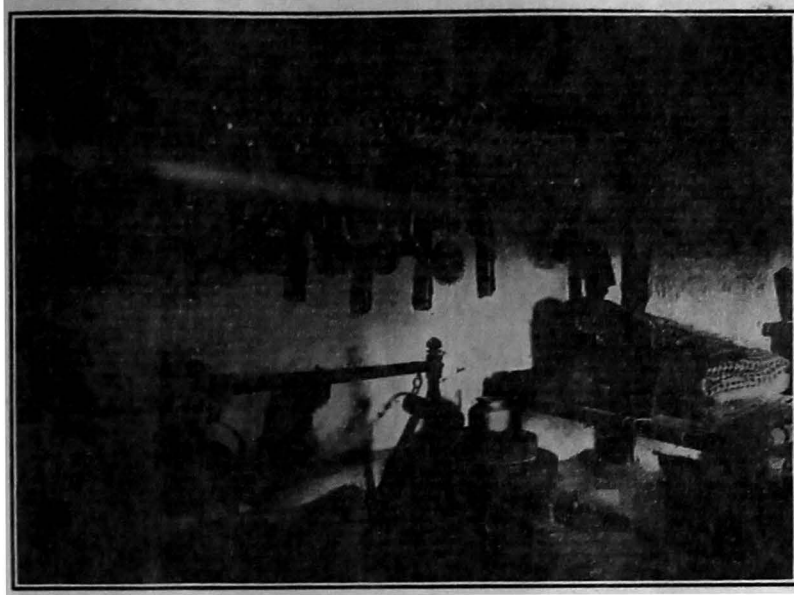


Exterior of a Memon's House

and daub partition. One of the corners of the house is chosen for the fire-place where cooking pots, most of them earthen, are kept. The rest of the rooms serve for dining, sitting and sleeping. In South Gujarat, the houses of the poor are made of wood or wattle and daub and do not differ



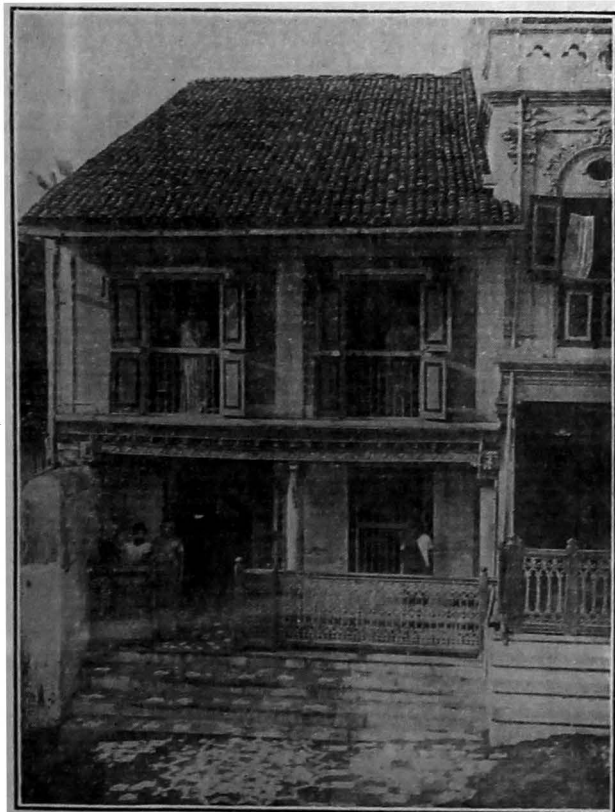
from those of the North, except that they have in South Gujarat a loft (*machhda*) about three feet below the roof where they store fuel and lumber. At the back is a yard or *vada* with a



Interior of a Memon's House

well in some cases. The only furniture in houses of this class is a cot, a grindstone, a coverlet or two and a few copper or earthen pots. To own a house is a great object among poor Musalmans.

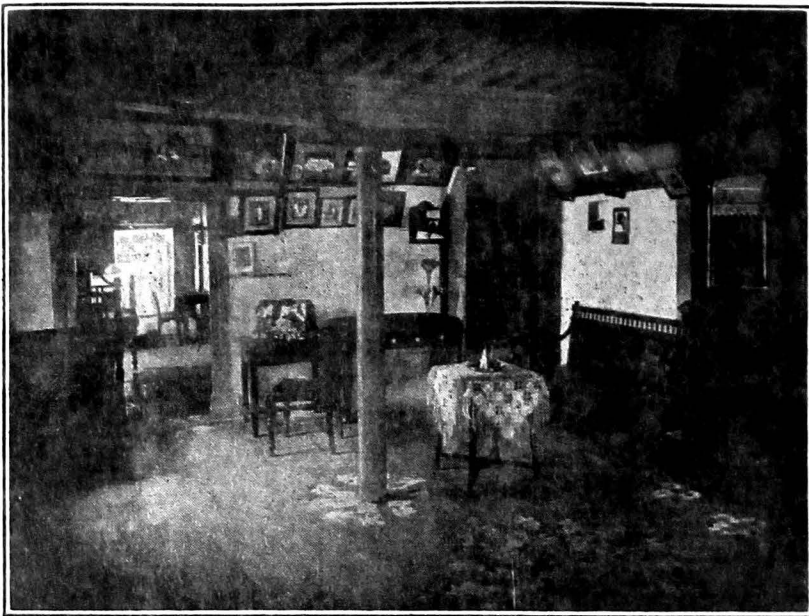
**21. Exterior of a Parsi House**—Houses of town Parsis are generally large and well built, one or two storeys high, with walls of brick and mortar and tiled roofs. In villages, however, though the roofs are always tiled, the walls are made of mud. All have a front verandah



Exterior of a Parsi's House

and inside of verandah, a large hall filling the whole breadth of the house. All have a separate cooking room and a lying-in room. The houses of the poorer Parsis have only one or two rooms at the most. In houses of the well-to-do, the number of rooms varies from six to ten according to space, means and requirements.

**22. Furniture in a Parsi House**—The furniture in a rich Parsi house includes sofas, chairs, tables, clocks, mirrors, pictures, carpets and cushions and in bedrooms, they have bedsteads, boxes and wardrobes. In a middle class house, the furniture consists of a few boxes,



Interior of a Parsi's House

cupboards, chairs and two or three wooden stools. A rich man's house has silver water vessels, copper and brass cooking vessels, cups, dishes, trays and silver and brass goblets. These vary according to means in houses of middle class Parsis.

## CHAPTER II

### URBAN AND RURAL POPULATION

#### § 1. GENERAL RESULTS

**54. Introductory**—In this chapter will be dealt with figures of distribution of population according to the kind (or rather size) of the census unit which they inhabit. These units are broadly either urban or rural. We must begin therefore with definitions. No satisfactory definition of a village or town has been devised, under which anything like a uniformity of interpretation can be achieved from census to census. Again where agreement has been found in the meaning of certain points, the exercise of discretion involved in the definition has led to changes in class from town to village and *vice versa*, which have vitiated the figures and in some cases rendered comparison well nigh impossible. Of course a complete definition of a town would require, as was pointed out in 1921,\*

“the exposition of the racial elements and industrial characteristics of the different places, the distribution and density of their inhabitants, their occupational differences, the standard of comfort as shown in their house room, their appreciation of sanitary needs and urban amenities, such as roads, lighting, gardens, municipal conveniences, etc., and finally even a reference to the policy of the State in regard to the encouragement of industries and the growth of industrial or agricultural settlements. A scientific definition of “Town” as distinct from “Country” or “Village” is a task attended with great difficulties. The passage from “Country” to “Town” may be described in general terms as the change from a condition of status to that of contract.”

Again a “country” place leads a more individualistic life, while a town has more of a communal organisation. But as individualistic tendencies belong pre-eminently to agricultural communities, “rural” has come to be associated more with a predominantly agricultural population, while “urban” is predominantly otherwise. That is the first distinction of townhood. Secondly the possession of self-governing local institutions such as municipalities distinguishes a town from a rural area. Thirdly the distinctly higher standard in living and comfort as apparent from the availability of house room per each individual person marks off a town from other places.

**55. Standard Definition of a Town**—The standard definition of a town laid down since 1901 shows that (1) it must include all municipalities, (2) all civil lines not included within the municipal limits, (3) all cantonments and (4) all other *continuous* collections of houses inhabited by at least 5,000 persons, which the local census authority may decide to treat as town. This last item of the definition is the cause of so much difference in interpretation since 1901. But apart from this, there has been more than once a departure from the standard definition which has caused more trouble than any other matter. In 1901, five places—below the 5,000 limit and without municipal institutions were treated as towns because they were important trade centres. In 1911, certain places were treated as towns, although they were quite small sized, because they were headquarters of mahals. But here consistency was not kept up. Atarsumba and Tilakwada were treated as towns in 1901 and 1911, as taluka headquarters, although Palsana, which was bigger, and also a taluka town, was ignored. In 1921 and 1931, the standard definition has been strictly enforced. Unava which had passed the 5,000 limit and was a continuous collection of houses, though not a municipality, was treated as a town and has been continued as such in this census. Mahuva and Dhinoj have become municipalities in the last decade and have therefore to be included in the list of towns. Only in regard to Pij, which was a

\* Baroda Census Report of 1921, page 65.

KIND	No.	Population
City .. .. .	1	109,639
Cantonment .. .. .	1	3,221
Municipalities .. .. .	43	382,600
Non-municipal Urban Areas .. .. .	5	27,543

municipality in 1921, and has ceased to be one now, it was decided in this census to continue it as a town, although it was below the 5,000 limit. The reason why this was done was that Pij was classed as a town in all censuses but one since 1881. It dropped out of towns in 1911, because it went below the 5,000 limit. Three other places which were municipalities before,

but are no longer so, have been included as towns as they had each more than 5,000 inhabitants. Thus we get the 50 towns in the State distributed according to the four parts of the standard definition. The capital is the only city. The standard definition of a city for all-India purposes requires a minimum population of 100,000 persons. But in this State, the capital has been always regarded as a city for census purposes.

**56. Standard Definition of a Village**—The reader might imagine that having defined a town, there was no need to define a village. By a process of elimination all other places could be treated as villages. But the point was where to set the limit of a village. Should we take each separate collection of houses—each unit of residential area—as a village or should the census boundary of a village coincide with the limits of a revenue village? Before 1921, the census list of villages was not identical with the revenue *moje* (*mauja*), although the Census Code since 1911 treated all hamlets within the area of a revenue village as parts of that village. In 1901, the definition of a village was different: all hamlets more than a mile away from the parent village were treated as distinct villages. But in 1911 although the revenue village was taken formally as the unit, no less than 179 hamlets which should have been included as parts of their parent villages were counted as independent villages. Thus if the definition had been strictly adhered to in 1911, there should have been only 2,875 villages shown, instead of 3,054. In 1921 and 1931, the definition has been strictly adhered to: only revenue villages have been taken as the unit, as the boundaries are distinct and well defined and the people themselves recognise the territorial limits of a revenue village as real and significant. As the Imperial Census Code points out, there are two difficulties about taking a residential area as the census unit, first because

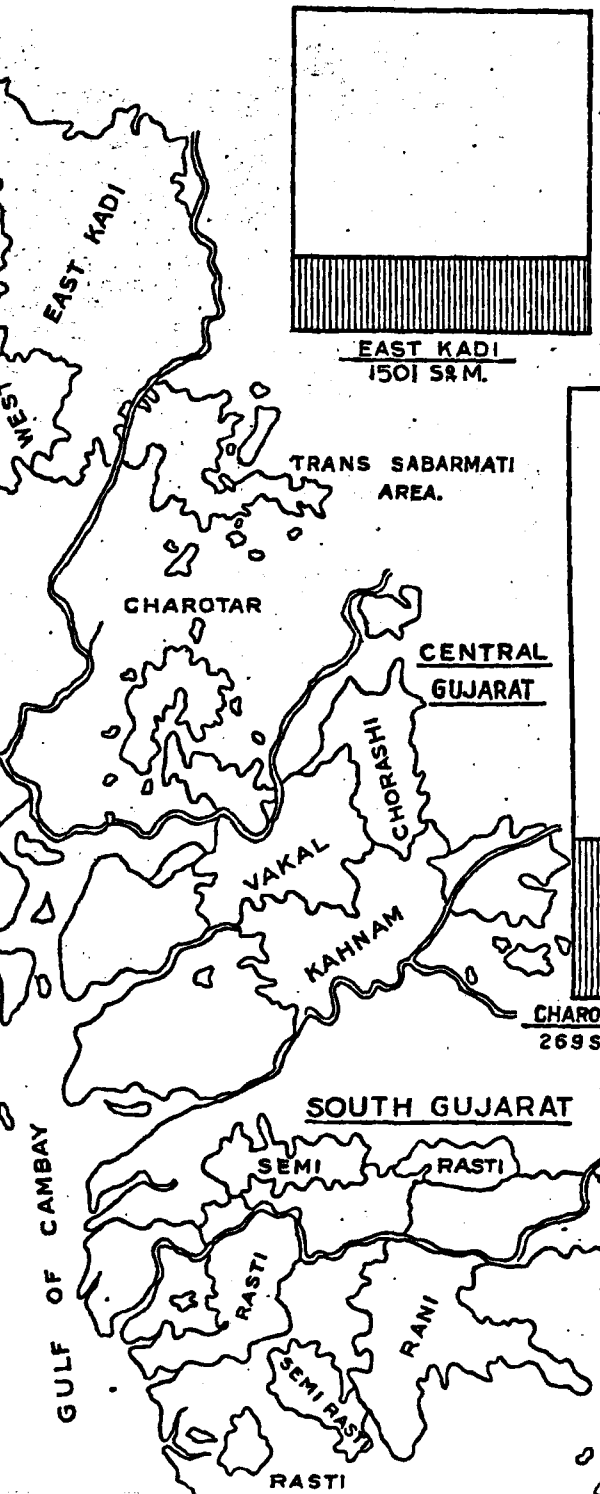
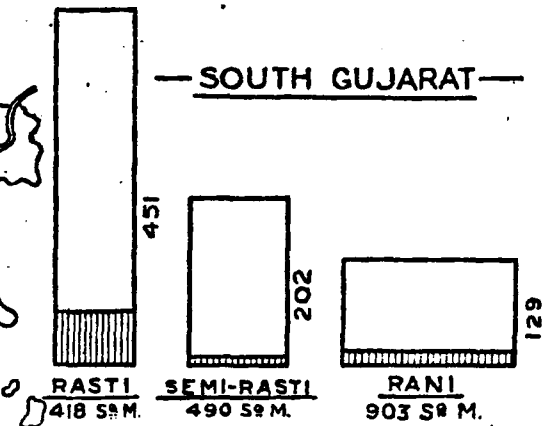
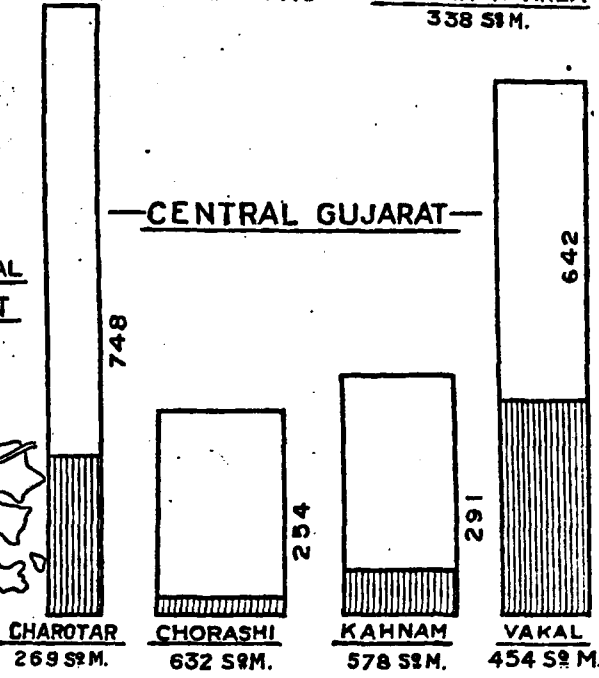
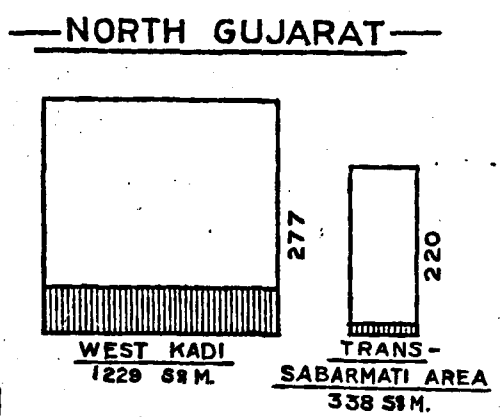
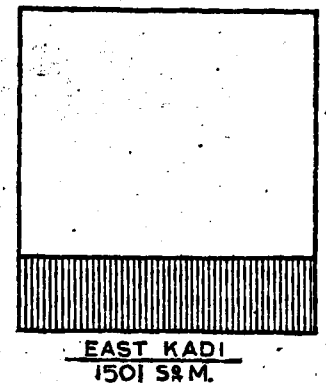
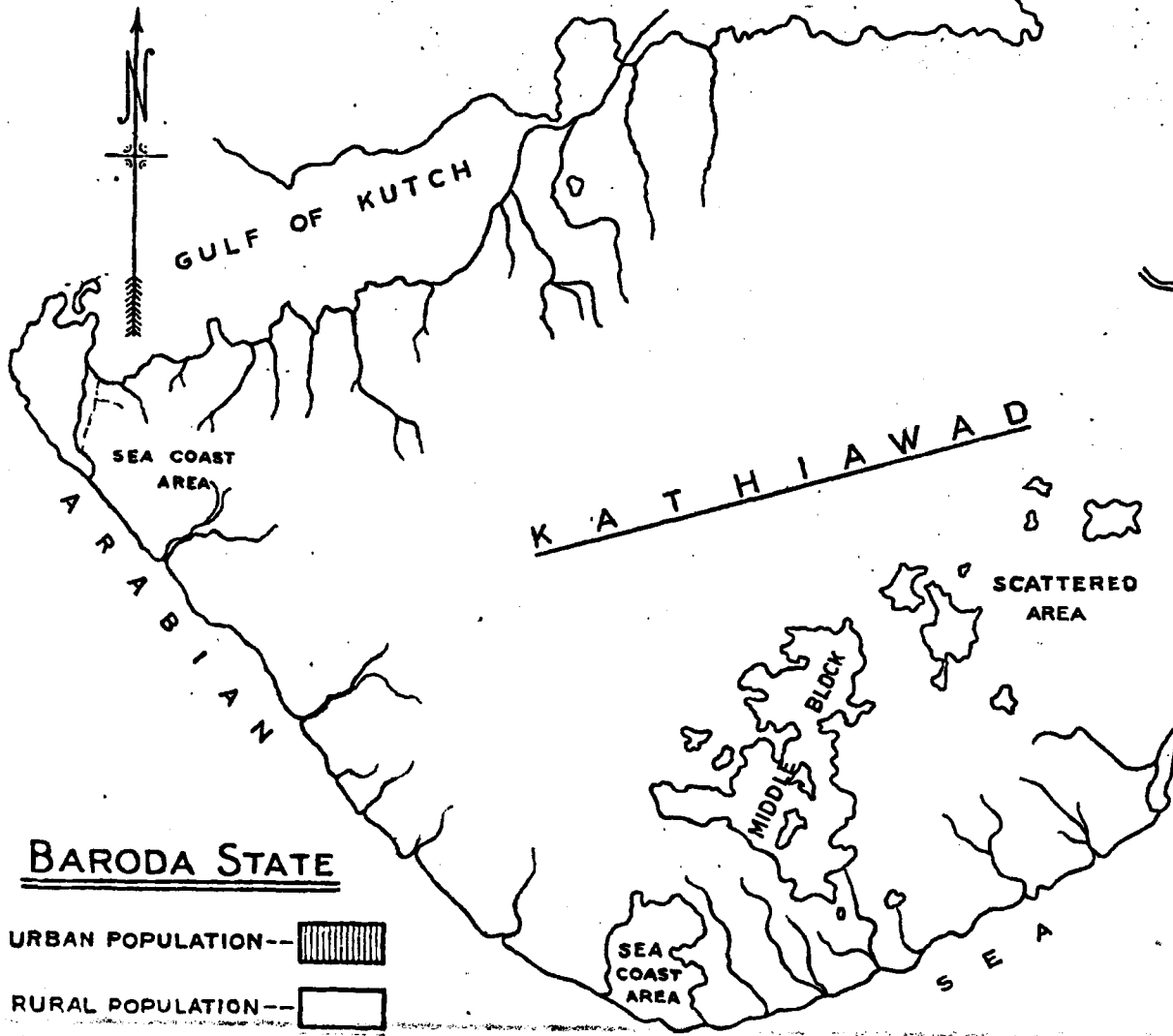
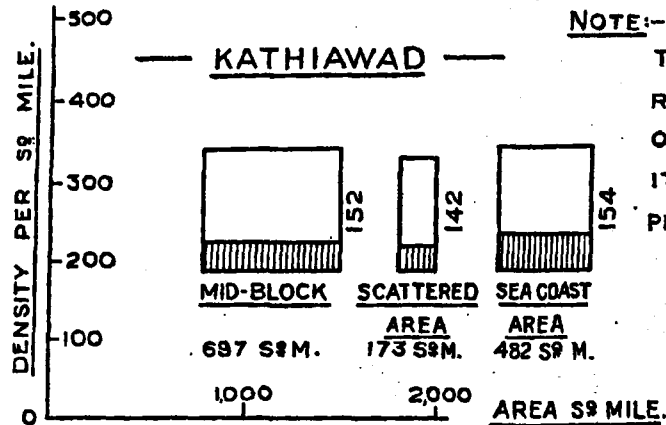
“ it is often difficult in practice to say what is a hamlet and what is a village and secondly in the case of a small outlying group of houses, there is always the danger that the enumerators of the villages on the opposite sides of it (especially when they belong to different circles) may omit to deal with it, each thinking it to be his neighbour's business.”

The hamlets have therefore been included within the parent village; their population is however shown separately in the Village Tables (*dehzada*) under the total of the village. Making adjustments according to the strict definition of a village, the variation in the number of villages in the last three censuses is set out in the marginal table.

YEAR	No. of villages
1911 .. .	2,875
1921 .. .	2,902
1931 .. .	2,920

**57. Reference to Statistics**—The figures relating to towns are shown in Imperial Tables IV and V. In Table IV towns are classified by population with variations since 1881. In Table V, they are shown territorially with their population distributed by religion. Imperial Table III shows all towns and villages classed by population. The Age-Constitution, Sex and Civil Condition of selected towns are given in State Table V. Special literacy figures of all towns are collected in Part E of State Table VI. The results of the tenement census in the City are detailed in five parts of State Table X—which are summarised in five subsidiary tables at the end of this chapter.

**58. Distribution of Population between Towns and Villages**—There are altogether 2,970 inhabited places in the Raj not including hamlets and other residential areas, which were counted as part of revenue villages. These are divided into one city, 49 towns and 2,920 villages as against one city, 47 towns and 2,902



villages shown in 1921. Out of a total population of 2,443,007, 21 per cent or 523,003 reside in the city and 49 towns, and the remainder 79 per cent reside in villages. The average size of a town is 10,460 as against 9,184 in 1921 and that of a village is 658 as against 581, ten years ago. The average size of a town varies from 31,136 in Vakal to 1,729 in Semi-Rasti. But if the city is excluded from Vakal, the largest sized towns are met with in West Kadi and Middle Block. The most urbanised area in the State is, of course, Vakal (in Central Gujarat) which includes the City: 43 per cent of its population is town-dwelling. Next to Vakal is Charotar, where there are 8 towns and the proportion is as high as 33 per cent. The least urban area is the Trans-Sabarmati where only 9 per cent of the population is found in the two towns contained in it. The accompanying map illustrates by suitable rectangles the extent of urbanisation in the different natural areas. For details the reader is referred to the following Table :—

SUBSIDIARY TABLE I

## DISTRIBUTION OF POPULATION BETWEEN TOWNS AND VILLAGES

NATURAL DIVISION.	Average Population per		Number per mille residing in		Number per mille of Urban population residing in towns with a population of				Number per mille of rural population residing in villages with a population of			
	Towns	Villages	Towns	Villages	20,000 and over	10,000 to 20,000	5,000 to 10,000	Under 5,000	5,000 and over	2,000 to 5,000	500 to 2,000	Under 500
1	2	3	4	5	6	7	8	9	10	11	12	13
Baroda State .. .. .	10,460	658	214	786	391	240	273	96	5	206	589	209
Central Gujarat including City .. .. .	12,489	713	288	712	462	246	182	110	9	222	578	191
Charotar .. .. .	8,352	1,400	332	668	..	447	486	67	38	413	510	39
Chorashi .. .. .	4,348	489	108	892	..	..	293	707	..	115	543	342
Kanam .. .. .	9,514	606	167	833	..	636	196	168	..	82	675	243
Vakal .. .. .	31,136	839	427	578	880	83	..	37	..	280	582	138
Kathiawad .. .. .	8,063	549	237	763	417	..	421	162	..	81	637	282
Mld block .. .. .	12,761	553	242	758	791	..	200	..	..	98	646	256
Scattered Area .. .. .	3,979	604	162	838	..	..	..	1,000	..	..	758	242
Sea Coast Area .. .. .	6,292	528	255	745	..	..	796	204	..	86	580	834
North Gujarat .. .. .	11,047	804	175	825	284	381	295	40	..	268	584	148
East Kadi .. .. .	11,172	1,007	188	812	183	482	335	..	84	376	529	95
West Kadi .. .. .	14,247	693	168	832	523	236	157	..	..	129	668	203
Trans-Sabarmati Area .. .. .	4,018	517	94	906	..	..	729	271	..	88	641	271
South Gujarat .. .. .	6,732	443	150	850	403	..	444	163	15	83	548	354
Rasti .. .. .	8,405	661	287	733	484	..	410	106	..	130	631	289
Semi-Rasti .. .. .	1,729	489	17	983	..	..	..	1,000	54	68	558	310
Rani .. .. .	4,215	295	72	928	..	..	734	266	..	38	422	540

59. **Towns by Size**—The above Table indicates that with the exception of the City, Baroda towns are not large-sized. 39 per cent of the urban population reside in towns containing 20,000 persons and over ; 24 per cent in towns of medium size (10,000—20,000) and the remainder (37 per cent) in small towns below 10,000. There are only four towns with a population of 20,000 and over—Patan (29,830), Navsari (24,397), Sidhpur (20,468) and Amreli (20,186). Of the nine towns in Class IV, two belong to Charotar, five belong to East Kadi, one to Vakal and one to Kanam. The bulk of Class V towns belong to Charotar (5 towns), East Kadi (5) and Rasti (3). Vakal does not contribute any to this class showing that if the City figures,

TOWNS BY SIZE	Number	Population	Proportion
Class I. 100,000 and over ..	1	109,639	21
Class II. 50,000—100,000 ..	..	..	..
Class III. 20,000—50,000 ..	4	94,881	18
Class IV. 10,000—20,000 ..	9	125,723	24
Class V. 5,000—10,000 ..	21	142,583	27
Class VI. Under 5,000 ..	15	50,177	10
<b>Total ..</b>	<b>50</b>	<b>523,003</b>	<b>100</b>

are omitted, Vakal becomes one of the least urbanised areas with only 6.5 per cent living in towns. The last class has towns from all the areas, excluding East Kadi and Middle Block. Another map is attached here to show the position of towns whose size is indicated by distinctive marks against each.

**60. Villages by Size**—Imperial Table III gives the number and population of villages and towns classified according to size. Subsidiary Table I above gives the main proportional figures. The element of floating population (persons enumerated in boats, railway trains, platforms, etc.) is so small in this State that the figures have been included in the total of the village or town in whose charge the enumeration took place. As the census is of the *de facto* population there is no reason why this floating population should be excluded from the population

Classed as at 1931		
CLASS OF VILLAGE	Number	Population
I Largest Size (5,000 and over) ..	2	10,410
II Large Size (2,000-5,000) ..	144	395,536
III Average Size (500-2,000) ..	1,194	1,113,480
IV Small Size (Under 500) ..	1,580	400,578

of the respective towns and villages to which they have been assigned.\* In the margin the number of villages is distributed by size into four classes, the largest size (5,000 and over) containing only two villages and the smallest size containing the largest number of villages. But the bulk of the rural population (*i.e.*, 58 per cent) lives in the villages of average size. The

large villages absorb 21 per cent of it, but they are concentrated mainly in Charotar, East Kadi and Vakal. The small villages, although forming the largest number, have only 21 per cent of the rural population. This type of village is least in evidence in Charotar and East Kadi, while it absorbs more than half of the rural strength of Rani. The two villages of the largest size—Naldhara in Semi-Rasti with 5,149 and Kasar in Charotar with 5,261, owe their place in this class to the *hijratīs* who formed over 12 per cent of the enumerated population of these two villages.

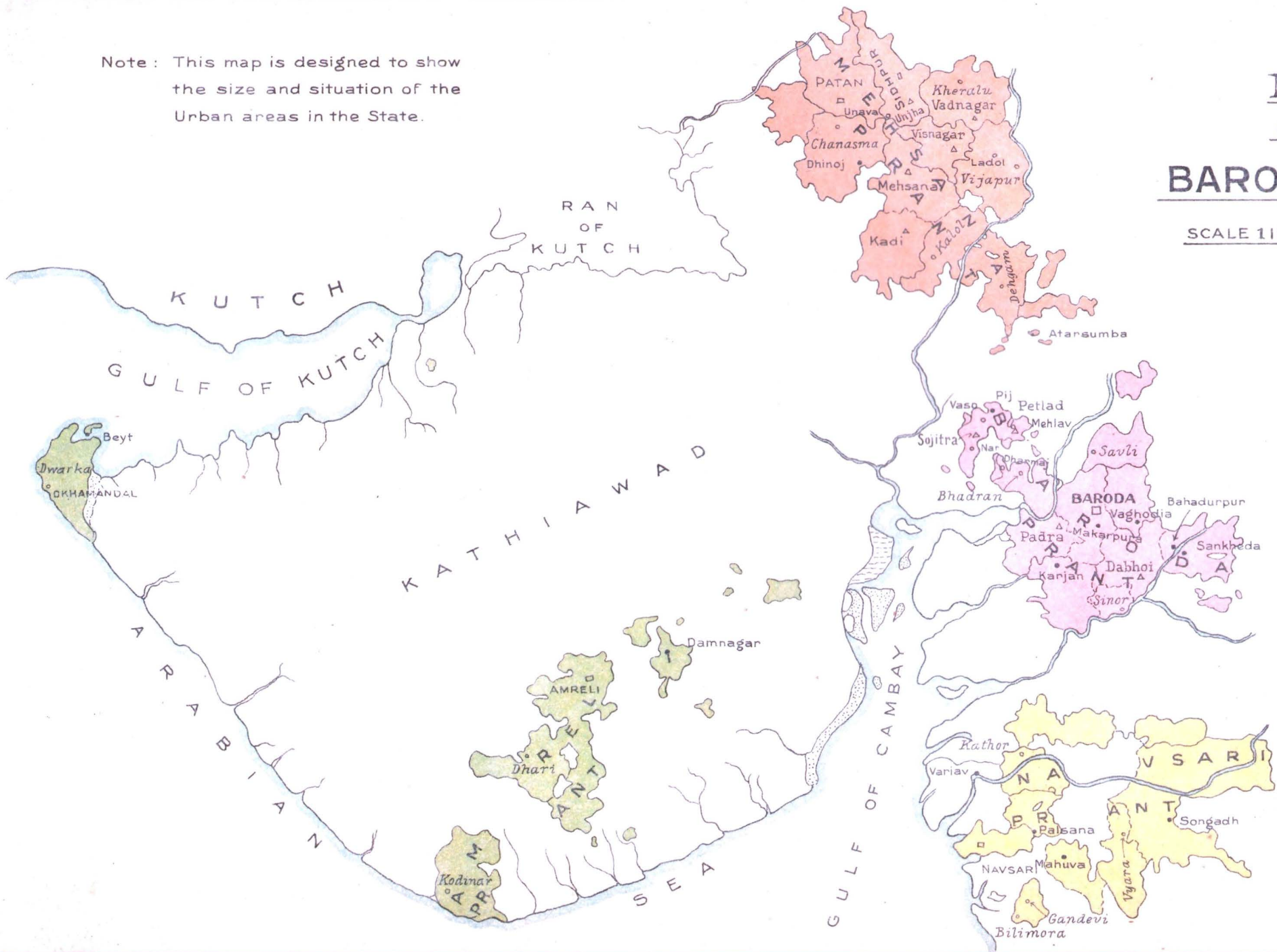
**61. Religion of Urban Population: Subsidiary Table II**—Before we come to the discussion of variation, it is as well to analyse the religious composition of the urban population. We give below Subsidiary Table II for details. The general ratio of 21 per cent which is the extent of urbanisation in the State does not indicate how the followers of the different religions spread themselves between town and country. The Hindu total in this census includes the bulk of the forest tribes, hitherto classed as Animist or “Tribal”; and that explains why only 19 per cent of Hindus are found to be town-dwellers as against 20 in 1921, but even if forest tribes are entirely excluded from the Hindu total, the followers of other religions, particularly Parsis, Muslims and Jains will be found far more addicted to town dwelling than the Hindus. 81 per cent of Parsis, 44 of Muslims and 42 of Jains are found in urban areas. The bulk of Parsis are found in trade or learned professions, and these are pre-eminently urban callings. The few Parsis found in agriculture are limited to South Gujarat in Semi-Rasti and Rani tracts, and there the few scattered families residing in villages combine farming with the occupation of liquor shop-keeping. The Baroda State Muslims are broadly divided into three groups (*i*) traders, (*ii*) artisans and (*iii*) cultivators. The last reside mostly in villages, while the first two are town-bred. But even amongst Muslims there are great variations. The Mid-Block Muslims are mostly Khojas: that is why the urban ratio of their people in that area is as high as 65 per cent. The Vakal Muslims include the large Muslim community in the city and the urban ratio therefore is 66 per cent. The bulk of Charotar Muslims are similarly concentrated in Petlad town and so half of the total pursuing the faith of Islam in that area are found in towns. But in Semi-Rasti, the Muslim urban ratio is reduced to only 2 per cent in its one town. Jains are also a predominantly trading com-

\* The floating population numbers 3,539, of which 1,120 belongs to the City of Baroda, 210 to Port Okha in Okhamandal and 809 in 10 principal Railway stations. In none of these areas, the exclusion of the floating population affects their class.

Note: This map is designed to show the size and situation of the Urban areas in the State.

# MAP OF THE BARODA STATE

SCALE 1 INCH = 32 MILES



REFERENCES

Symbol	TOWNS OF
□	100,000 AND OVER
◻	20,000 TO 50,000
△	10,000 TO 20,000
○	5,000 TO 10,000
•	BELOW 5,000



munity, but they often combine with great profit to themselves money lending with land and that is why many Jains are found in large villages, besides towns. In North Gujarat, particularly in West Kadi, is this the case, where only 31 per cent of them are town dwellers, although the town of Patan is full of them, and is the traditional home of their great commercial houses. The mean Hindu ratio of 19 per cent is similarly made up of great contrasts. In Charotar, the Hindus are most urbanised with 31 per cent, while in Rani area, particularly in Vyara taluka, where the bulk of the Raniparaj have gone over to Hinduism, the urban Hindu ratio is only 9. The Tribals are only met with in South Gujarat, and there also they are practically confined to the Rani area. Hardly a thousand Tribals out of nearly 45,000 were enumerated in towns.

SUBSIDIARY TABLE II

NUMBER PER MILLE OF THE TOTAL POPULATION AND OF EACH MAIN RELIGION WHO LIVE IN TOWNS

NATURAL DIVISION	Number per mille who live in towns							
	Total Population	Hindu	Muslim	Jain	Christian	Zoroastrian	Tribal	Other
1	2	3	4	5	6	7	8	9
Baroda State .. ..	214	191	444	421	372	812	21	887
Central Gujarat with City	288	262	483	530	375	957	..	977
(i) Charotar .. ..	332	312	512	527	314	1,000	..	1,000
(ii) Vakil .. ..	427	392	664	619	517	980	..	994
(iii) Kahnām .. ..	167	144	295	434	617	937	..	1,000
(iv) Chorashi .. ..	108	100	250	175	20	559	..	..
North Gujarat .. ..	175	154	405	365	821	959	..	720
(i) East Kadi .. ..	188	167	429	311	839	952	..	750
(ii) West Kadi .. ..	173	148	390	475	1,000	1,000	..	..
(iii) Trans-Sabarmati area .. ..	94	83	239	253	..	1,000	..	..
South Gujarat .. ..	150	134	363	462	266	796	21	667
(i) Rasti .. ..	267	217	501	604	840	925	579	500
(ii) Semi-Rasti .. ..	17	14	24	149	..	246	..	..
(iii) Rani .. ..	72	92	753	431	173	214	18	1,000
Kathiawad .. ..	237	198	523	434	240	760	..	138
(i) Mid-Block .. ..	242	201	651	421	..	1,000	..	..
(ii) Scattered area .. ..	162	132	464	547	..	..	..	..
(iii) Sea coast .. ..	255	218	443	140	240	600	..	148

§ 2. VARIATIONS

62. Variation in Number of Towns and Villages—The number of towns in the State increased from 42 in 1911 to 48 in 1921 and 50 in this census. The increase of six in 1921 was due to dropping of one place because it was not a municipality and had less than 5,000 population, and the inclusion of seven others as six had acquired municipal status and the seventh had passed beyond the 5,000 limit; the increase of two in 1931 is due, as already pointed out, to the inclusion of Mahuva and Dhinoj in the list, owing to their becoming municipalities. The number of villages (according to the standard definition) in 1911 was 2,875, after deducting 179 hamlets treated wrongly as villages. This number increased to 2,902 in 1921,—the main variations in the decade 1911-21 being the growth of 25

new villages (or uninhabited places becoming inhabited). From the 2,902 villages as shown in 1921, twelve have gone out of the class of villages (7 becoming depopulated, 3 getting amalgamated with neighbouring villages and 2 turned into towns); and no less than 30 have to be added to the list of 1921. These thirty are made up of (i) 17 uninhabited places becoming populous, (ii) 3 new villages being established, and (iii) 10 hamlets acquiring the status of independent villages in the decade.

**63. Variation of Population in Urban and Rural Areas**—The total population of 1931 consisted of 523,003 in urban and 1,920,004 in rural areas. Of the 26,755

NATURAL AREAS	Variation since 1921 in	
	Urban Areas	Rural Areas
The State .. ..	18.1	12.5
Charotar .. ..	21.2	4.9
Vakal .. ..	18.8	16.7
Kahnani .. ..	16.6	15.4
Chorashi .. ..	8.6	13.2
East Kadi .. ..	15.9	12.6
West Kadi .. ..	21.4	11.1
Trans-Sabarmati .. ..	17.6	8.2
Rasti .. ..	21.7	10.4
Semi-Rasti .. ..	17.16	19.5
Rani .. ..	20.3	15.0
Middle Block .. ..	15.8	13.0
Scattered areas .. ..	15.3	4.5
Sea coast .. ..	2.7	26.5

*hijratis* 2,422 were enumerated in towns and 24,333 in rural areas. These will have to be first deducted before the variations are considered. The net variations in the last two censuses in the urban and rural populations are worked out in the margin per each of the natural areas, as they stood at each census. No adjustments on account of change in class from village to town have been made. We see that the urban population has grown faster than the rural almost everywhere except in the Sea-coast area and Chorashi. But as pointed out already while discussing the movement of population in Kathiawad (para 42 above) the large rate of increase in rural population of the Sea-coast area is only

apparent, as it is due to the increase of population in Port Okha, still regarded technically as a village. The large increase in the Chorashi rural population is on account of extension of cultivation. Charotar and Rasti towns show the highest rates of growth due to the opening of new cotton mills in Petlad, Navsari and Billimora. In Semi-Rasti, there was no town in 1921, and in 1931 Mahuva has come from the class of village and become an urban area. Similarly the apparently large increase in West Kadi is due to the coming up of Dhinoj into the class of towns in this census. The other three towns in this area together show an increase of 11.4 per cent only. The increase in Scattered areas is almost entirely confined to Damnagar town, the only urbanised place in the whole region. In 1901, as the immediate result of the famine, the urban areas showed a smaller rate of decline than the country side, as the refugees from the villages, crowded into the towns. In the decade that followed, there happened a reverse movement, as conditions turned towards the normal and the people flocked back to the country. In 1911, therefore, although the general census showed an increase of 80,106, the urban areas declined by 36,173. In 1921, there was a swing back to the towns. Agriculture became increasingly unprofitable, and insecurity of life in the villages grew worse on account of economic distress. Stragglers who got no openings in the agricultural labour attempted "to seek livelihood in untried fields of industrial labour." The industrial boom after the war encouraged this movement. Particularly the Kathiawad towns showed increase while the general population had remained stationary. In 1921-1931, the census shows that this movement became intensified. The 169 industrial establishments, that were working at the time of 1921 Census, employed only 11,403 persons. In 1931, 275 establishments, working about the census date, absorbed 22,323 workers. As all these factories are concentrated in towns and large villages, the industrial labour force must have contributed nearly 10,000 out of the net increase of 73,242 in urban areas since 1921. Taking the whole urban population as it stood in each census, we give in

YEAR	Per mille of 1901
1901 .. ..	1,000
1911 .. ..	864
1921 .. ..	940
1931 .. ..	1,110

the inset comparative ratios since 1901. The State is now more urbanised (to the extent of 11 per cent) than in 1901. These ratios can be accepted as the index of urbanisation on the assumption that the number of places treated as towns in each census has been correctly chosen according to the standard definition.

**64. Variation in Towns which are Continuously Urban**—We have now dealt with variations in the population considered urban in each census. The disconcerting changes in class of town from decade to decade, and in the definition of "town" itself, are so frequent that no proper comparison with previous censuses is possible, unless we take into account only such towns as have been treated continuously as urban since 1881. Such towns are 29 in number distributed according to districts as in the marginal table. The margin also shows how the proportion of "continuously urban"

compares with that of the population considered as urban in 1931. Over four-fifths of the population of these towns are confined to Central and North Gujarat. The variations in these 29 towns since 1881 are useful to show the rate of increase in the definitely urbanised areas that have withstood the vagaries of classification and continued as towns in the last 50 years. The marginal table gives the total population of continuously urban areas since 1881. There was an increase of 7 per cent in 1891, since which date the decline was continuous for two censuses. The 1921 figures showed a rise, but in 1931 the highest increase was recorded, the total rise since 1881 being 10.3 per cent. Since 1921 the increase in this type of population has been shared by all the towns comprised in it, with the exception of Dwarka and Beyt which have declined. The variations in the different divisions in this type of towns since 1891, are shown in another table in the margin, from which it will be seen that Kathiawad and South Gujarat towns have alone made progress, while the North Gujarat towns have actually declined. The Central Gujarat towns show a very slight increase since 1891, but even this is illusory as the *hijratīs* are responsible for the whole of it. The absolute figures of population per town of these continuously urban places for the last six censuses are given in Subsidiary Table X appended at the end of this chapter.

Division	Number	Population in 1931	Percentage of continuously urban	Percentage to total population of	
				Continuously urban	Urban in 1931
State .. ..	29	435,880	100	18	21
Central Gujarat ..	11	202,140	46	25	29
North Gujarat ..	12	158,481	36	16	18
South Gujarat ..	3	40,057	9	10	15
Kathiawad ..	3	35,202	9	17	24

The absolute figures of population per town of these continuously urban places for the last six censuses are given in Subsidiary Table X appended at the end of this chapter.

Year	Population of places continuously treated as towns	Proportion per mille with 1881 as index
1881 ..	396,160	1,000
1891 ..	424,614	1,072
1901 ..	392,507	991
1911 ..	360,813	918
1921 ..	372,582	940
1931 ..	435,880	1,103

**65. Variation in Towns classified by Population: Subsidiary Table III**—There is a third way in which the population figures of towns can be studied from census to census; that

Variations in continuously urban areas in				
Year	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
1891 .. ..	100	100	100	100
1901 .. ..	90	90	107	110
1911 .. ..	83	81	103	103
1921 .. ..	84	84	108	110
1931 .. ..	100.3	97	133	120

is by taking the variation in the population of towns as classified in the previous census. As for example, we can take the urban figures of 1921 only and classify them according to their size and see how far increases or otherwise have happened in 1931, in each class of 1921. For this purpose, places newly raised to towns in 1931 will have to be neglected, as also all changes in class. In this manner we can work up the proportions for all the previous censuses. Thus on the basis of the urban classification of 1921, there is an increase of 17.2 per cent. Six classes have been standardised according to size of population: commencing with Class I: 100,000 and over, and ending with Class VI: under 5,000. Baroda City is now restored to Class I, but as it was below the 100,000 limit in 1921, it belonged to Class II, and therefore the increase in the City is credited to that class. Similarly

in 1921, only Patan used to belong to Class III—20,000–50,000 ; so that the variation in that class should be the same as that for Patan itself, although three other towns have come up to that class now. Class III therefore as a result of these accessions shows an increase of 190 per cent on the corresponding class of 1881. The next class—10,000–20,000 has lost three and gained one town in this census. These three towns now promoted to Class III are Navsari, Amreli and Sidhpur. Padra has now come up from Class V. Nearly a fourth of the urban population is found in this class of towns. Class IV of 1921 shows an increase of 10.4 per cent in this census : because of these changes in class, the population of these fourth class towns (as classed in 1931) shows a decline of 18.3 per cent as compared to Class IV of 1881. Class V now consists of 21 towns and absorbs more than a fourth of the urban population. Variations per size of towns are not however very illuminating ; we shall therefore have to examine variations in individual towns grouped according to their character. We give in the meanwhile Subsidiary Table III contenting ourselves with the remark that it is somewhat artificial and academic.

SUBSIDIARY TABLE III

## TOWNS CLASSIFIED BY POPULATION

CLASS OF TOWN	Number of towns of each class in 1931	Proportion to total urban population	Number of females per 1,000 males	Increase per cent in the population of towns as classified at previous censuses					Increase per cent in urban population of each class from 1881-1931	
				1921 to 1931	1911 to 1921	1901 to 1911	1891 to 1901	1881 to 1891	(a) In towns as classed in 1881	(b) In the total of each class in 1931 as compared with corresponding total in 1881
1	2	3	4	5	6	7	8	9	10	11
<b>Total</b> .. .. .	50	100	919	+17.2	+ 3.4	- 8.4	- 7.5	+ 8.0	+ 9.1	+24.2
I 100,000 and over .. ..	1	20.96	806	..	..	- 4.7	-10.5	+10.5	+ 7.7	+ 7.7
II 50,000 - 100,000 .. ..	..	..	..	+19.5	- 4.3	..	..	..	..	..
III 20,000 - 50,000 .. ..	4	18.14	1,008	+10.4	- 4.7	-12.4	- 9.9	- 0.2	- 8.8	+190.0
IV 10,000 - 20,000 .. ..	9	24.04	949	+18.4	+ 4.5	-11.6	- 2.8	+ 6.7	+13.8	- 18.3
V 5,000 - 10,000 .. ..	21	27.26	937	+15.3	+10.7	- 9.8	-10.0	+10.0	+ 7.5	+ 20.1
VI Under 5,000 .. ..	15	9.60	896	+17.4	+ 3.7	- 2.7	- 0.7	+ 6.1	+24.2	+255.7

**66. Population of Certain Towns**—We will now briefly consider the figures of certain towns with a population of 10,000 and over, and their variation per cent since 1921. Everywhere, the increases are ample as the margin shows. Seven of these 13 towns show a proportionate increase higher than the State average. Four of the remaining six have increases over 10 per cent. Only Vadnagar and Visnagar (both in East Kadi) show lower rates of increase. Previous to this census, Visnagar was one of the most consistently decaying towns in the State. Vadnagar showed a small increase in 1921, but the Censuses of 1901 and 1911 registered a sharp decline of population in that town. The large increase in Petlad is due specifically to the establishment of two new spinning mills, two printing presses and one match factory. The increase in Sojitra is partly due to

NAME OF TOWN	Population in 1931	Variation per cent since 1921 (Increase)
Patan .. .. .	29,830	10.4
Navsari .. .. .	24,397	25.5
Sidhpur .. .. .	20,468	26.4
Amreli .. .. .	20,186	13.4
Petlad .. .. .	19,236	26.9
Dabhoi .. .. .	18,156	14.4
Visnagar .. .. .	15,050	8.6
Mehsana .. .. .	14,762	24.2
Kadi .. .. .	13,455	12.8
Vadnagar .. .. .	12,692	8.7
Unjha .. .. .	11,344	15.4
Sojitra .. .. .	10,649	20.3
Padra .. .. .	10,379	15.2

the *hijrat*s and without them the rate of growth is reduced in that town to nearly 18 per cent. Part of the Sidhpur increase is due to a feast of *ladus* to which Brahmans flocked from other places,—a catastrophe already alluded to in the previous chapter (*vide* para 9).

**67. Variation in Types of Towns**—Variations in individual towns can be best understood when they are grouped according to their character. Besides the City and the Cantonment, the towns of the State were divided in the last Census Report into five types: (i) industrial centres, (ii) market towns and railway centres, (iii) old established urban areas, (iv) temple towns and (v) agricultural and distributive towns, the last named being really overgrown villages where the movement of population is governed by factors similar to rural areas. In the present census one has to add a sixth class, *i.e.*, of new towns. We shall for the moment neglect the City and Cantonment as a separate section is devoted to them, and consider the marginal table. The variations given therein refer to the last two decades. The *hijrat*s have been excluded from the absolute figures of 1931. 28.4 per cent of the urban population are residents of agricultural towns; this class of town happens to have the smallest size of all. The largest increases in the decade have

KIND	No.	Population in 1931 excluding <i>hijrat</i> s	Proportion to total	Average population	Variation per cent	
					1931-1921	1921-1911
1	2	3	4	5	6	7
Industrial Centres ..	7	88,699	17.0	12,674	+23.6	+17.7
Market towns and Railway areas ..	6	89,863	17.2	14,977	+16.9	+ 7.7
Old established towns ..	6	65,244	12.5	10,874	+11.9	— 5
Temple towns .. ..	2	11,492	2.2	5,746	— 3.8	+17
Agricultural and Distributive .. ..	25	148,312	28.4	5,932	+14.6	+ 6.6
New towns .. ..	2	6,516	1.2	3,258	..	..

occurred in industrial towns and marketing centres. The increase in the former is even more rapid than that recorded in 1921. The only class of towns that has declined are the two temple towns which together show a decrease of 4 per cent. These two towns showed an increase of 17 per cent in 1921, which was due to the influx of pilgrims to their temples as well as of labourers to the cement factory. Part of the decrease in 1931 is due to the outflowing of labour to the newly opened Port of Okha and to the diminution of the pilgrim traffic as a result of the growing indifference of Hindus towards this aspect of their faith. The decrease in the size of the regiment at Dwarka before the census date to about half of its previous strength also contributed to the decline in population of that town.

**68. Sex Ratio in Towns**—One other point to note about urban population is the variation of the sex ratio in the towns of different sizes. Subsidiary Table III shows that, as is the case with towns elsewhere, males greatly outnumber females. The only exception is in respect of 3 towns in Class III (*i.e.*, in Patan, Navsari and Sidhpur) where females outnumber males. The general sex ratio for the whole State is 942 females to 1,000 males. In these three towns, the female preponderance is due to the following reasons:—

CLASS	Number of towns	Proportion to total urban population	Number of females per 1,000 males
I. 100,000 and over ..	1	20.96	806
II. 50,000-100,000 ..	..	..	..
III. 20,000-50,000 ..	4	18.14	1,008
IV. 10,000-20,000 ..	9	24.04	949
V. 5,000-10,000 ..	21	27.26	937
VI. Under 5,000 ..	15	9.60	897
<b>Total ..</b>	<b>50</b>	<b>100</b>	<b>919</b>

- (i) Vohras in Sidhpur, Vanias in Patan and Parsis in Navsari are largely engaged in business or trade elsewhere, and their able-bodied males are therefore out of their homes ;
- (ii) Sidhpur is a place of pilgrimage also, and therefore as is natural to such places, females predominate there.

With these exceptions the masculinity is higher in towns than in the general population. It is the highest in the largest as well as in the smallest sized towns. The urban sex ratio has remained the same for the last two censuses but in 1911, the proportion of females was higher (934), pointing to gain through migration in 1921 ; the femininity in towns below 5,000 is now higher than either in 1921 or 1911, possibly because in certain of the towns in this class—Palsana, Variav, etc.,—the male proportion has declined through emigration.

**69. "Revenue Village" and "Residential" Area**—We have now to note a few points about rural areas, before we proceed to deal with the figures of the City census. The different sizes of villages have been already dealt with. In connection with the definition of terms in para 56 above, it was pointed out that the census village corresponded exactly with the revenue village. The unit of the revenue village is well-known and easily identifiable in Gujarat. The system of revenue administration being the *ryotwari* in the State, the unit for collection of revenue is the *moje* (or *mauza*) which is the parcel of ground marked off by the Survey and Settlement department with a definite boundary which may contain one or more continuous groups of houses surrounded as islands by a sea of cultivated fields. It is possible that some revenue villages may have no houses at all. In that case it is an uninhabited one, and a note is made of such at the end of the Village Tables prepared by the Census. The normal village is the compact type of the central inhabited nucleus situated near a pond and sheltered by trees round which cluster the farms of the peasantry ; exceptions to this general rule occur in villages where there is scope for cultivation, as a result of which new settlers from other places come and form new hamlets thereby breaking up the unity of the old village sites. Even now the vast majority of villages have only one central inhabited area, with a self-contained rural organisation. Only 386 or 13 per cent of the villages have hamlets attached to them. The most dispersed of villages are Makni (in Sankheda) which consists of 13 separate hamlets and Naldhara (in Mahuva) which has 12 residential areas included within its area. The total

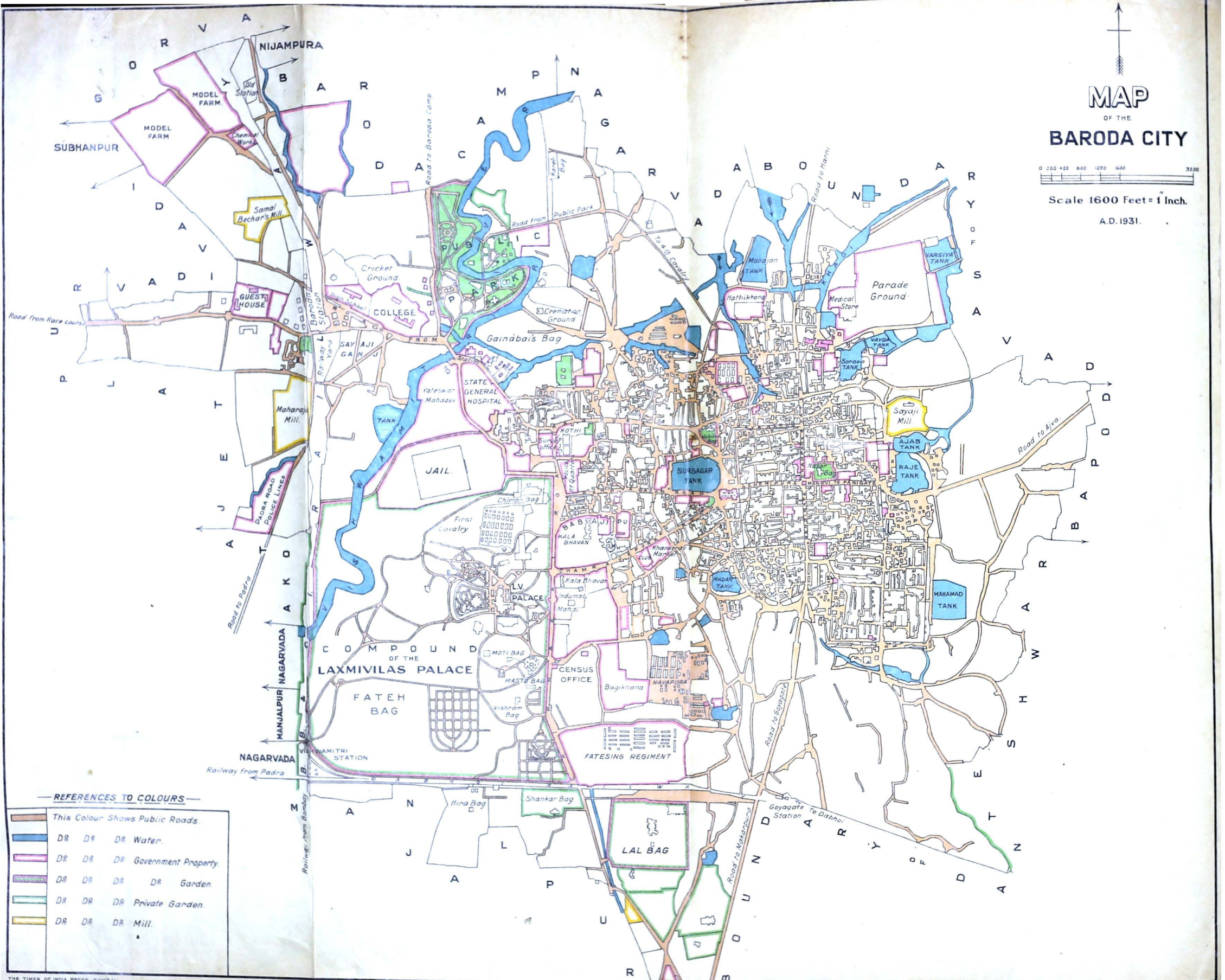
NATURAL AREA	Number of villages in 1931			Number of separate hamlets in	
	Total	Compact	With hamlets	1931	1921
State .. .. .	2,920	2,534	386	641	574
Charotar .. .. .	96	89	7	7	5
Vakal .. .. .	199	168	31	53	30
Kahnem .. .. .	235	220	15	33	37
Chorashi .. .. .	293	166	127	226	247
East Kadi .. .. .	480	402	78	114	59
West Kadi .. .. .	408	351	57	62	57
Trans-Sabarmati .. .. .	149	112	37	90	77
Rasti .. .. .	209	204	5	8	9
Semi-Rasti .. .. .	199	186	13	23	14
Rani .. .. .	368	368	..	..	20
Middle Block .. .. .	145	136	9	14	9
Sea Coast .. .. .	105	100	5	1	1
Scattered .. .. .	34	32	2	10	9

number of separate hamlets is 641 as against 574 in 1921 and 431 in 1911. Fissiparous tendencies in the rural economy may be therefore said to be on the increase. These are particularly in evidence in Vakal, Trans-Sabarmati and East and West Kadi. In Chorashi, the disintegration which went the farthest in 1921 is now stemmed, while in Mehsana *prant*, where the movement from neighbouring territory is still active, these hamlets or *paras* are on the increase. The average population per inhabited village is 658 ; per residential area it is 539 ; in Chorashi, the average per residential area is only 276, while the average per village there is 489. In East Kadi, the averages per village and residential area are respectively 1,007 and 812.

# MAP OF THE BARODA CITY



Scale 1600 Feet = 1 Inch.  
A.D. 1931.



**REFERENCES TO COLOURS**

	This Colour Shows Public Roads.
	DR DR DR Water.
	DR DR DR Government Property.
	DR DR DR DR Garden
	DR DR DR Private Garden.
	DR DR DR Mill.

Apart from these "revenue" villages, the census had to deal with inhabited areas within the reserved forests, where fiscal demarcation of the ordinary type was not possible. In the Umarpada and Vajpur ranges 33 such settlements were recorded with a population of 2,121. These settlements had no permanency about them. The bulk belonged to individual timber contractors who were working in the different coupes and they travelled from place to place, according as their work required them. In 1921, such settlements in the reserved forests numbered 18 with an enumerated population of 775.

**70. Port Okha**—Finally a brief reference may be made to Port Okha. During the last decade, Baroda has come into prominence in international trade by the opening of a modern port in 1926. Port Okha is situated on the north-west corner of Kathiawad 18 miles by rail from Dwarka. It is on the direct sea route between Bombay and Karachi, and as an all-weather port with a safe harbour where two steamers of 27 feet draft can safely berth alongside the pier, it is fitted to have a place amongst future Indian ports. The pier was specially designed and constructed for the purpose of a large volume of trade. The port is served by a metre-gauge line connected with Delhi and the North, besides Central India, Gujarat, Rajputana and the United Provinces. It has a jetty 400 feet long, connected with the shore by an approach viaduct 500 feet long. The port is provided with good cargo-handling equipment and warehouses, banking and other facilities. Besides the port area, the civil station has been well laid out. In five years the little fishing village of Adatra (with only 78 inhabitants in 1921) has grown into a town of 1,497 people. Since its opening, the tonnage handled, and the number of steamers calling have progressively increased from year to year as the following figures will show. The last year only registers a slight set-back owing to political causes and outside factors :—

YEAR	No. of ocean-going steamers	Cargo handled in tons		
		Import	Export	Total
1929-30 .. ..	59	54,588	18,520	73,108
1928-29 .. ..	58	60,586	19,941	80,527
1927-28 .. ..	48	37,843	13,692	51,535
1926-27 .. ..	17	14,160	2,035	16,195

§ 3. THE CITY OF BARODA

**71. Area of the City**—The results of the census in the City deserve to be dealt with in a separate section. The area of the City including the Camp has now been definitely ascertained to be 10.93 or 11 square miles, distributed as in the margin in the different parts. The municipal area consists of five wards of which the largest in area is Raopura (3 square miles). The other four are (with the area in square miles noted in brackets after each) Babajipura (2.25), Wadi (1.75), Fatehpura (1.0) and the City (0.25). The last named is a highly congested area, as shown in the map attached to this page, and it is enclosed by the four walls and entered by the four gates. Raopura is on the north of the main high road from the Baroda Central Railway Station and extends towards the cantonment limits on the north and the Race Course on the west.

Name of Ward or Area	Area in square miles
City Municipal area ..	8.25
State Military area ..	1.00
Camp .. .. .	1.00
Railway area ..	0.68
Total	10.93

It includes many open spaces, such as the public park, the college compound and the environs of the Bahucharaji temple. The Babajipura district on the south includes



the immense Lakshmi Villas Palace compound, the public offices and the old regimental parade grounds, but between these it contains some of the most congested quarters of the City. The Fatehpura on the north-east contains the poorest quarters, has few open streets but borders on a chain of lakes and open grounds towards the east. The Wadi ward flanks round the walled City proper on its east and south. It is the oldest part of Baroda and used to be formerly the seat of the gentry, whose abodes are now dilapidated, giving place to a new industrial site which is fast growing up with miscellaneous factories near the Railway Workshops on the south-east.

**72. General Results of the Census**—The population of the City, according to the Census of 1931, is 112,860 (62,744 males and 50,116 females). This population includes the Cantonment or the Camp, the Railway areas, and the State Military area. The following Subsidiary Table gives the main figures:—

SUBSIDIARY TABLE IV

## BARODA CITY

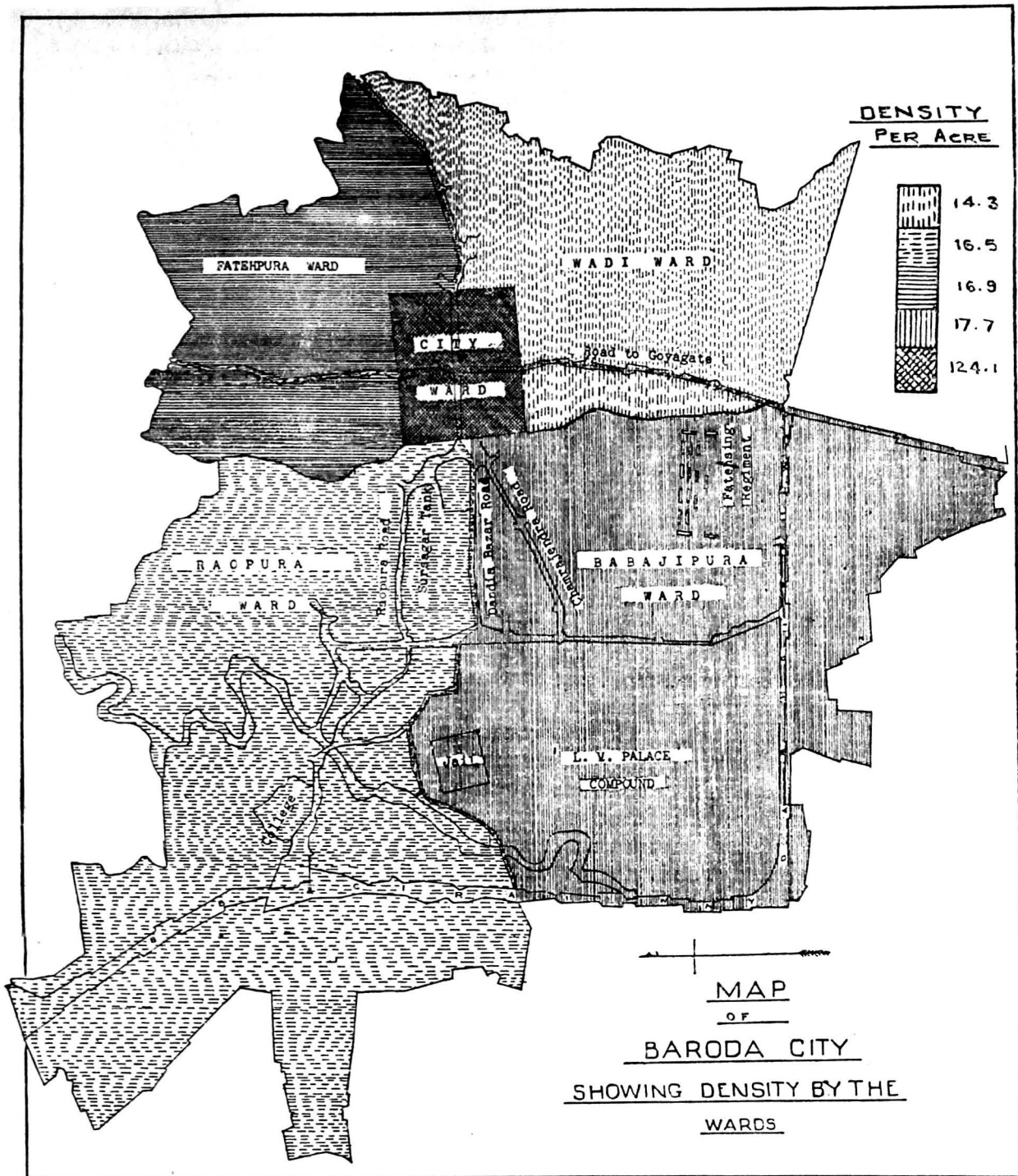
CITY	Population in 1931	Number of persons per square mile	Number of females to 1,000 males	Proportion of foreign born per mile	Percentage of Variation					
					1921 to 1931	1911 to 1921	1901 to 1911	1891 to 1901	1881 to 1891	Total 1881 to 1931
1	2	3	4	5	6	7	8	9	10	11
<b>Baroda City (with Cantonment)</b>	<b>112,860</b>	<b>10,964</b>	<b>799</b>	<b>278</b>	<b>+ 19.2</b>	<b>- 4.66</b>	<b>- 4.28</b>	<b>- 10.84</b>	<b>+ 9.30</b>	<b>+ 5.96</b>
<b>1. City Municipal Area</b>	<b>103,892</b>	<b>12,593</b>	<b>825</b>	<b>248</b>	<b>+ 18.6</b>	<b>..</b>	} The figures are not available.			
i. City Ward ..	19,856	79,424	889	163	+ 17.57	1.17				
ii. Fatehpura ..	10,788	10,788	848	260	+ 8.4	5.4				
iii. Wadi ..	16,013	9,150	873	160	+ 18.69	..				
iv. Raopura ..	31,609	10,536	766	331	+ 25.21	1.3				
v. Babajipura ..	25,628	11,345	820	263	+ 16.55	..				
<b>2. State Military Area ..</b>	<b>2,403</b>	<b>2,403</b>	<b>482</b>	<b>526</b>	<b>+ 41.69</b>	<b>..</b>				
<b>3. Railway Areas..</b>	<b>3,344</b>	<b>4,918</b>	<b>499</b>	<b>420</b>	<b>+ 32.75</b>	<b>284.58</b>				
<b>4. Baroda Camp</b>	<b>3,221</b>	<b>3,221</b>	<b>594</b>	<b>455</b>	<b>+ 9.8</b>	<b>- 15.6</b>	<b>+ .99</b>	<b>- 19.9</b>	<b>- 15.9</b>	<b>- 31.38</b>

NOTE.—“Foreign born” means the persons born outside the State.

**73. Distribution of the Population**—(i) *The City Municipal Area*—Within this district, the City's population is most unevenly distributed. The density per square mile is 12,593 or 19.7 per acre. The City ward with only a quarter of a square mile in extent has an appalling density of 124 persons to the acre. Fatehpura has 17, and Wadi 14.3 to the acre. Babajipura and Raopura which together constitute nearly two-thirds of the total municipal area, have a density of 18 and 17 respectively per acre. But the large open spaces, already referred to, which are included in these districts have to be excluded for an idea of the overcrowding. The area of these open spaces is about

WARD	Gross areas in acres	Thickly inhabited area (acres)	Density per acre of column 3
1	2	3	4
City .. ..	156	143	138
Raopura ..	1,922	472	67
Babajipura ..	1,440	372	69
Wadi .. ..	1,120	193	83
Fatehpura ..	762	199	54

2.5 square miles including 980 acres for gardens and parks. There are 100 miles of public roads. These together with vacant unbuilt spaces and cultivated lands, if excluded from the total area of the City leave only 1,279 acres as the space for “residential” or thickly inhabited area. The density calculated on this congested area is shown in the inset. The City ward density shows even greater congestion than by the former calculation. In



the two wards of Raopura and Babajipura where the middle class and the small shop-keepers congregate, the density is about half of the City. The quarters of the poorest classes are in the least congested part of the City.

(ii) *The Camp* has a large parade ground and golf links. The cantonment bazar consists of a few acres and is very congested. The military population numbers 636, while the civil area has 2,585 inhabitants. Together, there is a density of 5 to the acre here.

(iii) *The State Military Area* has a density of only 4 per acre. It has extensive parade grounds bordering on the village of Tarsali.

(iv) *The Railway Areas* are in the four distinct parts of the town : (a) the Goyagate colony being the headquarters of the Gaekwad's narrow-gauge railway system with 515 inhabitants, (b) the B. B. and C. I. Passenger Station area including the floating population counted on the platform and in trains (with 1,142), (c) the Vishwamitri station which is the junction between the broad-gauge

and the narrow gauge systems (with 192), and lastly (*d*) the Marshalling Yard, about two miles to the north of the main passenger station, (with 1,495). The density in all these railway areas taken collectively is 8 per acre.

(*v*) *Sex ratio in the City*—Far more than the other parts of the State, the masculinity in the City is high, there being 799 females to 1,000 males. In the municipal area, this ratio is slightly higher (825). The City ward has the highest feminine ratio of 89 per cent of males. The Baroda Camp has a low feminine ratio of 594 per mille of males, but in the civil area it becomes 761. These ratios are important to remember while considering variations, as a higher masculinity would presuppose gain through immigration from abroad.

**74. Variation in the City Population**—Subsidiary Table IV shows that the population increased in the City by 19.2 per cent since 1921. There was an increase of 9.3 per cent in the normal decade of 1881-1891, but since 1891, the City figures were continuously on the down grade until this year, when they made up most of the lost ground. Even now it is 3 per cent below the 1891 figure as the

Population of City	
YEAR	Variation since 1891
1891 ..	100
1901 ..	89
1911 ..	85
1921 ..	81
1931 ..	97

inset shows. Subsidiary Table IV reckons the total increase since 1881 at 6 per cent. In 1921, the City municipal area suffered a net loss of 6,067 (including the State military area in the totals of both the censuses). This decline was explained by (*i*) a loss of 5,500 on account of natural causes and (*ii*) the adverse balance of migration and (*iii*) street improvements which cleared the slums and sent the de-housed people to the surrounding villages. In 1911, the decline was ascribed to the going away of stragglers who had swollen the City figures in the famine census of 1901. In the present census the increase recorded is 18,148. Within the limits of the City municipal area (excluding the State Military), the population has increased by 16,329 to 103,892. We shall consider in detail the elements of this increase in the next paragraph. In the meanwhile, the other areas do not call for much remark. The State Railway area (Goyagate colony) has increased from 28 persons to 515. The increase is due to the opening of the State Railway headquarters in 1922 and of the Workshops about that time. The increases in other railway areas are normal. The Camp records an increase of 9.8 per cent which is about half that for the City as a whole. No large increase is ever anticipated there, as the Camp bazar acts as the feeder to the British Indian regiment stationed there; and the fluctuations in its strength are mainly responsible for the variations in the whole cantonment.

**75. The Elements of the Census Increase in the City Municipal Area**—Of the total increase in the City's population (18,148), the City municipal area claims 16,329. The recorded surplus of births over deaths in the decade is only 2,926. The recorded deaths are 30,611. The registration of deaths is fairly accurate in the City; so the volume of deaths in the City in the decade cannot have been more than 31,000. The annual average of registered births in the City is 3,354. The mean population aged 0-1 of the decade (based on the census returns) is 3,108: but this figure is not smoothed nor does it refer to the City municipal area. Taking the return of persons aged 0-1 from the compilation registers of 1931 for that area and smoothing on the basis of the general population we estimate that 3,390 is the corrected figure for that age. Making similar calculations for 1921, our estimate for that year is 2,951. The mean corrected figure for the decade is 3,170. By the method described in Appendix I already, the volume of births in the decade amounts to 36,466. This gives a natural increase of 6,466 or 7.4 per cent on 87,563 the City municipal population of 1921. The remainder 9,863 is the increase gained through immigration. The persons born in the City have increased from 61,292 to 69,632 or by 13.6 per cent. But those born outside the City have increased by 9,808 from 33,420 in 1921 or 29.3 per cent. Calculating

by the Longstaff method, we estimate the number of immigrants during the decade at 19,389. Deducting the balance of migration above calculated from this figure, we get 9,526 as the number of persons who had left the City during the decade. This is a larger volume of migration than in any other previous decade. The marginal table is prepared from the birthplace figures available according to the Longstaff method and gives the estimates of migration as far as possible for the last four decades.

The flow of migration in the last decade is, according to our estimate, double that of the previous one.

DECADE	Volume estimated of	
	Immigra- tion	Emigra- tion
1891—1901 ..	4,165	Not available
1901—1911 ..	11,880	..
1911—1921 ..	8,380	7,333
1921—1931 ..	19,389	9,526

**76. Elements of the Foreign Born in the City's Population**—The number of persons born outside the City but enumerated therein in 1931 was 43,228. These are distributed as in the margin. The other parts of the State contribute more than a quarter of the outsider's total. Of the rest, the immigrants from Gujarat and Kathiawad (both British districts and states) form rather less than one-seventh of the City's population. In 1921, their number was 12,272 (including 3,749 from the states). Thus the Gujarat and Kathiawad has grown largely during the last 10 years particularly the latter. The chief elements of the immigration from

IMMIGRANTS	Figures of 1931	Varia- tion since 1921	Percentage to total	
			1931	1921
From other parts of the State ..	11,895	+ 33	27.5	26.9
From British Gujarat ..	10,026	+ 18	23.2	25.5
From Gujarat and Kathiawad States ..	5,510	+ 47	12.7	11.2
From other parts of India ..	15,485	+ 28	35.9	36.2
From outside India ..	312	+295	0.7	0.1
<b>Total</b> ..	<b>43,228</b>	..	<b>100</b>	<b>100</b>

outside Gujarat and Kathiawad are the Deccanis, the Hindustanis and the immigrants from Rajputana. Their proportion shows a small decline since 1921 but their numbers show a large increase of over 28 per cent. The "Outside India" increase is entirely due to the influx of Gurkhas in the army, as they are from Nepal. The other parts of the State are contributing in the last two censuses, a larger share in the total of the "foreign born" in the City than before. Excluding these from the calculations, as they belong to the State the proportion of the "Outside State" born is 278 per mille. Within the City municipal area, this proportion is 248. We have already calculated in the previous paragraph, that 19,389 immigrants have come to the City since 1921. Of these the different parts must have contributed in the manner shown in the margin, which is prepared according to the Longstaff method. The largest contribution to the City's growth has come from parts other than Gujarat and Kathiawad. Thus this migration constitutes more than 35 per cent of the total number of in-comers. The Deccanis have declined but the others have come in much larger numbers than before.

Immigrants in the Decade	
From	Number
Other parts of the State ..	5,525
Gujarat and Kathiawad ..	6,740
Other parts of India ..	6,846
The Rest ..	278
<b>Total</b> ..	<b>19,389</b>

**77. Occupations of Immigrants to City**—An interesting question arises how far these immigrants have been requisitioned to meet the demands of the new industrial establishments which have been added during the decade. The industrial statistics collected for the whole State in this census show (*vide* State Table XIII-B) that 37 factories and mills, working on the census date, employed 5,125 factory workers as against 32 with 2,772 in 1921. Special statistics were compiled regarding the age and occupations of immigrants from certain selected districts since 1921. These were the British Gujarat districts and the Kathiawad, Rewa and Mahi Kantha States. These contributed 11,404 immigrants in 1921,

of whom only 55 were factory workers. In 1931, the number of immigrants from these areas was 15,090 of whom only 274 were factory workers. Thus the bulk of the increase in this direction was not met from these sources. Two specific sources indicate where this increased demand must have been met. The immigrants from United Provinces and Rajputana have increased from 2,715 to 4,878. The Railway Workshops in the City have absorbed a large number of labourers from these parts.

As to other occupations, the immigrants from these selected areas are now contributing much less largely to the State service than before. In 1921, 1,039 earners in the service of the State were recorded as having come from the contiguous areas. In 1931, the corresponding figure was only 847.

**78. The Tenement Census**—We now come to the results of the City Tenement Census. A census of tenements is taken in the City (municipal area only) along with the general census ever since 1911. In 1921, the enquiry was made more elaborate, and tables based on the Bombay City Tenement Census were devised. These were further improved and revised in this census. Altogether five tables have been prepared and are herewith appended :—

- (i) Classification of structures (Subsidiary Table V),
- (ii) Classification of buildings by floors (Subsidiary Table VI),
- (iii) Showing number of families by buildings (Subsidiary Table VII),
- (iv) Classification of buildings by number of occupants (Subsidiary Table VIII), and
- (v) Classification of structures by number of rooms and distribution of families by rooms (Subsidiary Table IX).

In this enquiry, the census definition of "house" as the abode of a commensal family, was combined with the structural definition. The enquiry was undertaken about the time of house numbering so that there is no correspondence between the number of families as found then, with that of occupied houses at the time of the census. The number of families whose details were recorded in this census was 28,054 while the number of inhabited houses in the City municipal area at the time of the general census was 27,574. These tables are summarised below.

(i) *Classification of Structures according to Kind*—The enquiry disclosed a total of 24,579 structures of which 2,202 were *kutchha* and 22,377 *pucca*. Private buildings and bungalows numbered 15,769; and with other dwelling houses, including government residences, shops and temples combined with residences, etc., the total of occupied structures was 18,658. In 1921 the total number of structures was 22,787, of which *kutchha* ones numbered 4,226. The decline in *kutchha* structures in 1931 shows the effect of the disastrous floods of 1927. The purely private dwelling houses that were inhabited increased by only .7 per cent to 15,769. Thus accommodation has not grown *pari passu* with the increase in population. Shops increased from 1,124 to 1,311 by 16.6 per cent.

(ii) *Classification of Buildings by Floors*.—The marginal table gives the comparative figures of the two censuses. It is significant that the number of high structures has declined, while the lower ones have increased showing that the standards of house rooms have deteriorated and the additional population has been housed in an inferior accommodation.

Kind of Structure having	1931	1921
Ground floor only ..	10,653	9,788
Two floors only ..	10,227	9,677
Three floors only ..	3,545	3,159
Four floors and above.	154	163

(iii) *Inhabited Structures by Number of Families*—In this statement the number of families has been correlated with the

number of occupied buildings. 28,054 families were found to reside in

18,658 buildings. 14,521 buildings contained in such cases, the social definition of the "House" coincided with the structural. As to the other families the inset table gives the main figures. The buildings containing 5 families and over are evidence of overcrowding, which problem is, however, more closely studied, in the next table. Such buildings, it is noteworthy, have increased from 295 in 1921 to 536 in this census. Lastly, it is found that of a total of 28,054 families only 12,239 or 43.6 per cent resided in buildings owned by them, and the rest resided as tenants.

only one family each, *i.e.*,

Number of buildings containing		
One family .. ..		14,521
Two families .. ..		2,643
Three families .. ..		655
Four families .. ..		303
Five families and over ..		536

The "owner" families have only increased by 454 or 3.8 per cent in the last ten years.

(iv) *Inhabited Structures by Number of Occupants*—The marginal table sets out the comparative figures. Probably owing to dearth of houses, the buildings containing 10 persons and over now form rather more than 10 per cent of the total, while they only formed a little over .7 per cent in 1921. The number of occupants per inhabited structure is now 5.6 as against 5.4 in 1921, taking the censused population in the municipal area in each case and adding 500 to the total of inhabited structures (for official quarters and residences).

Number of occupied buildings containing	1931	1921
5 Persons and under ..	12,908	11,696
6 to 9 persons ..	3,840	2,848
10 to 19 persons ..	1,515	943
20 persons and over ..	395	172

(v) *Inhabited Structures by Number of Rooms and Families and Distribution of Families by Number of Rooms*—This elaborate table seeks to find out the distribution of tenements by number of rooms. The inset table gives the proportionate figures of the different kinds of tenements for the two censuses. In the poorer class of tenements—the one and two-roomed ones—there is a large proportionate increase, while there is a decline in the better classes of houses. Similar conditions are observable in respect of the number of families residing in the different kinds of tenements. The number of families residing in one-roomed tenements has increased from 6,825 in 1921 to 10,996 in 1931. Such families now form 39.2 per cent while they were only 28 per cent of the total in 1921. There are two reasons for this increasing tendency of the population in the City to herd in inferior types of tenements. One is the special cause of the floods of 1927. The houses of the poorer classes were generally demolished, and they have very little chance or means of rebuilding their old homes on the old scale. Secondly, the growing industrialisation of the City as shown in the increase in mills and factories has developed the one-roomed chawl system so familiar to social observers in the Bombay and Ahmedabad mill areas.

Type of tenement	Proportion to total in	
	1931	1921
One room Tenement ..	24.1	16.3
Two rooms .. ..	27.8	20.0
Three .. ..	10.6	12.5
Four .. ..	14.6	16.4
Five .. ..	5.1	10.2
Six and above ..	17.8	24.6

## ADDITIONAL SUBSIDIARY TABLES

## SUBSIDIARY TABLE V

## TENEMENT CENSUS—CLASSIFICATION OF STRUCTURES

NAME OF SECTION	Private Bungalows and Dwelling houses	Dwelling houses and shops combined	Dwelling houses and Stable combined	Dwelling houses with Mosques and Temples	Government occupied structures	Total number of occupied structures	Shops and godowns	Mosques and Temples	Schools
1	2	3	4	5	6	7	8	9	10
Baroda City ..	15,769	1,311	393	139	1,046	18,658	1,281	284	25
Babajipura Ward	3,535	253	68	34	180	4,070	210	81	8
City Ward ..	3,714	305	113	33	46	4,211	375	70	4
Fatehpura Ward	1,667	172	29	25	611	2,504	141	30	2
Raopura Ward..	3,610	365	133	21	194	4,323	360	47	9
Wadi Ward ..	3,243	216	50	26	15	3,550	195	56	2

NAME OF SECTION	Dispensaries	Stables	Factories and Mill Buildings	Government offices including Police Stations and government vacant buildings	Other vacant structures	Total number of structures	Kutchas structures	Pucca structures
1	11	12	13	14	15	16	17	18
Baroda City ..	17	442	43	573	3,256	24,579	2,202	22,377
Babajipura Ward	4	98	6	208	705	5,390	426	4,964
City Ward ..	1	87	1	87	790	5,626	96	5,530
Fatehpura Ward	..	28	..	132	300	3,137	256	2,881
Raopura Ward ..	9	155	24	142	784	5,853	935	4,918
Wadi Ward ..	3	74	12	4	677	4,573	489	4,084

## SUBSIDIARY TABLE VI

## TENEMENT CENSUS—CLASSIFICATION OF BUILDINGS BY FLOORS

NAME OF SECTION	NUMBER OF STRUCTURES WITH					
	Ground floor only	Two floors only	Three floors only	Four floors only	Five floors and above	TOTAL NUMBER OF STRUCTURES
1	2	3	4	5	6	7
Baroda City .. .. .	10,653	10,227	3,545	149	5	24,579
Babajipura Ward .. .	2,875	2,097	413	4	1	5,390
City Ward .. .. .	1,086	2,364	2,051	123	2	5,626
Fatehpura Ward .. .	1,933	1,099	105	....	....	3,137
Raopura Ward .. .. .	2,778	2,409	647	17	2	5,853
Wadi Ward .. .. .	1,981	2,258	329	5	....	4,573

**SUBSIDIARY TABLE VII**  
**TENEMENT CENSUS—SHOWING NUMBER OF FAMILIES IN BUILDINGS**

NAME OF SECTION	NUMBER OF BUILDINGS CONTAINING						TOTAL NUMBER OF FAMILIES		
	One family	Two families	Three families	Four families	Five families and over	Total	Total	Residing in houses owned by them	Residing as tenants
1	2	3	4	5	6	7	8	9	10
Baroda City .. ..	14,521	2,643	655	303	536	18,658	28,054	12,239	15,815
Babajipura Ward ..	3,146	599	121	63	141	4,070	6,376	2,751	3,625
City Ward .. ..	3,357	647	129	43	35	4,211	5,440	3,123	2,317
Fatehpura Ward ...	2,153	213	65	35	38	2,504	3,228	1,451	1,777
Raopura Ward .. ..	2,921	758	246	116	282	4,323	8,415	2,579	5,836
Wadi Ward .. ..	2,944	426	94	46	40	3,550	4,595	2,335	2,260

**SUBSIDIARY TABLE VIII**  
**TENEMENTS CENSUS—CLASSIFICATION OF BUILDINGS BY NUMBER OF OCCUPANTS**

NAME OF SECTION	NUMBER OF OCCUPIED BUILDINGS CONTAINING				TOTAL NUMBER OF OCCUPIED BUILDINGS
	5 persons and under	6 persons to 9 persons	10 persons to 19 persons	20 persons and over	
1	2	3	4	5	6
Baroda City .. ..	12,908	3,840	1,515	395	18,658
Babajipura Ward ..	2,612	939	401	118	4,070
City Ward .. ..	3,151	821	219	20	4,211
Fatehpura Ward ..	2,045	333	95	31	2,504
Raopura Ward .. ..	2,504	1,038	580	201	4,323
Wadi Ward .. ..	2,596	709	220	25	3,550

**SUBSIDIARY TABLE IX**  
**TENEMENT CENSUS—CLASSIFICATION OF STRUCTURES BY NUMBER OF ROOMS AND DISTRIBUTION OF FAMILIES BY ROOMS**

NAME OF SECTION	Structures		Percentage of each class of structures to total	Number of families occupying		Percentage of each class of families to total
	Kind	Number		Kind	Number	
1	2	3	4	5	6	7
Baroda City .. ..	Total ..	18,658	100.00	Total ..	28,054	100.00
	One Room ..	4,490	24.06	One Room ..	10,996	39.19
	Two Rooms.	5,188	27.81	Two Rooms.	9,004	32.10
	Three Rooms.	1,985	10.64	Three Rooms.	2,936	10.47
	Four Rooms.	2,731	14.64	Four Rooms.	2,668	9.51
	Five Rooms.	954	5.11	Five Rooms.	671	2.39
	Six Rooms and over.	3,310	17.74	Six Rooms and over.	1,779	6.34



## SUBSIDIARY TABLE X

## CONTINUOUS URBAN POPULATION SINCE 1881

TOWN	Population in 1931	Population in 1921	Population in 1911	Population in 1901	Population in 1891	Population in 1881
1	2	3	4	5	6	7
<b>Baroda State</b> .. .. .	<b>435,880</b>	<b>372,582</b>	<b>360,813</b>	<b>392,507</b>	<b>424,614</b>	<b>396,160</b>
<i>Central Gujarat</i> .. .. .	<i>202,140</i>	<i>169,760</i>	<i>167,925</i>	<i>181,432</i>	<i>201,461</i>	<i>188,595</i>
1 Baroda City proper .. .. .	109,639	91,778	95,867	100,628	112,471	101,818
2 Baroda Cantonment .. .. .	3,221	2,934	3,478	3,162	3,049	4,604
3 Petlad .. .. .	19,236	15,159	14,863	15,282	15,528	14,418
4 Dabhoi .. .. .	18,156	15,870	9,117	14,034	14,539	14,925
5 Sojitra .. .. .	10,649	8,851	9,315	10,578	11,412	10,253
6 Padra .. .. .	10,379	9,006	7,853	8,289	8,415	7,668
7 Vaso .. .. .	8,712	5,986	7,508	8,765	10,271	10,208
8 Nar .. .. .	6,481	5,856	5,722	6,525	7,921	7,328
9 Sinor .. .. .	5,595	5,068	5,636	5,186	5,309	6,047
10 Savli .. .. .	5,089	4,650	3,620	4,687	6,551	6,275
11 Sankheda .. .. .	4,983	4,602	4,946	4,296	5,095	4,661
<i>North Gujarat</i> .. .. .	<i>158,481</i>	<i>138,143</i>	<i>131,896</i>	<i>146,808</i>	<i>163,814</i>	<i>155,099</i>
12 Patan .. .. .	29,830	27,017	28,339	31,402	32,646	32,712
13 Sidhpur .. .. .	20,468	16,187	15,447	14,743	16,224	13,688
14 Visnagar .. .. .	15,050	13,855	14,137	17,268	21,378	19,602
15 Mehsana .. .. .	14,762	11,888	10,141	9,393	9,985	8,791
16 Kadi .. .. .	13,455	11,919	11,556	13,070	16,331	16,689
17 Vadnagar .. .. .	12,692	11,671	11,228	13,716	15,941	15,424
18 Unjha .. .. .	11,344	9,832	9,258	9,800	11,287	10,512
19 Vijapur .. .. .	9,481	8,306	6,408	8,510	9,716	10,081
20 Kalol .. .. .	9,364	7,259	6,376	6,465	6,805	5,859
21 Chanasma .. .. .	8,918	7,940	7,003	8,183	8,560	7,452
22 Kheralu .. .. .	7,290	6,866	6,574	7,617	8,905	8,528
23 Ladol .. .. .	5,827	5,403	5,429	6,641	6,038	5,761
<i>South Gujarat</i> .. .. .	<i>40,057</i>	<i>32,479</i>	<i>30,926</i>	<i>32,071</i>	<i>30,110</i>	<i>26,742</i>
24 Navsari .. .. .	24,397	19,437	17,982	21,451	16,276	14,920
25 Bilimora .. .. .	9,318	7,321	6,462	4,693	5,915	4,787
26 Gandevi .. .. .	6,342	5,721	6,482	5,927	7,919	7,035
<i>Kathiawad</i> .. .. .	<i>35,202</i>	<i>32,200</i>	<i>30,066</i>	<i>32,196</i>	<i>29,229</i>	<i>26,024</i>
27 Amreli .. .. .	20,186	17,793	17,443	17,997	15,653	13,642
28 Kodinar .. .. .	7,384	6,430	6,075	6,664	7,447	6,542
29 Dwarka .. .. .	7,632	7,977	6,548	7,535	6,129	5,840

## CHAPTER III

## BIRTHPLACE AND MIGRATION

## § 1. GENERAL

**79. Introduction**—This chapter is primarily concerned with the statistics of the birthplaces of the censused population. Column 13 of the census schedule enquired into the birthplace of the person returned, and in that connection, the rule was to enter the birth district of the person concerned. If the person belonged to British India, the birth district together with the name of the Presidency or Province was to be shown. If he belonged to one of the principal Indian states, like Hyderabad, Mysore, Kashmir, Gwalior, etc., an endeavour was made to make a reciprocal arrangement whereby we undertook to enter the district of such state in which the details of our *prants* were shown. For the City of Baroda, those born in the City had to specify that fact and those born outside the City but within the State had to indicate the taluka of their birth. For the few persons counted in the State, who were born out of India, the name of their native country was reckoned to be enough. The Bombay Presidency was asked, as in 1921, to show the *prants* of the State for the birthplace figures of the Baroda-born enumerated within the limits of that Province. This was at first agreed to, but from motives of economy the details were subsequently withheld. We however agreed to give details of districts for all British Indian provinces and the larger Indian states; and as it will appear from the margin, the State census organisation endeavoured to discharge its responsibilities in this regard to the best of its ability.

Our largest population exchanges are with our big neighbour, the Bombay Presidency, and the network of states in Gujarat and Kathiawad. There the number under "Bombay unspecified" was only 197 or .07 per cent of the total number of immigrants from Bombay. The ratio of "unspecified" grows with the remoteness of the province dealt with. Every endeavour however was made to teach the enumerating staff the details of Indian geography in the instruction classes, and informative booklets giving details of names of countries and of districts and chief towns of provinces and important Indian states were distributed broadcast. The birthplace returns are compiled in Imperial Table VI, in which the district details of the Bombay Presidency alone are published and as to other units only the provincial totals are shown. But the district

BORN IN	ENUMERATED IN THE STATE	
	Total	Number returned with districts of birthplace unspecified
1	2	3
Bombay Presidency and adjacent States .. ..	299,038	197
United Provinces and States .. ..	7,012	298
Rajputana .. ..	8,973	401
The Punjab and States ..	1,692	691
Madras and States ..	578	69
Central Provinces and States .. ..	651	179
Burma .. ..	265	95

details of other provinces and states were supplied in manuscript to individual Census Superintendents of Provinces and States belonging to the All-India Census organisation. State Table XVIII gives additional details in three parts of (a) immigrants by age periods, (b) immigrants from selected areas by age and occupation for the City of Baroda, and (c) the comparative literacy in local and immigrant population aged 10 and over of Baroda City by wards. The last named was prepared from a special sort of slips by birthplace and age correlated with literacy.

The figures of age therefore do not exactly correspond to the age-returns compiled after the smoothing process to be explained in the next chapter, for the City of Baroda.

**80. Scope of the Chapter**—The main concern of this chapter is to find out from the birthplaces of the enumerated population the *extent* of the movements of the people, whither it moves, how much of it moves and why it moves at all. In the absence of any organisation for the registration of migrants the birthplace is the only clue for finding out whether a person is an immigrant or not. The question of migration has been already anticipated in the general discussion of the variations in the population figures in the first chapter and an attempt has also been made, by the use of certain simple mathematical formulæ, to measure the volume of migration from decade to decade. In this chapter we will give further details of this movement, its variations from place to place, its kind, sex ratio and other particulars.

**81. Accuracy of the Return**—That these instructions were effective in bringing about greater accuracy in the results is seen in the progressive decline of "District unspecified figures" in the birthplace returns of persons counted here who were born somewhere in Bombay Presidency and Sind. This decline is striking in this census compared to the previous two enumerations.

IMMIGRANTS FROM	Number of 'District unspecified'		
	1931	1921	1911
Bombay Presidency ..	197	5,259	5,650
Sind .. .. .	587	907	440

**82. Limitations of the Birthplace Return**—The census takes the birthplace as the sole test of the enumerated person's normal residence and assumes that he has immigrated to the place of enumeration from his place of birth. How unsatisfactory this test is may be realised from a few instances of anomalies. For example, a family of semi-permanent settlers have been counted in an area, in one census; they have children born in that place who are counted in the next census as part of the native born population, although they are really not so. Again a genuine resident, whose mother may have been born elsewhere and gone there for her confinement when he was born, has to show a different birthplace in the returns of the place of which he is to all intents and purposes a native, and thereby becomes an 'immigrant.' Again any calculation of the volume of genuine immigration is vitiated, because casual visitors, railway passengers or stragglers from beyond the State are counted on the census date or thereby included under immigrants. Even if they are genuine immigrants, the mere record of their birthplace is no guide to their real domicile. Thus a soldier born in Malta, and counted in Baroda is compiled as a native of Malta, although he is a genuine native of England. A Japanese may have been born in Baroda, and, returning to his native country soon after, may have come back later in life to his place of birth on business and counted on the census date. He thus becomes a "Barodian" and part of the State's natural population! The birthplace return is full of these anomalies, and it is hoped future censuses will seek to improve upon it by adding clauses in the schedule about nationality and race, and correlating these facts with nativity and occupation. But this means overcharging the questionnaire, and cannot be undertaken unless it is relieved by omitting certain details, *e.g.*, Infirmities or (if we may suggest this, taking courage with both hands) Religion. In view of the defectiveness of these returns of birthplace, it is usual not to examine them in conjunction with any other factor. Subsidiary Tables given at the end of this chapter are merely concerned with dealing out absolute figures and are prepared by merely arranging Imperial Table VI in a certain way and collating similar figures of the Baroda-born enumerated elsewhere, supplied by other provinces and states.

**83. Types of Migrants**—Defective as they are, the birthplace figures are usually accepted as a rough index of the source of migration in the hope that in dealing with large figures on both sides (*i.e.*, of immigration and emigration), these

anomalies will tend to cancel out. Apart from these anomalies, the figures however tend to arrange themselves in a particular manner, and these particularities repeat themselves from census to census with the regularity of laws. Thus a certain type of migration tends to have a predominance of females and this sex feature persists constantly from decade to decade. Again, masculinity, it is noticed, rises with the distance of the place of birth of immigrants. The more remote the area from which they come, the less likely are they to have parity of sex ratio. Further, the proportion of the sexes tends to vary with the nature of the migrations. These tendencies are found associated with particular types of migration, of which the Indian census recognises five kinds. These main forms are :

“(i) *casual*, which comprise minor movements between neighbouring villages, which may be of a permanent or temporary character and come into our records only when the persons crossed the borders of two birthplace units; (ii) *temporary*, due usually to the migration of coolies to meet the demand for labour on canals, railways and so forth and to journeys on business or in connection with pilgrimages, marriage ceremonies and the like; (iii) *periodic*, due to seasonal demands for labour generally for the harvests\*; (iv) *semi-permanent*, where the inhabitants of one place earn their living in another but maintain connection with their own homes and ultimately return there; (v) *permanent*, usually in the nature of colonisation. While it is naturally impossible to isolate the statistics of these various classes of migration some estimate is possible as to their respective importance from (a) the distance between the places of enumeration and birthplace, (b) the proportion of the sexes among the migrants and (c) our general knowledge of the chief territorial movements in different parts of India and the statistical information regarding them which is obtainable from various independent sources.” †

**84. Nature of Casual and Short Distance Movements**—It is important to understand the nature of the first type of these movements, as they relate to the movement in contiguous areas, which absorb the bulk of our migrants. These are miscalled “casual,” for the greater portion of migrants of this kind are brides married in a village other than their own or children of such brides born in the native village of their mothers. These occur as migrants only when villages belong to different districts. Migrations of this kind are permanent forms of short-distance movements, in which the sex ratio will depend on the nature of the exchange. Some areas give more brides than they take, but on the whole, there is always a deficiency of males in this form of movement. Further, a frequent type of casual movements is the number of pilgrims, the majority of whom are women, who flock to temple places or other seats of religion: e.g., Dwarka, Beyt, Karnali, Unawa, Bechraji, etc. Other varieties of short-distance movements are of the temporary kind, and of these the most conspicuous was the *hijrat* movement, of which full details have been given in the first chapter.

## § 2. MAIN RESULTS

**85. Main Figures of Immigration**—The general results of the birthplace returns will be stated here. The census records a total of 324,579 persons, who have returned birthplaces outside the State. These birthplaces may be grouped under five heads :

(a) *Contiguous areas* : which include the five districts of British Gujarat, the districts of Khandesh and Nasik that border on the Southern division of the State, the different states, large and small, of Gujarat and Kathiawad and the little island of Diu on the Kathiawad coast belonging to Portugal;

(b) *Fairly near areas* : made up of the remainder of Bombay Presidency and States including Bombay City, the Deccan and Sind, Portuguese India, Rajputana with Ajmere-Merwara, Central India Agency and Gwalior State;

(c) *Remote* : which include the provinces of Delhi, Punjab, United Provinces, Bihar and Orissa and Central Provinces (with their respective states), and the Indian State of Hyderabad;

\* Instances of seasonal migration in other parts of the world are the Italian workers who before the war used to leave their native land for short periods for seasonal employment in Central Europe, South America and elsewhere, the Irish harvesters who came to Great Britain each year, the Aberdeen fisher-girls who came to Yarmouth for herring packing, and the great influx of labour into Kent for the hop-picking.

† *The Census Report of India, 1921, para 63.*

(d) *Very remote*: comprising the rest of India, such as Assam, Bengal, Burma, etc.;

(e) *Outside India*: from countries other than India, of Asia, Europe and the rest of the world,—Nepal and Ceylon being counted as outside India.

Under these five heads the sex ratio of immigrants is shown in the margin. There are

KIND OF AREA	Persons	Males	Females	Females per 100 males	Proportion to total immigrants
<b>Total</b> ..	<b>324,579</b>	<b>132,505</b>	<b>192,074</b>	<b>145</b>	<b>100</b>
Contiguous Area ..	288,255	109,259	178,996	164	89
Fairly Near ..	22,622	13,134	9,488	72	7
Remote ..	10,155	7,801	2,354	30	3
Very Remote ..	2,045	1,422	623	44	} 1
Outside India ..	1,502	889	613	68	

145 females to 100 amongst immigrants. The ratio for females decreases as the area of their birth gets more remote but for very remote areas and countries beyond India, for special reasons which will be given presently, the ratio of females

is greater. The bulk of the immigrants are from continuous areas.

**86. Mobility of the Population**—The extent of the mobility of the population is shown by the following proportions of the actual enumerated population according to their birthplace. This table is based on Subsidiary Table IV given at the end of this chapter.

SUBSIDIARY TABLE I

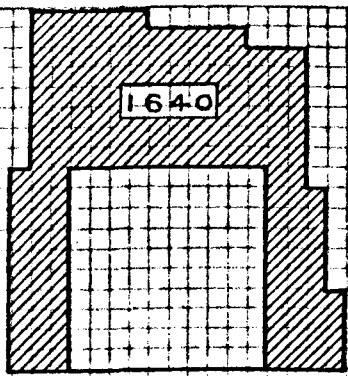
PROPORTIONS OF THE ENUMERATED ACCORDING TO THEIR BIRTHPLACE

Proportion per mille of actual population born in	ENUMERATED IN				
	State	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
District of enumeration .. .. .	857	807	926	816	798
Other parts of the State .. .. .	10	23	2	7	6
Contiguous areas .. .. .	118	143	65	165	184
Non-Contiguous areas .. .. .	14	26	7	11	11
Outside India.. .. .	1	1	....	1	1
<b>Total</b> ..	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>

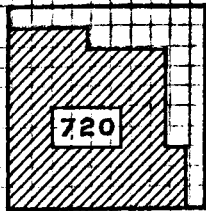
The above table shows that 86 per cent of the State population were born within their district of enumeration; only one per cent came from other districts of the State, 12 from adjacent parts of British and other State territory and the rest from everywhere else. The very small part which the districts of the State play in the migration figures is the result of its dispersed character, on which emphasis has been laid in the introductory paragraphs of this Report. Where districts are more compact than others, there its population is more native to the soil. Thus the Kathiawad division is riddled with "foreign" territory and contiguous areas contribute no less than 18 per cent of its population in this census. The Northern on the other hand is the most compact division, and has 93 per cent of its inhabitants born within its limits. The proportions for Central and South Gujarat are affected by the presence of the *hijratis* on the census date. If these are omitted (less those amongst them who were born within the State),

# SEX INDEX AND BALANCE OF MIGRATION

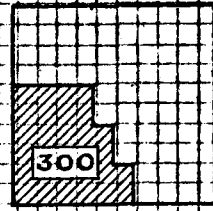
## FEMALE RATIO PER 1,000 MALE IMMIGRANTS



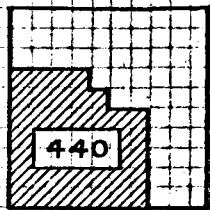
CONTIGUOUS



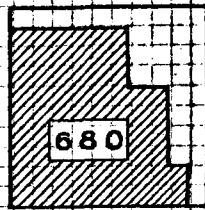
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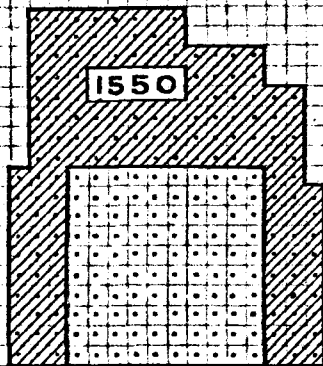
REMOTE



VERY REMOTE

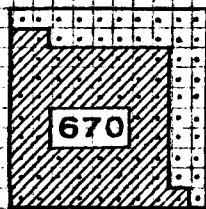


OUTSIDE INDIA

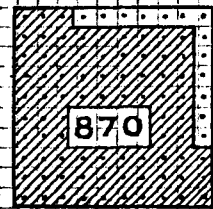


CONTIGUOUS

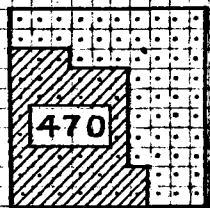
## FEMALE RATIO PER 1,000 MALE EMIGRANTS



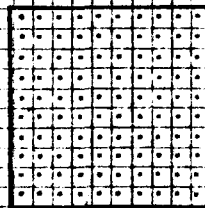
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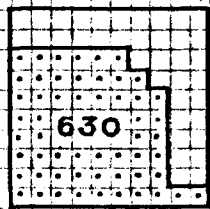


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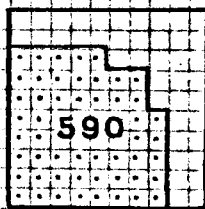


OUTSIDE INDIA

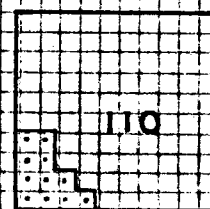
## BALANCE OF MIGRATION



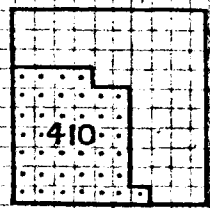
CONTIGUOUS



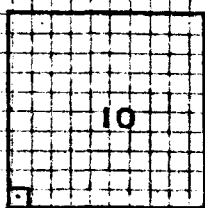
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OUTSIDE INDIA



IMMIGRANTS



FEMALES



EMIGRANTS

the proportions are altered as in the margin. The total number of *hijratis*, found in these two divisions, who were born outside the State, was 24,166. Excluding these from the census population of these two districts and also from the immigrants total from contiguous areas, we find the proportion of immigrants from contiguous areas to Central Gujarat is reduced from 143 to 124 and to South Gujarat from 165 to 143.

Proportion per mille of actual population (less <i>hijratis</i> born outside the State) born in	Central Gujarat	South Gujarat
District of enumeration ..	824	836
Other parts of the State ..	24	7
Contiguous areas .. ..	124	143
Elsewhere .. .. .	28	14

The non-contiguous areas bulk most largely in the Central Gujarat as in the City, the Deccani population is concentrated and its factories offer the greatest scope of industrial labour from Rajputana and the United Provinces. "Outside India" forms only 1 per mille of the population of the State with 1,502 persons of whom a fifth were found in the City, 91 were counted in Okhamandal, the bulk belonging to the ships which had touched Port Okha on the census day.

**87. Main Figures of Emigration**—The general total of the Baroda-born counted elsewhere must necessarily be incomplete. The figures from other provinces and states have now arrived, but not one has acceded to my request to give details by districts. Portuguese and French India returns are not available and only figures from Ceylon and Rhodesia have been furnished by the Census Commissioner. These census returns give a total of 195,456 persons born in Baroda State enumerated elsewhere so far as they are available. The marginal table divides these emigrants according to the distance they have travelled from their homes and the sex ratio amongst each class of emigrants. Here the immobility of the State population is even more strikingly illustrated than in

EMIGRANTS TO	Persons	Males	Females	Females to 100 males	Proportion to total emigrants
<b>Total ..</b>	<b>195,456</b>	<b>79,735</b>	<b>115,721</b>	<b>145</b>	<b>100</b>
Contiguous Area ..	180,178	70,578	109,600	155	92
Fairly Near Area ..	13,067	7,814	5,253	67	7
Remote Area ..	1,143	611	532	87	} 1
Very Remote Area ..	1,058	722	336	47	
Outside India ..	10	10	..	..	

the corresponding table regarding immigrants. The State receives far more than it gives, even if we exclude the temporary factor of the *hijratis*. The "Outside India" emigrant from Baroda is a much larger factor than the above figures show. Special statistics were collected regarding these and details, will be discussed in a subsequent paragraph.

**88. Mobility according to Emigration Figures**—As with immigrants, we give a corresponding table for emigrants, showing proportions per mille of the natural population who were enumerated in the different census areas grouped according to degree of remoteness. This table is based on Subsidiary Table V given at the end of this chapter.

SUBSIDIARY TABLE II

PROPORTIONS OF THE BARODA-BORN ACCORDING TO AREA OF ENUMERATION

Proportion per mille of natural population enumerated in	BORN IN				
	State	Central Gujarat	North Gujarat	South Gujarat	Kathiawad
District of Birth .. .. .	909	894	920	917	897
Other parts of State .. .. .	6	5	6	5	17
Contiguous areas .. .. .	71	87	61	63	71
Non-contiguous areas .. .. .	14	14	13	15	15
Outside India .. .. .	....	....	....	....	....
<b>Total ..</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>

Only nine per cent of the natural population were found outside the district of their birth in this census in the different parts of India, and such other parts of the world from which census returns were available : but the immobility of the population would be found to be even greater when we deduct out of this nine per cent, eight for contiguous areas and the districts of the State. Hardly more than one per cent would seem from the census figures to venture out to remote areas. But this is not entirely correct. Africa, Europe and even Japan are countries which furnish evidence of the enterprise of "Barodians" who have gone and settled there of whom mere census returns of birthplace can show no trace. Of the different divisions of the State, the most self-sufficing in this census as well as in 1921 was the Northern district, 92 per cent of whose natural population were counted there at the census. As emigration figures are not received by districts, the above table (as well as Subsidiary Table V) has been prepared by distributing emigrants of contiguous areas according to the *prant* nearest to the British district or Indian state in which they were counted : while the emigrants in other areas were distributed *pro rata* according to population strength of these divisions of the State.

**89. Variation in Migration**—Having considered the actual state of things as disclosed in the census, we shall discuss now the general variations in the figures

MIGRANTS	Number in 1931	Variation since 1921	Percentage of Migrants in	
			1931	1921
Immigrants .. ..	324,579	+39.6	13	11
Emigrants .. ..	195,456	-11.6	9	10

of migrants since 1921. In the margin, a small table is given showing the variation per cent amongst the migrants and in the proportion per cent in the last two censuses. The ratios for the immigrants are calculated on the total actual population censused in the two years, while these for the emigrants are based on the total natural population as found for the last two censuses. The increase amongst immigrants is more than double the rate of growth in the general population, while emigrants have declined by nearly 12 per cent. If we exclude the *hijratis* born outside the State, the increase amongst immigrants is reduced to 28.8 per cent. Thus the volume of immigrations has largely increased and the balance due to migration has turned decidedly in favour of the State.

**90. Variation in Migrants by Divisions**—(a) *Immigration*—We will now note variations amongst immigrants by divisions. The margin shows the number and proportion of the foreign born in each division and the City of Baroda.

Division of enumeration	Number of foreign born	PERCENTAGE OF FOREIGN BORN IN	
		1931	1921
Baroda State .. ..	324,579	13	11
Baroda City .. ..	31,333	28	26
Central Gujarat excluding City ..	108,515	15	12
North Gujarat .. ..	73,163	7	6
South Gujarat .. ..	71,608	18	14
Kathiawad .. ..	39,960	20	19

The smallest proportion of outsiders is in North Gujarat as usual and the City returns similarly show a considerable proportion of outsiders. The extraordinary factor of *hijratis* accounts for the comparatively high proportion of outsiders in Central and South Gujarat. If the *hijratis* are excluded the proportion becomes only 13 and 15.5 respectively. The increase in the number of outsiders in the City is mostly due to the opening of the railway workshops and the textile mills attracting foreign born labour. The increase in South Gujarat, apart from the *hijratis*, is more apparent than real. It is mainly due to the return of the repatriated South African born Indians, whose homes are in Navsari *prant*.



(b) *Emigration.*—The figures of emigrants can only be estimated, as details for districts are not supplied from other places. But taking only the emigrants to other parts of India, the distribution is shown as in the margin. Everywhere the proportionate figures show decline since 1921, particularly in Central Gujarat, where there are now four emigrants less per hundred of the natural population.

DIVISION OF BIRTH	Number enumerated elsewhere	Proportion of emigrants to natural population in	
		1931	1921
Baroda State ..	195,446	9	10
Central Gujarat ..	80,528	11	15
North Gujarat ..	81,070	8	9
South Gujarat ..	29,730	8	10
Kathiawad ..	18,709	10	9

**91. Inter-Divisional Migration**—We shall now consider the various types of migration a little more in detail. First the largest type, concerned with contiguous or short distance movements may be taken up. In para 90 above, two marginal tables have been given, in which it will be noticed that the totals of the migrants of individual districts exceed the all-State figures of immigrants and emigrants by 14,591. This figure represents the net result of exchange of populations between the different divisions : that is to say, Subsidiary Tables IV and V give details of distribution of these migrants in the different natural divisions. The geographical situation prevents any large migration but it appears that this interchange is increasing gradually year by year. In 1911, the total inter-divisional migrant figure was 10,540. In 1921, this figure rose to 12,778. Now it has increased by 1,813. The most remarkable feature of this migration is that

INTER-DIVISIONAL MIGRATION						
NATURAL DIVISION	Receives from other divisions			Gives to other divisions		
	1931	1921	Variation or	1931	1921	Variation or
Central Gujarat ..	8,702	6,685	+2,017	3,923	4,500	— 577
North Gujarat ..	2,287	3,549	—1,262	5,820	4,401	+1,419
South Gujarat ..	2,782	1,708	+1,074	1,789	1,696	+ 93
Kathiawad ..	820	836	— 16	3,059	2,181	+ 878

Kathiawad, a remote and not well-favoured part of the State, always gives more to other divisions of the State than it receives from them. But, as pointed out already while discussing variations in the first chapter, this division is a gainer in migration as against the other states of Kathiawad. How these gains and losses are distributed is seen from the following Subsidiary Table :—

SUBSIDIARY TABLE III  
MIGRATION BETWEEN NATURAL DIVISIONS  
(ACTUAL FIGURES COMPARED WITH 1921)

NATURAL DIVISION IN WHICH BORN	NUMBER ENUMERATED IN NATURAL DIVISION			
	Central Gujarat	Kathiawad	North Gujarat	South Gujarat
1	2	3	4	5
Central Gujarat .. .. . { 1931	675,791	558	1,701	1,664
.. .. . { 1921	604,769	350	2,893	1,257
Kathiawad .. .. . { 1931	2,169	163,502	462	428
.. .. . { 1921	1,494	143,130	473	214
North Gujarat .. .. . { 1931	4,925	205	934,557	690
.. .. . { 1921	3,741	423	840,965	237
South Gujarat .. .. . { 1931	1,608	57	124	329,987
.. .. . { 1921	1,450	63	183	292,386

The above table shows that the City and Baroda division are the largest recipients of immigrants from other divisions ; as being the capital and centre of adminis-

YEAR	Females per 100 males
1911	74
1921	82
1931	78

tration and business activity this area offers the most of what little scope there is for employment or enterprise in the State. That this migration is genuine, in search for livelihood, and more or less semi-permanent in character is indicated by the fairly constant high female ratio amongst these migrants persisting in the last three censuses. The bulk of it is not certainly of the casual type of "marriage migrant," although taking of brides from Kathiawad Patidars has become increasingly common of late years.

**92. Variation in Volume of Migration**—We shall now take up the chief items of the extra-State migration. Some general figures of the volume of migration must first be given. In the first chapter we have already estimated in addition to the *hijratis* that immigrants and emigrants in the last ten years numbered 131,010 and 31,900 respectively. Calculating separately for males and females, these estimates are divided into 47,500 males and 83,510 females for the former and 13,821 males and 18,079 females for the latter type of movement. In 1921, the respective estimates for migration were 100,593 and 79,385. The very large drop in the emigration figures requires an explanation ; as each type of migration is taken up this particular phenomenon will be analysed and attempts will be made to assign reasons. In the meanwhile the general reason may be suggested that the true Baroda-born emigrant, working in outside areas must have returned to his home during the decade and contributed to the general census increase in the population. It appears to be the general impression that the industrial crisis in Bombay and other places of opportunity for Baroda enterprise has resulted in driving many people back to their homes and relations within the State to stay on till the crisis passes away and better times return. One indication of this is found in the fact already stated that the increase in occupied houses has not been *pari passu* with the general increase in population. Another indication is that the number of persons born in the State and enumerated within it has risen from 1,894,028 to 2,118,428 or by nearly 12 per cent, while the natural rate of increase is only 9 per cent. Thus it is permissible to infer that if this natural rate of increase were applicable to this item of variation, the number of the Baroda-born counted within the State in 1931 would have been only 2,064,491 ; thus the excess of 53,937 may be almost entirely credited to this account of returned emigrants.

### § 3. DETAILED STUDY BY AREAS

**93. Contiguous Areas**—We now come to the largest item of our migration statistics. 288,255 out of a total of 324,579 immigrants from beyond the State (or 89 per cent) come from the adjacent districts of British Gujarat and neighbouring states of Gujarat and Kathiawad. These are broadly of three types : (a) *hijratis* born outside the State but within the British limits 25,093, in number or 14.8 per cent, (b) marriage migrants or children born of such, an indeterminate number, but remaining fairly constant from decade to decade, (c) casual visitors of the temporary type, pilgrims, floating population, etc., and (d) real genuine migrants, who have been moved to travel out of their homes, for settlement, search for livelihood or enterprise. Emigrants numbering 180,138 also belong to the above types with the exception of (a) which was only a political immigration caused by special reasons. The number under (b) of emigrants is difficult to estimate. There is a frequent interchange of wives between Baroda *prant* and Kaira and Broach villages. Certain of the British villages in Charotar form with others in our territory an endogamous *gól* (circle) for *kulin* Patidars. Kadwa Kanbis of South Gujarat form a similar *gól* of their own. The Rewa Kantha and Palanpur agencies similarly have exchanges with our Baroda and Mehsana *prants*. Considering that the population of the State is only about a quarter of its contiguous area, it should give one-fourth of marriage migrants to what it receives, but in practice the quota does not work out to that extent. Female immigrants from contiguous areas number

166,328 (less *hijratis*) while the emigrants to similar areas is only 109,600, so that we give much less in these bridal exchanges presumably than we receive. All immigrants have been compiled by age, but separate age-returns of *hijratis* are not available. Assuming that 80 per cent *hijrati* females are aged 15 and over, and deducting these *hijrati* females, we get 70,884 females aged 15 and over from British districts of Gujarat. (State Table XVIII-A gives the absolute figures of immigrants by age). In 1921, female immigrants (15 and over) numbered 56,430. Neglecting the slight error involved in the difference in grouping of ages in the two censuses by taking a mean of their two figures, and using the Longstaff method, we calculate that 30,368 women aged 15 and over must have come to the State during the last ten years. Exactly how many of these were "marriage migrants" it is not possible to tell. But the mean number of children aged 0-15, among these immigrants, making the necessary reductions on account of *hijratis* for these five districts, was 13,738. Applying a 20 per cent mortality we would estimate that some 9,800 children must have been born in their homes and come to the State with their mothers during the decade. Thus we will not be far wrong in assuming that 20,000 women of marriageable ages and over came to the State in the decade as "bridal" immigrants. As the decade's marriage total is well over 150,000 this supposition is not excessive.

**94. Estimate of Volume of Immigration from Contiguous Areas**—Now the total volume of immigration during the decade from contiguous areas can be calculated if we split the immigrant total of 1931 into contiguous British areas and Indian states. The margin does this and compares the absolute figures of two censuses. The difference between the two censuses in British districts is reduced from 57,227 to 32,134, by eliminating the *hijrati* factor. From the marginal figures and using the Longstaff method we arrive at the following estimates of kinds of immigrants that must have come to the State during the last ten years:—

MIGRATION FROM AND TO CONTIGUOUS AREAS				
PROVINCE OR STATE	Year	Gives to Baroda	Receives from Baroda	Gain (+) or Loss (—) to Baroda
British Territory .. {	1931	168,734	102,983	+65,751
	1921	111,507	125,837	—14,330
Variation ..		+57,227	—22,854	
Indian States and Foreign Territory {	1931	119,521	77,195	+42,326
	1921	87,396	76,173	+11,223
Variation ..		+32,125	+ 1,022	

- (1) *Contiguous areas*.—*hijratis*, 25,093 of whom 9,864 must have been females aged 15 and over ;
- (2) 64,028 other immigrants of whom 30,368 must have been adult women aged at least 15 and over. Of these, at least 20,000 should have been women, and 9,800 children. The genuine type of immigrants must have numbered about 34,200 or nearly half the total estimate for these areas.

**95. Estimate of Emigration to Contiguous Areas**—The emigration during the decade can be similarly estimated for British territory and Indian states separately. For British territory, the number of emigrants during the decade according to the method followed was 5,748 as against 36,072 in 1911-21. For Indian states, the respective figures of emigrants for the two decades are 20,068 and 22,807. Evidently the tide of movement outside to short distance areas has receded; the decline in Indian states is slight and due to normal fluctuations. The movement here is mostly confined to marriage exchanges. In British contiguous territory, the decline is serious. We have estimated the number of "marriage-immigrants" to be about 20,000 in the last ten years. This is a fairly constant factor. Of this figure, about a quarter must be assigned on the basis of population to the Indian

states adjacent to our Raj. The remaining 15,000 must have gone out of the State as brides to British territory. But the net volume of emigration is only 5,748. The discrepancy is therefore to be explained in the following three ways :—

- (a) Some returned as wives of *hijratis* and got counted in our census. Of the 26,755 *hijratis*, 1,662 were born in our State, including 1,339 women, the bulk of whom were married.
- (b) Large numbers of emigrants returned to our territory, owing to agricultural and industrial depression and also as labourers for our new mills and factories. The greater part of the increase in Charotar towns is due to this last named reason.
- (c) There was a real decline in the movement to contiguous areas, as to other areas within India generally. Inducements were less strong, the scope for expansion within the limits of the State had not yet exhausted itself, and the wherewithal for enterprise outside seemed to diminish appreciably.

**96. Fairly Near Areas: (a) Immigrants**—These areas gave 22,622 to Baroda

UNITS	Immigrants from		Emigrants to	
	1931	1921	1931	1921
<b>Total .. ..</b>	<b>22,622</b>	<b>26,266</b>	<b>13,067</b>	<b>16,561</b>
Non-contiguous Bombay Presidency and States ..	11,339	17,283	10,139	13,145
Rajputana and Ajmer Merwara .. ..	9,502	7,583	816	1,096
Central India Agency ..	974	744	1,620	1,741
Gwalior .. ..	491	377	492	579
Portuguese India .. ..	297	272	..	..
Aden .. ..	19	7	..	..

and received from the State 13,067 persons. The margin specifies the details per area included. Under Portuguese India, no emigrants are noted, but it may be mentioned here that Diu is contiguous to Kodinar and must contain as many Baroda-born persons as we have recorded natives of that island; but no figures have so far been furnished of these details. With

non-contiguous parts of the Bombay Presidency and States, our exchanges recorded in this census are about equal; with Gwalior, the same is the case, while we give nearly double of what we receive from Central India Agency. On the other hand, we receive nearly 12 times from Rajputana the number that we send to that territory. This migration exchanges with fairly near areas is almost entirely of the true type of semi-permanent or permanent nature and variations do throw a very helpful light on the economic conditions of the people. From Bombay non-contiguous districts and areas, the largest contingent is from Ratnagiri, Colaba and Bombay City. Poona district and Kolhapur state are other important contributors. Immigrants from Rajputana have largely increased in this census particularly in North Gujarat, Baroda City and *prant*. The greater part of these immigrants are Hindus—Brahmans and Vantias and a few Bhils. The Musalmans from Rajputana are mostly from Ajmere. These immigrants are the most important contingent, outside of Bombay Presidency, in the State “foreign born” population and have shown consistent increase since 1911.

(b) *Emigrants*—Emigrants to this class of territory have declined since 1921 by over 21 per cent. More than 54 per cent are found in Bombay City alone, and emigrants of this type are mostly educated and middle class. Emigrants to this city of opportunity increased from 450 in 1911 to 9,757 in 1921 but since then have declined to 6,938 in 1931. This fall is attributable to economic causes, and accentuates the feature of the returned emigrants to which reference has been already made. Thana and Poona districts come long after the Bombay City in point of number of emigrants; the Poona owes mostly Vantias and artisans who are long settled there. In Thana, the emigrants are mostly Kolis working on salt pans and other labour, on a seasonal basis, which explains why so many of them have their wives and children behind.

**97. Remote and Very Remote Areas**—Migration between this State and these areas is not large, and the figures need not detain us long. The remote areas give 10,155 persons and receive 1,143 (or nearly one ninth). The very remote areas give 2,045 and receive 1,058. The former class includes the United Provinces and States which furnish the largest contingent of immigrants (7,012). Next to these are Punjab and Delhi, and Central Provinces. The immigrants from the last named are mostly limited to Marathi Speakers—Decani Brahmans and Marathas who have intermarried with local residents.

CHIEF AREAS	GIVE		RECEIVE	
	1931	1921	1931	1921
United Provinces and States ..	7,012	3,932	326	183
Punjab and Delhi with States ..	2,042	904	208	119
Central Provinces .. ..	647	565	509	376

The most remarkable feature of the variations is the large increase of immigrants from the United Provinces in the State, particularly in the City, where their number is now more than double. They have also come more into evidence in the country-side, where the tall gaunt Bhaiya is quite an occasional figure as protector of the farmers' fields. The State has not encouraged Sindhis and Makranis for this purpose, as they are a lawless and turbulent lot. That is why these Bhaiyas are more favoured.

**98. Sex Ratio of Migrants from Remote and Very Remote Areas**—Ordinarily one would expect that as the distance of places with which migrants are concerned grows more remote, so the female ratio declines. This is however modified by the circumstance that if the migration is of a permanent or semi-permanent nature then the ratio approaches parity: Thus European officers in this country are immigrants of a semi-permanent nature and they have frequently their families with them. The sex ratio amongst them would be higher than amongst labourers from United Provinces and Rajputana. Immigrants from very remote areas show femininity to the extent of 44 per cent, while remote areas have only 30. This is due mainly to the fact that immigrants with birthplaces in Burma and Madras are of a semi-permanent nature and come here accompanied by their families. In remote areas, the immigrants from United Provinces are of the labouring class and have a low female ratio and as they are the most numerous, they help to bring the average for the whole class down.

**99. Overseas Migration: (a) Immigrants**—Coming to the last class, we find that the State contains 1,502 persons from countries outside India; of these 460 belong to Asia, 88 to Europe, 938 to Africa, 15 to America and 1 to New Zealand. Of the 460 Asiatics 239 are Nepalese and 122 Afghans. 44 Japanese were also recorded of whom 38 belonged to a ship which halted at Port Okha on the census date. The 88 persons from Europe include 77 from United Kingdom. The largest item of the African born is "Africa unspecified" (540). 230 are from South Africa. Abyssinia claims 27. In 1921, only 614 persons from outside India were recorded: thus the influx from this quarter would seem to have multiplied. But the increase is more apparent than real. The increase under Asia is due to the presence of Gurkhas in the employ of the State Forces. The Asiatic immigrants are largely of the temporary kind, one in five of them being female. The Europeans have slightly increased, but this is almost entirely due to the presence of a ship at Port Okha. The Americans have declined, because of economy in the missionary organisation. The very large increase under Africa is however not due to any influx of genuine natives of Africa, but to the return of repatriated

COUNTRY	GIVES TO BARODA	
	1931	1921
Africa .. ..	938	371
Asia .. ..	460	158
Europe .. ..	88	64
America and Australia .. ..	15	21

Indians, many of whom were born and domiciled in Africa, but all belonging by ancestry to this State. The female ratio of these immigrants is high being nearly 68 per cent but if we except the African born element, the ratio is only 25.

(b) *Overseas Emigrants*—Emigrants to countries outside India cannot be estimated from census data. Only 10 persons have been so far reported by the Census Commissioner for India as having been counted in Ceylon and Rhodesia. But the overseas item of the Baroda emigration is very much larger, in fact it is an important feature of Baroda migration statistics. Since 1911, therefore, the census authorities of the State have attempted to supplement the enumeration figures which local enquiries and figures furnished by the Political office of passports

BARODA SUBJECTS RESIDING OUTSIDE INDIA			
Natural Division	1931	1921	1911
Central Gujarat ..	2,471	844	94
North Gujarat ..	325	387	810
South Gujarat ..	6,687	3,802	2,499
Kathiawad .. ..	1,007	377	152
<b>Total</b> ..	<b>10,490</b>	<b>5,410</b>	<b>3,555</b>

issued during the decade. Taluka Vahivatdars were asked to furnish statements of persons and families belonging to their charges, who were known to reside abroad. As the facts were supposed to be well-known to village officials, the statement may be accepted as accurate. A comparative inset table is given above which shows the variations in the strength of these overseas emigrants since 1911. The number has progressively increased, showing a net

growth of 195 per cent in the last 20 years. This increase is shared by all divisions except North Gujarat. Four tables (Subsidiary Tables VII-X) are given at the end of this chapter showing (i) emigrants by country of residence, (ii) emigrants by period of absence from the state, (iii) emigrants by occupation and (iv) emigrants by caste. From these tables the following summary results are

COUNTRY	Number of emigrants from Baroda	
	1931	1921
South Africa .. ..	3,459	1,233
East Africa .. ..	1,528	317
Abyssinia .. ..	100	} 3,214
Rest of Africa .. ..	4,400	
Mauritius .. ..	128	
America .. ..	71	4
Europe .. ..	320	34
Fiji .. ..	197	} 608
Other countries ..	287	

given. There are 5,284 families of "Barodians" found abroad, consisting of 7,967 males and 2,523 females. These emigrants are distributed in the principal countries of the world as in the margin, with corresponding figures for 1921. If these are to be believed, in spite of the vigorous pursuit of the policy of repatriation there, the number of Baroda emigrants has increased in South Africa. The East Africa emigration also became important during the decade. The increase in Europe includes an extraordinary item of 198 Barodians in Spain, which on enquiry proves to be a fact. Vohras from Kamrej taluka have been carrying on business there for years, especially in two towns, Bilboa and Malaga.

(c) *Overseas Emigrants by Caste and Occupation*—The main castes represented amongst emigrants are Patidars (2,532), Kolis (650), Brahmans (450), Luhanas (315), Mochis (232) and Vankars (230) amongst Hindus; and Vohras (3,216) and Memons (150) amongst Muslims. Hindus number 5,777 or 55 per cent; Muslim are 4,705 or 45 per cent. There are besides 6 Parsis and two Anglo-Indians (presumably Christians). In view of their proportion to the general population, the Muslims contribute much more than their share to this overseas migration. The majority of these Muslim emigrants are traders, who are daring *entrepreneurs* and have contributed largely to the building up of the wealth of such places as Transvaal, Natal and Abyssinia. By occupation these emigrants are divided as follows: 4,923 are engaged in trade: 4,360 in private service, largely connected with trade, 221 are hairdressers, 160 are tailors, and 148 makers of boots and shoes, 189 are engaged in the washing industry

while only 28 are teachers, 21 engaged in agriculture and 16 in government service. Lastly 26 are unemployed.

(d) *Volume of Overseas Emigration*—Finally we shall try and estimate the volume of this emigration during the last 10 years. There are three ways in which this can be done. First there is the Longstaff method or the similar but more elaborate formula advocated in this Report. We have already estimated the volume of emigration according to this method. The figure arrived at is 6,670 (*vide* para 34, Chapter I). The second clue in this matter is furnished by Subsidiary Table VIII in which the emigrants are classified according to the length of residence. This is at best unsatisfactory, as the mahal data are only based on guess work. As the margin shows, on the mahal estimates of periods of absence from the village, 8,465 emigrants have been away from the State within ten years, so that this figure may be taken as the estimate of overseas emigrants who left the State during the last 10 years. The second estimate is higher because it includes children etc., of families of emigrants who are born in the places in which they reside.

Period of residence	NUMBER
Below one year .. ..	996
Between 1 and 3 years ..	2,406
Between 3 and 5 years ..	2,038
Between 5 and 10 years ..	3,025
Below ten years .. ..	8,465

## ADDITIONAL SUBSIDIARY TABLES

SUBSIDIARY TABLE IV  
IMMIGRATION (ACTUAL FIGURES)

Natural Division where enumerated	BORN IN					
	Division of enumeration			Other parts of the State		
	Persons	Males	Females	Persons	Males	Females
I	2	3	4	5	6	7
Baroda State .. ..	2,103,837	1,117,114	986,723	14,591	8,198	6,393
Central Gujarat .. ..	675,791	370,842	304,949	8,702	4,979	3,723
Kathiawad .. ..	163,502	90,212	73,290	820	444	376
North Gujarat .. ..	934,557	487,326	447,231	2,287	1,142	1,145
South Gujarat .. ..	329,987	168,734	161,253	2,782	1,633	1,149

Natural Division where enumerated	BORN IN								
	Contiguous parts of other provinces			Non-contiguous parts of other provinces			Outside India		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	8	9	10	11	12	13	14	15	16
Baroda State .. ..	288,255	109,259	178,996	34,822	22,357	12,465	1,502	889	613
Central Gujarat .. ..	118,143	47,597	70,546	21,068	13,804	7,264	637	406	231
Kathiawad .. ..	37,489	12,271	25,218	2,265	1,528	737	206	145	61
North Gujarat .. ..	65,807	19,526	46,281	7,239	4,337	2,902	117	90	27
South Gujarat .. ..	66,816	29,865	36,951	4,250	2,688	1,562	542	248	294

SUBSIDIARY TABLE V  
EMIGRATION (ACTUAL FIGURES)

NATURAL DIVISION OF BIRTH	ENUMERATED IN								
	Natural population (State-born but enumerated anywhere in India)			Natural Division of Birth			Other parts of the State		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	2	3	4	5	6	7	8	9	10
Baroda State .. ..	2,313,874	1,205,037	1,108,837	2,103,837	1,117,114	986,723	14,591	8,198	6,393
Central Gujarat .. ..	766,319	402,298	354,021	675,791	370,842	304,949	3,923	2,094	1,829
North Gujarat .. ..	1,015,627	522,759	492,868	934,557	487,326	447,231	5,820	3,671	2,149
South Gujarat .. ..	359,717	182,045	177,672	329,987	168,734	161,253	1,789	939	850
Kathiawad .. ..	182,211	97,935	84,276	163,502	90,212	73,290	3,059	1,494	1,565

NATURAL DIVISION OF BIRTH	ENUMERATED IN								
	Contiguous parts of other provinces			Non-contiguous parts of other provinces			Outside India		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
1	11	12	13	14	15	16	17	18	19
Baroda State .. ..	180,178	70,578	103,600	15,268	9,147	6,121	10	10	..
Central Gujarat .. ..	71,208	25,959	45,249	5,397	3,403	1,994	10	10	..
North Gujarat .. ..	71,155	29,301	41,854	4,095	2,461	1,634	..	..	..
South Gujarat .. ..	22,787	9,509	13,278	5,154	2,863	2,291	..	..	..
Kathiawad .. ..	15,028	5,809	9,219	622	420	202	..	..	..



## SUBSIDIARY TABLE VI

## MIGRATION BETWEEN THE BARODA STATE AND OTHER PARTS OF INDIA

PROVINCES AND STATES	Immigrants to the Baroda State			Emigrants from the Baroda State			Excess (+) or deficiency (—) of immigration over emigration	
	1931	1921	Variation	1931	1921	Variation	1931	1921
1	2	3	4	5	6	7	8	9
<b>Total ..</b>	<b>323,077</b>	<b>231,880</b>	<b>+ 91,197</b>	<b>195,446</b>	<b>221,206</b>	<b>— 52,760</b>	<b>+ 127,631</b>	<b>+ 10,674</b>
<i>British Provinces .. ..</i>	<i>191,190</i>	<i>134,169</i>	<i>+ 57,021</i>	<i>113,978</i>	<i>141,228</i>	<i>— 27,250</i>	<i>+ 77,212</i>	<i>— 7,059</i>
Ajmer-Merwara .. ..	529	110	+ 419	71	234	— 163	+ 458	— 124
Andamans and Nicobars	1	2	— 1	19	16	+ 3	— 18	— 14
Assam .. ..	11	2	+ 9	232	125	+ 107	— 221	— 123
Baluchistan .. ..	..	..	..	22	12	+ 10	— 22	— 12
Bengal .. ..	393	257	+ 136	350	199	+ 151	+ 43	+ 58
Bihar and Orissa .. ..	110	42	+ 68	47	107	— 60	+ 63	— 65
Bombay .. ..	179,435	128,022	+ 51,413	111,846	138,838	— 26,992	+ 67,589	— 10,816
Burma .. ..	265	88	+ 177	342	661	— 319	— 77	— 573
Central Provinces and Berar .. ..	647	565	+ 82	509	376	+ 133	+ 138	+ 189
Coorg .. ..	..	..	..	..	..	..	..	..
Madras .. ..	555	284	+ 291	..	130	— 130	+ 555	+ 134
North-West Frontier Province .. ..	338	65	+ 273	8	228	— 220	+ 330	— 163
Punjab and Delhi .. ..	1,906	873	+ 1,033	208	119	+ 89	+ 1,698	+ 754
United Provinces .. ..	7,000	3,879	+ 3,121	324	183	+ 141	+ 6,676	+ 3,696
<i>Indian States and Agencies .. ..</i>	<i>131,887</i>	<i>97,711</i>	<i>+ 34,176</i>	<i>81,468</i>	<i>79,978</i>	<i>+ 1,490</i>	<i>+ 50,419</i>	<i>+ 17,733</i>
Baluchistan Agency .. ..	200	232	— 32	..	..	..	+ 200	+ 232
Bengal States .. ..	..	..	..	..	..	..	..	..
Bihar and Orissa States	3	..	+ 3	16	46	— 30	— 13	— 46
Bombay States .. ..	119,653	87,816	+ 31,837	78,471	7,443	+ 2,028	+ 41,182	+ 11,373
Burma States .. ..	..	..	..	..	1	— 1	..	— 1
Central India Agency .. ..	974	744	+ 230	1,620	1,741	— 121	— 646	— 997
Central Provinces States	4	..	+ 4	..	17	— 17	+ 4	— 17
Cochin State .. ..	14	..	+ 14	3	9	— 6	+ 11	— 9
Gwalior State .. ..	491	377	+ 114	492	579	— 87	— 1	— 202
Hyderabad State .. ..	337	267	+ 70	37	198	— 161	+ 300	+ 69
Kashmir and Jammu State .. ..	30	6	+ 24	22	6	+ 16	+ 8	..
Madras States .. ..	..	..	..	..	..	..	..	..
Mysore State .. ..	72	15	+ 57	51	72	— 21	+ 21	— 57
North-West Frontier Province States .. ..	3	..	+ 3	..	..	..	+ 3	..
Punjab States .. ..	136	31	+ 105	..	..	..	+ 136	+ 31
Rajputana Agency .. ..	8,973	7,473	+ 1,500	745	862	— 117	+ 8,223	+ 6,611
Sikkim State .. ..	..	..	..	..	..	..	..	..
Travancore State .. ..	9	..	+ 9	9	4	+ 5	..	— 4
United Provinces States	12	53	— 41	2	..	+ 2	+ 10	+ 53
India Unspecified .. ..	152	72	+ 80	..	..	..	+ 152	+ 72
Foreign Settlements .. ..	824	625	+ 199	..	..	..	+ 824	+ 625

**SUBSIDIARY TABLE VI-A**  
**SHOWING THE NUMBER OF IMMIGRANTS AND EMIGRANTS FROM AND TO THE BOMBAY PRESIDENCY**

DISTRICT OR STATE	GIVES TO BARODA		RECEIVES FROM BARODA		GAIN (+) OR LOSS (—) TO BARODA		
	Males	Females	Males	Females	Males	Females	Total
1	2	3	4	5	6	7	8
<b>Bombay Presidency .. ..</b>	<b>115,240*</b>	<b>183,829*</b>	<b>76,909*</b>	<b>113,408*</b>	<b>+ 38,331</b>	<b>+ 70,421</b>	<b>+ 108,752</b>
(i) <i>British Territory .. ..</i>	71,932	107,287	48,439	63,407	+ 23,493	+ 43,880	+ 67,373
(a) <i>Contiguous Districts .. ..</i>	66,294	102,440	42,916	60,067	+ 23,378	+ 42,373	+ 65,751
Ahmedabad .. ..	7,805	17,744	21,493	23,261	— 13,688	— 5,517	— 19,205
Broach .. ..	6,302	8,661	5,068	8,326	+ 1,234	+ 335	+ 1,569
Kaira .. ..	23,928	37,587	5,654	15,126	+ 18,274	+ 22,461	+ 40,735
Khandesh (West) .. ..	1,618	1,425	318	319	+ 1,300	+ 1,106	+ 2,406
Nasik .. ..	525	531	171	140	+ 354	+ 391	+ 745
Panch Mahals .. ..	2,876	6,405	3,102	3,517	— 226	+ 2,888	+ 2,662
Surat .. ..	23,240	30,087	7,110	9,378	+ 16,130	+ 20,709	+ 36,839
(b) <i>Non-contiguous Districts .. ..</i>	5,272	4,626	5,503	3,330	— 231	+ 1,296	+ 1,065
Ahmednagar .. ..	163	155	53	42	+ 110	+ 113	+ 223
Belgaum .. ..	43	38	19	7	+ 24	+ 31	+ 55
Bijapur .. ..	36	20	5	1	+ 31	+ 19	+ 50
Bombay City (Including Suburban Districts) .. ..	879	1,285	4,454	2,484	— 3,575	— 1,199	— 4,774
Colaba .. ..	1,209	588	74	47	+ 1,135	+ 541	+ 1,676
Dharwar .. ..	54	29	10	16	+ 44	+ 13	+ 57
Kanara .. ..	16	18	2	1	+ 14	+ 17	+ 31
Khandesh (East) .. ..	..	..	60	163	— 60	— 163	— 223
Poona .. ..	668	678	268	285	+ 400	+ 393	+ 793
Ratnagiri .. ..	1,343	1,122	28	28	+ 1,315	+ 1,094	+ 2,409
Satara .. ..	397	259	50	63	+ 347	+ 196	+ 543
Sholapur .. ..	177	123	50	26	+ 127	+ 97	+ 224
Thana .. ..	287	311	430	167	— 143	+ 144	+ 1
(c) <i>Sind .. ..</i>	366	221	20	10	+ 346	+ 211	+ 557
(ii) <i>Indian States .. ..</i>	43,206	76,447	28,470	50,001	+ 14,736	+ 26,446	+ 41,182
(a) <i>Contiguous .. ..</i>	42,777	76,219	27,662	49,533	+ 15,115	+ 26,686	+ 41,801
(1) <i>Bombay States .. ..</i>	12,482	28,085	18,558	33,678	— 6,076	— 5,593	— 11,669
Cambay .. ..	1,033	2,630	2,668	2,912	— 1,635	— 282	— 1,917
Mahikantha Agency .. ..	3,494	13,078	4,513	12,957	— 1,019	+ 121	— 898
Idar .. ..	619	2,133	1,001	1,716	— 382	+ 417	+ 35
Other States .. ..	2,875	10,945	3,512	11,241	— 637	— 296	— 933
Rewakantha Agency .. ..	6,456	10,513	9,467	15,368	— 3,011	— 4,855	— 7,866
Chhota Udepur .. ..	674	1,227	1,815	2,002	— 1,141	— 775	— 1,916
Lunawada .. ..	358	114	84	124	+ 274	— 10	+ 264
Rajpipla .. ..	2,658	4,509	3,875	6,309	— 1,217	— 1,800	— 3,017
Other States .. ..	2,766	4,663	3,683	6,933	— 917	— 2,270	— 3,187
Surat Agency .. ..	1,499	1,864	1,910	2,441	— 411	— 577	— 988
Bansda .. ..	863	1,128	1,236	1,359	— 373	— 231	— 604
Dharampur .. ..	343	225	126	113	+ 217	+ 112	+ 329
Sachin .. ..	293	511	548	969	— 255	— 458	— 713
(2) <i>Western India States .. ..</i>	30,295	48,134	9,104	15,855	+ 21,191	+ 32,279	+ 53,470
Bhavnagar .. ..	6,557	10,479	..	..	+ 6,557	+ 10,479	+ 17,036
Cutch .. ..	777	651	93	68	+ 684	+ 583	+ 1,267
Gondal .. ..	432	856	702	697	— 270	+ 159	— 111
Junagadh .. ..	2,693	4,973	2,718	3,645	— 25	+ 1,328	+ 1,303
Nawanagar .. ..	1,369	2,204	..	..	+ 1,369	+ 2,204	+ 3,573
Palanpur .. ..	5,551	8,464	787	2,254	+ 4,764	+ 6,210	+ 10,974
Porbander .. ..	133	223	281	293	— 148	— 70	— 218
Radhanpur .. ..	698	951	383	666	+ 315	+ 285	+ 600
Other States .. ..	12,085	19,333	4,140	8,232	+ 7,945	+ 11,101	+ 19,046
(b) <i>Non-Contiguous .. ..</i>	429	228	808	468	— 379	— 240	— 619
Bhor .. ..	18	16	..	..	+ 18	+ 16	+ 34
Kolhapur .. ..	150	86	54	63	+ 96	+ 23	+ 119
Savantwadi .. ..	62	39	27	10	+ 35	+ 29	+ 64
Southern Maratha Country States .. ..	44	38	127	37	— 83	+ 1	— 82
(a) Sangli .. ..	..	..	17	20	— 17	— 20	— 37
(b) Other States .. ..	44	38	110	117	— 66	— 79	— 145
Other States in the Presidency proper .. ..	155	49	600	358	— 445	— 309	— 754
(iii) <i>Bombay Unspecified .. ..</i>	102	95	..	..	+ 102	+ 95	+ 197

\* These figures are exclusive of immigrants and emigrants of Aden.

## SUBSIDIARY TABLE VII

## DISTRIBUTION OF OVERSEAS EMIGRANTS BY COUNTRY OF RESIDENCE

NAME OF COUNTRY	Baroda State	Baroda City	Amreli Division	Baroda Division	Mehsana Division	Navsari Division	Okhamandal
	Persons	Persons	Persons	Persons	Persons	Persons	Persons
1	2	3	4	5	6	7	8
<b>Grand Total</b> .. ..	<b>10,490</b>	<b>38</b>	<b>849</b>	<b>2,433</b>	<b>325</b>	<b>6,687</b>	<b>158</b>
<i>Africa</i> .. ..	<i>9,663</i>	<i>6</i>	<i>788</i>	<i>2,351</i>	<i>213</i>	<i>6,147</i>	<i>158</i>
South Africa .. ..	3,459	..	16	93	..	3,335	15
East Africa .. ..	1,528	6	238	534	75	581	94
West Africa .. ..	26	..	..	..	..	26	..
Abyssinia .. ..	100	..	9	1	49	41	..
Mauritius .. ..	128	..	..	..	1	127	..
Madagascar .. ..	48	..	1	..	..	47	..
Other and Unspecified .. ..	4,374	..	524	1,723	88	1,990	49
<i>Asia</i> .. ..	<i>422</i>	<i>19</i>	<i>53</i>	<i>43</i>	<i>98</i>	<i>209</i>	<i>..</i>
Arabia .. ..	146	4	41	12	82	7	..
Ceylon .. ..	12	5	7	..	..	..	..
Fiji Island .. ..	197	..	1	20	..	176	..
China .. ..	8	..	..	5	..	3	..
Other and Unspecified .. ..	59	10	4	6	16	23	..
<i>Europe</i> .. ..	<i>320</i>	<i>12</i>	<i>8</i>	<i>33</i>	<i>10</i>	<i>257</i>	<i>..</i>
United Kingdom .. ..	38	10	8	3	1	16	..
Spain .. ..	198	..	..	..	..	198	..
France .. ..	28	..	..	17	5	6	..
Other and Unspecified .. ..	56	2	..	13	4	37	..
<i>Rest</i> .. ..	<i>85</i>	<i>1</i>	<i>..</i>	<i>6</i>	<i>4</i>	<i>74</i>	<i>..</i>

## SUBSIDIARY TABLE VIII

## OVERSEAS EMIGRANTS BY PERIOD OF ABSENCE FROM THE STATE

DIVISION OF BIRTH	Families	Persons	Males	Females	PERIOD OF ABSENCE FROM THE STATE					
					Below one year	1-3 years	3-5 years	5-10 years	10-20 years	20 years and above
1	2	3	4	5	6	7	8	9	10	11
<b>Baroda State</b> ..	<b>5,234</b>	<b>10,490</b>	<b>7,967</b>	<b>2,523</b>	<b>996</b>	<b>2,406</b>	<b>2,038</b>	<b>3,025</b>	<b>1,546</b>	<b>479</b>
Baroda City ..	28	38	29	9	15	8	4	4	7	..
Amreli .. ..	315	849	614	235	28	99	147	267	233	75
Baroda .. ..	1,390	2,433	1,654	779	179	581	543	879	232	19
Mehsana .. ..	288	325	288	37	62	143	43	64	8	5
Navsari .. ..	3,178	6,687	5,270	1,417	697	1,557	1,263	1,733	1,057	380
Okhamandal ..	85	158	112	46	15	18	38	78	9	..

**SUBSIDIARY TABLE IX**  
**OCCUPATION OF OVERSEAS EMIGRANTS**

PERSONS SUPPORTED BY	Baroda State	Baroda City	Amreli Division	Baroda Division	Mehsana Division	Navsari Division	Okha-mandal
1	2	3	4	5	6	7	8
<i>Agriculture</i> .. .. .	21	..	..	3	3	15	..
<i>Trade</i> .. .. .	4,923	13	640	546	119	3,483	122
<i>Service</i>							
Private .. .. .	4,360	15	52	1,822	69	2,374	28
Government .. .. .	16	4	..	11	..	1	..
<i>Industry</i>							
Blacksmith .. .. .	6	..	..	..	1	..	5
Carpenter .. .. .	147	..	..	4	33	109	1
Hairdressing .. .. .	221	..	27	3	86	105	..
Shoemaking .. .. .	148	..	..	..	..	148	..
Tailoring .. .. .	160	..	2	1	5	150	2
Washing .. .. .	189	..	120	..	..	69	..
Other .. .. .	11	..	6	..	..	5	..
<i>General Labour</i> .. .. .	196	..	..	..	8	188	..
<i>Other Occupations</i> .. .. .	42	..	1	13	..	28	..
<b>Total</b> .. .. .	<b>10,440</b>	<b>32</b>	<b>848</b>	<b>2,403</b>	<b>324</b>	<b>6,675</b>	<b>158</b>
Study .. .. .	24	6	1	4	1	12	..
Unemployed .. .. .	28	..	..	28	..	..	..
<b>Grand Total</b> .. .. .	<b>10,490</b>	<b>38</b>	<b>849</b>	<b>2,433</b>	<b>325</b>	<b>6,687</b>	<b>158</b>

**SUBSIDIARY TABLE X**

**EMIGRANTS BY CASTE**

CASTE	Baroda State	Baroda City	Amreli Division	Baroda Division	Mehsana Division	Navsari Division	Okha-mandal
1	2	3	4	5	6	7	8
<i>Hindu</i> .. .. .	5,777	23	667	2,309	211	2,524	43
Brahman .. .. .	450	2	45	199	41	163	..
Patidar .. .. .	2,532	9	2	2,020	21	480	..
Luhana .. .. .	315	..	281	..	..	..	34
Koli .. .. .	650	..	..	3	1	646	..
Mochi .. .. .	232	..	4	2	..	226	..
Valand .. .. .	228	..	25	11	86	106	..
Vankar (Dhed) .. .. .	230	..	..	4	..	228	..
Other .. .. .	1,140	12	310	70	62	677	9
<i>Musalman</i> .. .. .	4,705	13	182	124	114	4,157	115
Khoja .. .. .	103	..	103	..	..	..	..
Memon .. .. .	150	..	32	..	3	..	115
Vohra .. .. .	3,216	13	38	107	108	2,950	..
Other .. .. .	1,236	..	9	17	3	1,207	..
<i>Parsi</i> .. .. .	6	..	..	..	..	6	..
<i>Anglo-Indian</i> .. .. .	2	2	..	..	..	..	..
<b>Total</b> .. .. .	<b>10,490</b>	<b>38</b>	<b>849</b>	<b>2,433</b>	<b>325</b>	<b>6,687</b>	<b>158</b>

## CHAPTER IV

### AGE

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#### PART I

#### GENERAL OBSERVATIONS

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##### § 1. GENERAL ANALYSIS OF THE RETURNS

**100. Scope of Part I**—This chapter is concerned with the analysis of the age-returns. It has two parts. Part II contains the actuarial analysis of the age-returns, after they are carefully corrected and graduated by elaborate mathematical formulæ. Since 1921, a Life Table with deductions of birth and death rates and expectation of life in the different age-groups has formed a special feature of the Census Report of the State. For the present census, Professor Mukherji of the Baroda College has prepared this Life Table with a report on it which forms Part II of this chapter. In Part I therefore it is unnecessary to deal with the age-figures from this or any other technical aspect. Our main concern will be to take the figures of this census, subject them to such ordinary smoothing as is prescribed for all India and deduce general conclusions regarding the distribution and variation of the age-constitution, correlating them finally with such of the vital statistics as are worth consideration. In the opening chapter we have already shown the value of these registration figures and the extent of their reliability. The bearings of these returns (in their broad groups) on the general movement of population have been also briefly dealt with there. We shall here attempt a little closer analysis of these figures always remembering that the inaccuracy of the age-record in the Indian Census has passed into a proverb.

**101. Reference to Statistics**—The statistics regarding age, sex and civil condition of the population distributed by religion and administrative divisions are contained in the three parts of Imperial Table VII. The details of these matters in selected towns are given in State Table V. These Tables give the figures generally in groups of ages. The three parts of the Imperial Table give figures for individual ages up to 5 and then for each religion for the whole State in quinary groups up to 70, collecting the rest under the last group of 70 and over. For the different divisions, the groupings after the age of 20 are of ten years ending at 60 after which there is a final grouping of 60 and over. For the age-returns of towns, the groupings are as follows: 0-6, 7-13, 14-16, 17-23, 24-33 and 34 and over. Sex enters into all combinations of figures from the very first and appears in all Tables. Age and sex form part also of the Caste and Infirmity Tables (Imperial Tables VIII and IX-C) for which purpose castes have been selected on a uniform basis of strength and grouped according to a literacy percentage scale. The Infirmity figures of caste will be discussed in Chapter VII. But the caste figures of age, sex and civil condition are dealt with in this and the two succeeding chapters. Age again is a very important factor in the statistics regarding literacy, and its value is appraised in Chapter IX. Here we shall take up only the general age-returns irrespective of the reactions on them of civil condition and other factors. The special problems connected with sex we shall leave to the next chapter, limiting ourselves to occasional references to it where inevitable. The absolute figures

are reduced to proportions and correlated with the vitality returns in the following Subsidiary Tables printed at the end of this part :—

Subsidiary Table	I—Age distribution of 10,000 of each sex in the State and each natural division.
„	„ II—Age distribution of 10,000 of each sex in each main religion.
„	„ III—Age distribution of 1,000 of each sex in certain castes.
„	„ IV—Proportion of children under 14 and of persons over 43 to those aged 14-43 in certain castes: also of married females aged 14-43 per 100 females.
„	„ V—Proportion of children under 10 and of persons aged 60 and over to those aged 15-40: also of married females aged 15-40 per 100 females.
„	„ V-A—Proportion in certain religions of children under 10 and of persons aged 60 and over to those aged 15-40; also of married females aged 15-40 per 100 females.
„	„ VI—Variation in population at certain age-periods.
„	„ VII—Reported birth rate by sex and natural divisions.
„	„ VIII—Reported death rate by sex and natural divisions.
„	„ IX—Reported death rate by sex and age in decade and in selected years per mille living at same age based on the figures of the Censuses of 1921 and 1931.
„	„ X—Reported deaths from certain diseases per mille of each sex.
„	„ XI—Infantile mortality.

**102. Change in the Nature of Question asked**—The above list does appear to be formidable but it shows the importance attached to the returns of age in their bearing on demological discussions, and it is necessary therefore to know exactly what they mean and how they were collected, and to remember in that connection that the nature of the question asked in this census differed from previous occasions. We were required this time to ask people to return their ages nearest their birthdays. The instructions on the cover in this census specifically enjoined the census staff to write

(i) the record of age only in years, and not to enter months and days ;

(ii) in the case of infants below one year, for such as were below six months, the age to be recorded was 0; for those aged over six months but below one year and six months, one year and so on. Those who had passed more than six months after their last birth day, should have *one year added to their already completed years of age* ;

(iii) for those who did not know their age, their memory should be assisted by reference to well-known events such as dates of famines, *e.g. tetrisa* (or the memorable famine year of *samvat* 1933) or *chhapaniya* (the equally notable year of *samvat* 1956). Where even such devices failed, the age, from one's face and appearance, should be guessed and recorded.

These instructions marked a change from previous occasions, when only the completed number of years, *i.e.*, “age last birthday” was required to be returned. Thus, the age of a person who is 11 years 9 months would under the old definition

be shown as 11 in 1921 and under the new, as 12 in 1931. This change in the method of record was justified on the ground that returns of completed years were not correct and gave quinary groups, which were wholly unreliable for any actuarial purposes. On the present occasion, the age periods actually returned were  $0-\frac{1}{2}$ ,  $\frac{1}{2}-1\frac{1}{2}$ ,  $1\frac{1}{2}-2\frac{1}{2}$  and so on. Thus we see that if we add to the lower group half from the next higher group, we approach the definition of age of previous censuses. This new definition enabled us to have a first grouping into ternary and septenary groups (*i.e.*, 0-3, 4-6, 7-13, 14-16, 17-23, etc.) which could be readjusted by taking half of the last and adding it to the next lower group to form quinary age-periods. Imperial Table VII has been prepared in quinary groups in this way. We have also compiled a table of annual age-returns as actually returned by divisions and religions, which will be of use to the educationists in the preparation of primary school censuses (*vide* State Table XVI in two parts). Imperial Table VII of 1931 prepared on the basis of ternary and septenary groupings of age and later adjusted to quinary age-periods, thus approaches the age definition of 1921, but claims to be a correcter representation of the actual age-distribution than any previous record.

**103. Mean Age**—The first corrections to which the age-returns were subjected at the time of compilation were helpful in serving the same purpose, as the other modes of correction pursued at other censuses. It is not necessary to refer to these methods as previous Census Reports describe them in detail and Part II of this chapter explains and appraises them. The value of the method of Columnar differencing in particular has been discussed and compared with the process pursued on the present occasion by Professor Mukherji who has analysed the inaccuracies of the return, the types of mistakes often found and how they are to be corrected in order to arrive at a fair view of what actually was the age-distribution of the population on the census date. Having got the corrected data the first use that is made of them is to find out the mean age in different parts of the State, and amongst different religions and classes of people. The “mean age” is simply the average age of the living and is not to be confused with the mean expectation of life, which is calculated after elaborate graduation of figures of persons living at each age. The method hitherto followed of finding out the mean age was simply to take the corrected figures for each age, multiply them by the years of that age and the sum of these results divided by the total population gave the mean age for that year. As census figures are generally compiled by quinary and decennial groups, an approximation used to be attempted, by which the corrected population at the end of each quinary group was first determined, *viz.* total of persons 5 years and over, 10 years and over and so on. “The sum of these totals multiplied by 5, the difference of the age-divisions, and raised by  $2\frac{1}{2}$  times the number of persons dealt with (*i.e.*, in this case the total population) gave the number of years lived. The mean age was obtained by dividing this last number by the number of persons dealt with.”\*

**104. Mean Age how calculated**—On the present occasion, the method of calculating the mean age was slightly varied under orders of the Census Commissioner for India (*vide* No. 24-Rept. dated the 21st September 1931). The method consists in taking the quinary groups of age recorded, taking a middle point in the age-groups, multiplying the absolute figures of each age-group by the deviation number of that group from the middle group, summing up the products in two sets (the minus and the plus products separately) and then taking the difference between these two sums, dividing it by the total of figures of all ages. The result of this division is then multiplied by 5, the difference of years of the class intervals and the product is subtracted (or added, if the difference is a positive result) from the middle point of age taken, and thus the mean age is obtained. The above sounds complicated but will be easily understood from the following example. The total number for all ages is 8,442; and the last age-group returned is 61-65.

\* *Vide* India Administration Volume 1901, page 390, and Bengal Census Report, 1911.

Age-groups (class-intervals)	Mid-values of the class-intervals	Persons (frequency distribution)	Deviation from arbitrary value	Products (3×4)
1	2	3	4	5
1-5 .. ..	3	219	— 6	— 1,314
6-10 .. ..	8	175	— 5	— 875
11-15 .. ..	13	63	— 4	— 252
16-20 .. ..	18	374	— 3	— 1,122
21-25 .. ..	23	4,295	— 2	— 8,590
26-30 .. ..	28	1,739	— 1	— 1,739
<b>31-35 .. ..</b>	<b>33</b>	<b>740</b>	<b>0</b>	<b>— 13,892</b>
36-40 .. ..	38	464	1	464
41-45 .. ..	43	189	2	378
46-50 .. ..	48	119	3	357
51-55 .. ..	53	43	4	172
56-60 .. ..	58	15	5	75
61-65 .. ..	63	7	6	42
<b>Total ..</b>		<b>8,442</b>		<b>1,488</b>

$$1,488 - 13,892 = -12,404$$

$\frac{-12,404}{8,442} = -1.47$ . Multiplying  $-1.47$  by 5 we get  $-7.35$  which, subtracted from 33, the mid-year of the middle age-group gives 25.65 as the mean age. It must be remembered that  $-1.47$  in the above example gives the value in class-intervals and must not be directly added to or subtracted from the arbitrary middle value, —i.e., 31-35 in this case—unless the interval is also a unit. In the present illustration the class-interval is 5 units and accordingly the quotient is multiplied by 5 in order to obtain an answer in units.

**105. Mean Age by Divisions and Religions**—The mean ages for the different groups have been calculated on this basis. As we have age returns for individual ages for divisions and religions, the mean ages have been reckoned on the basis of individual ages smoothed on the same basis as in Imperial Table VII; that is to say half of the numbers in the higher age is added to the lower age and so on. The interval being a unit, the final quotient is at once subtracted from the middle year chosen without any further multiplication. In the margin are

Religion and Sex		1931	1921	1911	1901
State	Males .. ..	23.69	23.96	22.71	23.56
"	Females .. ..	23.63	24.04	22.77	23.76
Hindu	Males .. ..	23.66	23.99	22.86	23.70
"	Females .. ..	23.60	24.14	22.94	24.66
Tribal	Males .. ..	22.61	22.27	20.59	22.52
"	Females .. ..	20.83	21.84	19.92	22.12
Muslim	Males .. ..	23.95	24.87	23.42	23.80
"	Females .. ..	23.90	24.85	23.47	25.26
Jain	Males .. ..	25.23	25.89	24.65	25.34
"	Females .. ..	25.75	26.44	25.31	26.33

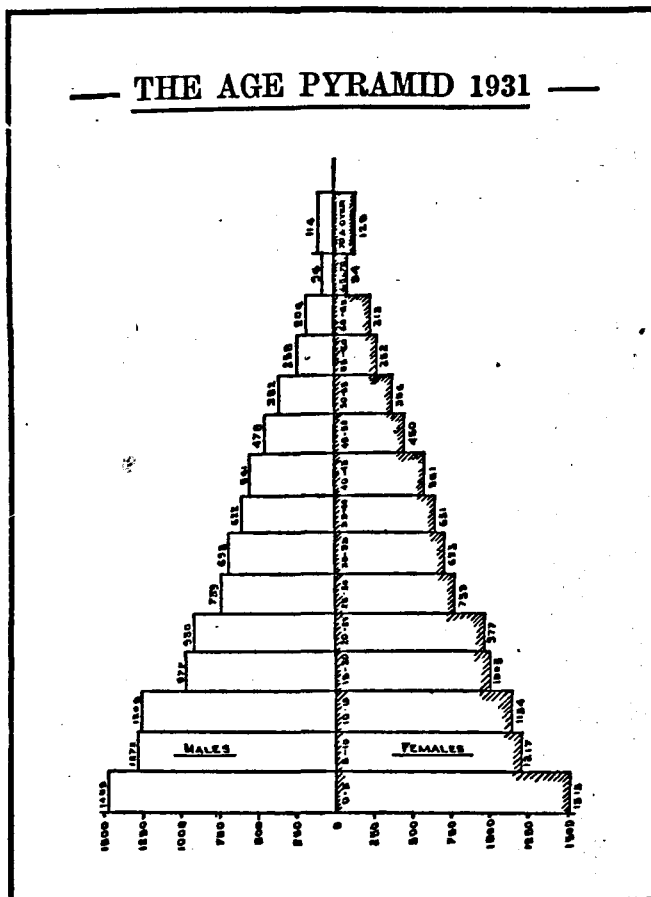
collected (from Subsidiary Table II) the mean ages as reckoned for the last four censuses by sex and the main religions. The detailed figures for administrative divisions are given in Subsidiary Table I. We have no room for them here, nor is detailed analysis necessary, for the difference in methods of calculation, coupled with the fact that smoothing of ages has also differed from census to census, vitiates the figures and renders any intelligible comparison impossible. The India Census Report of 1921, for this reason, declined to discuss the different mean ages on the ground that—

(1) "I am not satisfied that the calculations on which they are based (including methods of smoothing the crude figures) are sufficiently uniform at different censuses to admit of any trustworthy comparison of the resulting figures and (2) because the differences in the mean age are in any case merely the result of factors which have already been discussed in this chapter."

Generally it may be said that the Jains have the highest mean age, and the Tribal aborigines the lowest. Baroda City has the highest average age of the living (24.77), and Kathiawad and South Gujarat share the lowest place in this respect. A high mean age is associated with communities or regions with the most civilised standards of life and the most settled conditions. A low mean age



would mean either a high birth rate or a high rate of survival or a shrinkage in the old population, whose ranks may have been thinned by epidemics or other calamities that select adversely against old age. A high mean age may on the other hand mean an "unprogressive" population with a low birth rate but with healthy conditions resulting in a larger proportion of the old and the adult. Generally women are seen in the above table with a lower mean age than men because the female of child population is bigger than male. A slight decrease in the Hindu mean age in this census may be also due to the fact that large numbers of the aborigines have passed into Hinduism.



**106. General Results of Age Returns**—We can now take a general review of the age returns. Subsidiary Table I gives the age-distribution for four censuses. The following summary shows the general distribution of 10,000 of each sex in the State for the two censuses. A diagram is also given showing the age pyramid by quinquennial groups.

AGE GROUPS	1931		1921	
	Male	Female	Male	Female
0—1	352	364	308	331
1—5	1,107	1,151	934	1,016
5—10	1,272	1,217	1,411	1,360
10—15	1,208	1,154	1,229	1,171
15—20	977	1,003	847	751
20—25	930	977	723	786
25—30	739	759	842	843
30—35	698	693	813	837
35—40	622	631	701	668
40—45	561	561	628	681
45—50	478	450	435	410
50—55	382	356	484	476
55—60	258	252	210	172
60—65	206	213	242	288
65—70	96	94	81	77
70 and over	114	125	112	133
All Ages	10,000	10,000	10,000	10,000

**107. Study of the Age Pyramid**—It will be observed that from the 1931 figures a remarkably graded pyramid can be built; while the 1921 figures still retained traces of the havoc of 1900 famine in the dip observable in age-group 20-25 (the survivors from that calamity); in 1931 this dip is almost completely obliterated, probably on account of the larger number of births in the succeeding decades, the greater proportion of survival and the larger balance from migration in the last decade. The age-periods 0-10 in successive censuses since 1901 are

YEAR	Age period 0-10 proportioned to 10,000 of population	Proportion of females 15-45 (to 10,000)
1931	2,731	4,624
1921	2,680	4,566
1911	2,641	5,106
1901	2,254	5,084

given in the margin. The proportion of children has progressively increased since 1901, pointing at first sight to an increase in the birth rate. But this is not exactly the case. The registered birth rate is not of much use as a guide, because of the large margin of error involved. But assuming that this proportion of error is fairly constant, we find that the registered birth rate in 1901-11 was 203, in 1911-21, 279 and in the last decade it was 255, per mille of the mean population of the decade concerned. The proportion of child-bearing females (aged 15-45) as shown in the last column of the marginal table above tends to decrease although in the latest census it has slightly increased. In view of this increase, one would have expected a rise in the birth rate, but instead there is a decline in the registered birth rate. If we take the corrected birth rate according to the formula favoured in this Report, the same tendency is observable. In para 59 of the last Census Report, the volume of births in 1911-21 was estimated to be 898,060. In the last decade, our estimate based on similar principles is 890,620 (*vide para 35 supra*). Proportioned to 10,000 of the mean populations of the two decades, they come to 4,318 and 3,816 respectively. Thus there is an actual shrinkage in the real birth rate. The progressive rise in the child population in the last three decades is, therefore, due not to any rise in fertility or birth rate, but to a greater degree of survival. Owing to healthier conditions of living, the multiplication of facilities of rural medical relief and the more enlightened attitude of the people in respect of the care of their young, a larger number of children have been rescued from death and

YEAR	Proportion of children below 10, to 100	
	Persons aged 15-40	Married women aged 15-40
1901	50	135
1911	60	145
1921	69	167
1931	68	157

prepared for the adult ages in this decade than in the previous one. Subsidiary Table V compares the proportion of children below 10 (*i*) to persons aged 15-40 and (*ii*) married females aged 15-40 for the last three censuses for the whole State and the different divisions. In the margin the requisite ratios for four censuses are given. The proportionate increase in the child population was progressive till this census, when it has slightly declined. The fecundity rate has also shrunk in the last decade.

**108. Longevity**—The special phenomenon of longevity will now be taken up. The proportions of persons aged 70 and over are compared for the last three censuses in the margin. The absolute figures are also given and compared with

YEAR	70 and over						Variation with 1911 as 100
	Proportion to 10,000 of population			Absolute figures			
	Persons	Males	Females	Persons	Males	Females	
1911 ..	94	84	104	18,895	8,837	10,058	100
1921 ..	123	112	133	25,944	12,339	13,605	137
1931 ..	119	114	125	29,111	14,343	14,768	154

the figures of 1911 as 100. The results are an excellent illustration of how the age-returns are riddled with inaccuracies—some of which are of the deliberate kind. The aged contingent if figures are to be believed has increased by 54 per cent since 1911, while the general increase in the population is only 20 per cent during the same period.

Obviously the figures are wrong, the return of 1911 being the most reliable in this respect. The question of pensions for old age is sometimes talked about

in this State, and aged persons must have got wind of that fact and wrote up their ages so that they might stand a chance of being benefited. The statement of age also it must be remembered, becomes increasingly inaccurate, as the person gets older; and as the old population is not relatively larger than before, this element of error has now proportionately increased.

**109. Centenarians**—It is always of interest to know about the centenarians. The census figures are entirely unreliable on this score however. On the present occasion, all individual claims to longevity of this degree were closely inquired into and most of them rejected. The census record was found inaccurate and in some cases out by 30 years. But the curious

Year	Persons aged 100 and over		
	Persons	Males	Females
1911 ..	181	84	97
1921 ..	321	153	168
1931 ..	311	132	179

reader may be interested in the marginal table which compares the absolute figures of persons aged 100 and over in the last three censuses. As the ages are compiled in one year periods for the whole State since 1911, the crude returns are totalled and shown above. Of these figures, the bulk (190 in 1931, 223 in 1921, and 130 in 1911) belong to the age period 100. Most of these must be credited with ages below that age-limit. In the present census 33 are returned at 105, 13 at 110 and 8 at 120. Four of these cases seemed on enquiry to be genuine and their details are given below:—

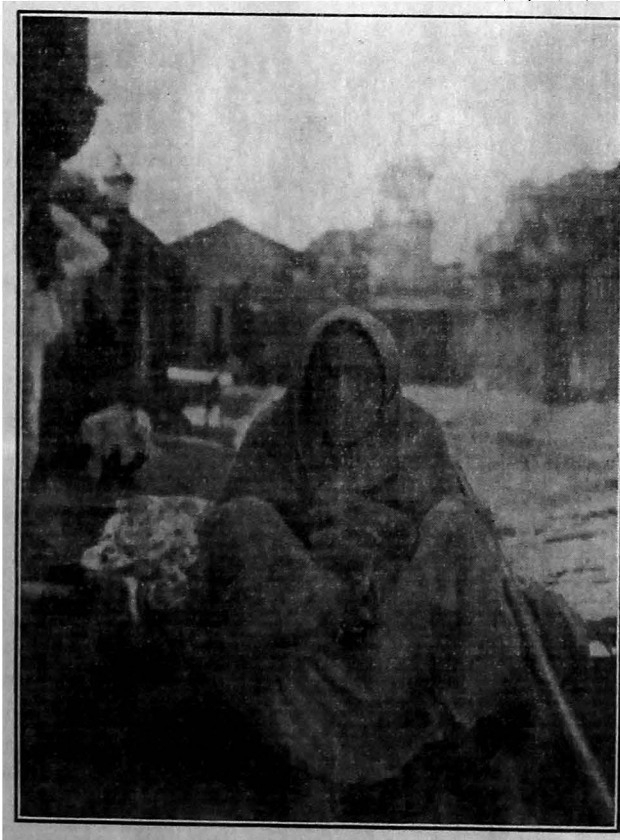
**Case No. 1**—Bai Jivi, Musalman widow of Kala Hasu of Karmaliyapura (in Vaghodia taluka of Baroda *prant*): age returned 120 years: blind, deaf and toothless: lives on alms: unemployed, being maintained by her son: probable age—well over 100.

**Case No. 2**—Bai Dhani: a Bhangi woman of Haldarwa (of Karjan taluka in Baroda *prant*), widow of Pasla Parbhu: toothless, blind and deaf: cannot work, being maintained by her grandson. Her age returned is 120, and local evidence asserts in confirmation that she is at least 118. She was 45 years of age, when the railway line was laid in the neighbourhood in *samvat* 1914 (1858 A.D.). Her grandson is now 50 years old. Old inhabitants aged 72 years in that village remember her as an old woman when they were children.

**Case No. 3**—Sadhu Kalyandas Ramdas, a Vairagi, belonging to Kurali village (Karjan taluka in Baroda *prant*).

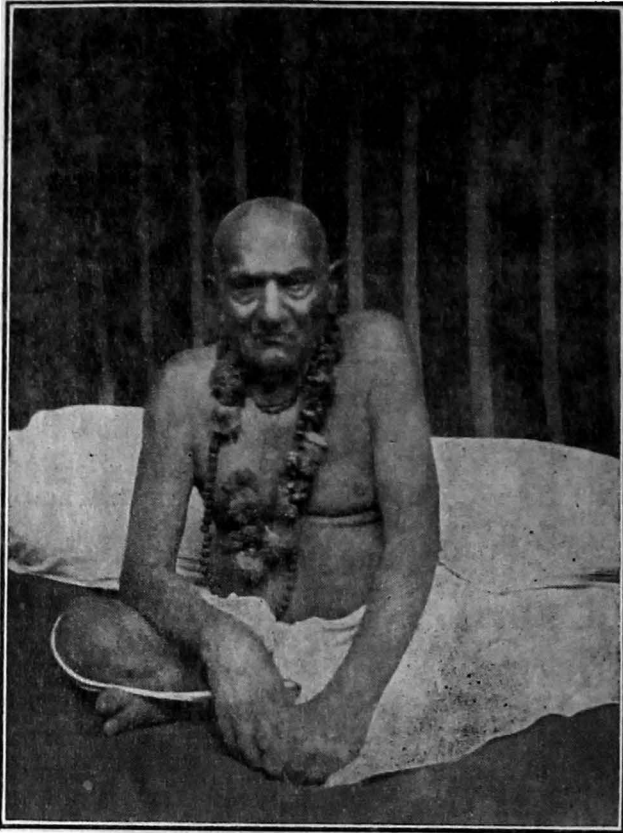


Bai Jivi: Age, well over 100.



Bai Dhani: Age, at least 118.

He is an educated person with a good memory, but now not able to read through defective eyesight: only one tooth left, but otherwise strong and healthy as his photograph shows it. He says he was 10 years old at the time of the famine of *samvat* 1869 (1813 A. D.) He remembers the fall of the last Peshwa in 1818: also to have seen Sayajirao II in his youth and the installation of Veniram as Dewan in 1828. He was born at Brahmangam (Bhadran taluka) in 1803 A. D. of Lewa Patidar parentage. This is a very genuine and interesting case. He went on pilgrimage to Badrinarayan, Jagannath, etc., on foot before the era of railways in India. He has had four *chelas*, all living to a good age and three of them predeceasing him. His hair has grown grey but he still requires three *puris*, two pounds of milk and  $\frac{1}{2}$  lb. of *ghee* for daily food. He started smoking at a late age. Tea drinking is also one of his late acquirements.



Sadhu Kalyandas: Age, over 125.

*Case No. 4—Garoda Hira Parshotam*: returned as of 125 years of age—belonging to Masar (Padra taluka, Baroda *prant*). Very feeble, toothless, blind and deaf. His nephew

maintains him. The family lives by begging. Local evidence affirms him to be well over 110 years of age.



Garoda Hira: Age, well over 110.

### 110. Sundbärg's Types of Population—

It will be of interest to study the age-returns in broad groups and see how far the population fits in to one of the Sundbärgian categories. According to M. Sundbärg, the most distinctive and constant feature of an age census is that the proportion of people between 15 and 50 is about half of the whole population, and the only changes that occur are usually in the higher and the lower age groups. On this theory, he distinguishes between three types of population—*progressive*, where the age-period 0–15 is about 40 per cent, *stationary*, where it is about 33, and *regressive*, where the first group forms only about 20 per cent and the third group (50 years and over) constitutes 30 per cent of the population. For this purpose, we have to take the corrected

age returns. The age returns for 1921 and 1911 have been smoothed according to the principle of Columnar referencing by which individual ages adjoining ages ending in digits of 0 or 5 were subjected to a series of differences from which the corrected figure for the quinary group was obtained. The 1931 figures, as shown in Table VII, are as explained above, the result of ternary and septenary adjustments and may be taken as correct.\* The marginal table is prepared

Age Groups	Percentage to total population			
	1931	1921	1911	1901
0-15 ..	39	40	36	34
15-50 ..	50	51	56	57
50 and over	11	9	8	9

\* The method of distribution now adopted for smoothing from age to age is to take half from the higher and add it to the lower. This introduces a small error, as Mr. Meikle admits as it makes no allowance for the continuous decrement which deaths cause in the numbers of succeeding ages in a normal population.

on this basis of corrected and adjusted age returns. We see therefrom how the rule about the middle age holds good only for the last two censuses. In 1901 and 1911, the middle age-group population was nearly 60 per cent of the total. Sundbärg's theory, therefore, does not hold good always for the State. The normal age constitution would be as shown in the Life Table Report of this State prepared in 1921,—39.5 per cent for the first age group, 52 per cent for the middle and 8.5 per cent for the last group (aged 50 and over). The reason why the European proportions do not hold good for this State is that, in spite of the high birth rate, the mortality rates here for the first and last age groups are so high compared with that operating in the middle group, that as a result, the old and young are killed off early and that those who survive into the healthy middle age are subjected to a comparatively low rate of death and, therefore, form a relatively higher proportion of the whole than the rest. These contrasts in specific death rates as shown in the margin, are not so much in evidence in European mortality experience as in Eastern countries and the Sundbärgian hypothesis cannot therefore apply in all cases, but it can be accepted as largely true.

Age Period	Normal mortality per mille per annum †
0-50 .. ..	60.06
15-50 .. ..	25.39
50 and over ..	76.86

## § 2. DIVISIONAL ANALYSIS

**111. Age Constitution in the different divisions**—In the inset table are arranged proportionate figures per age-period in the different natural divisions. Kathiawad, which has the highest proportion of children, has also the lowest proportion of middle aged persons. Central Gujarat, which is affected more largely than other divisions by immigration has, in consequence, a larger proportion of middle-aged people. The low ratio of the old in the South Gujarat population is due to the presence of the Raniparaj who are not a long-lived community. Taking the age-periods more in detail, we shall compare the data given in Subsidiary Tables I and V in the last three censuses:—

Natural Division	Age Periods		
	0-15	15-50	50 and over
Central Gujarat ..	37	52	11
North Gujarat ..	40	50	10
South Gujarat ..	41	50	9
Kathiawad .. ..	42	48	10
State .. .. .	39	50	11

(i) *Central Gujarat (excluding City)*—In this division, the proportion of the aged males (60 and over) has risen from 2.6 in 1901 to 4.6 in this census. Female longevity was higher in 1901 (3.7) but this has also grown to 4.5 in the last 30 years. Famine depletes usually the two ends of life and this was the cause of the shrinkage in the old population in 1901. Similarly the child population (below 10) has progressively grown in the last four censuses : and this is due to the higher rate of survival. The proportion of married women (aged 15-40) to 100 females of all ages has increased from 34 in 1921 to 39 in this census. The age constitution of the district, taking only the males as the criterion, for the four censuses in broad groups is shown in the margin. The child population is slowly improving in its proportionate strength. The effect of the famine is seen in the diminished ratios of the old and young. 1911 showed the traces of the famine in the fact that the survivors growing into the age-

YEAR	Proportion of children below 10 per 100	
	Persons aged 15-40	Married females aged 15-40
1901 .. ..	45	122
1911 .. ..	56	135
1921 .. ..	65	157
1931 .. ..	64	147

YEAR	Age Periods		
	0-15	15-60	60 and over
1901 ..	33.8	63.6	2.6
1911 ..	33.5	62.8	3.7
1921 ..	36.7	59.7	4.6
1931 ..	37.0	58.4	4.6

†Based on Life Table of 1921.

period 10-15 were so few that even the births of the decade were not enough to recoup their strength. The 1931 figures show a more normal distribution.

YEAR	Proportion of children below 10 per 100	
	Persons aged 15-40	Married females aged 15-40
1901 .. ..	39	117
1911 .. ..	44	119
1921 .. ..	48	132
1931 .. ..	48	134

the age constitution stamps the

YEAR	Age Period		
	0-15	15-60	60 and over
1901 .. ..	28.2	66.9	4.9
1911 .. ..	28.9	65.3	5.8
1921 .. ..	31.5	62.7	5.8
1931 .. ..	32.6	63.2	4.2

in the latest enumeration.

(iii) *North Gujarat*—Going over to North Gujarat, we find a population

YEAR	Proportion of children below 10 per 100	
	Persons aged 15-40	Married females aged 15-40
1901 .. ..	49	129
1911 .. ..	61	145
1921 .. ..	71	167
1931 .. ..	70	157

of the child population is continuous since 1901, showing a striking increase,

YEAR	Age Period		
	0-15	15-60	60 and over
1901 .. ..	35.7	61.5	2.8
1911 .. ..	35.8	60.8	3.4
1921 .. ..	39.8	55.9	4.3
1931 .. ..	40.0	55.9	4.1

YEAR	Proportion of children below 10 per 100	
	Persons aged 15-40	Married females aged 15-40
1901 .. ..	67	171
1911 .. ..	68	158
1921 .. ..	71	170
1931 .. ..	72	165

longevity is low in this division, and the population has gained through migration in recent years.

YEAR	Age Period		
	0-15	15-60	60 and over
1901 .. ..	39.9	56.2	3.9
1911 .. ..	39.2	56.6	4.2
1921 .. ..	40.2	55.4	4.4
1931 .. ..	40.6	55.5	3.9

decline indicating loss through

YEAR	Proportion of children under 10 per 100	
	Persons aged 15-40	Married females aged 15-40
1901 .. ..	53	181
1911 .. ..	61	148
1921 .. ..	75	183
1931 .. ..	76	178

(ii) *The City*—The City shows an age-constitution which is in many ways distinctive. It has the lowest proportion of children in the Raj and from the point of view of married females it has the lowest fecundity rate. The age constitution is also peculiar. Taking the mean of both sexes, character of the city's population as definitely of the *accessive* kind. 1901 was of course not normal, as the City was flooded with refugees from the countryside. But since then although the middle age population has declined proportionately, it still absorbs two-thirds of the total. The decline in the aged ratio is probably due to better record

losing somewhat from decade to decade its *accessive* character. This division has progressed fairly normally through natural increase although in 1921 and 1931 it recorded some gain through migration. The proportion of the old has remained low, probably the lowest in the State. The growth of the child population is continuous since 1901, showing a striking increase, but this is probably as much due to the shrinkage in the adult ages as to improving health conditions.

(iv) *South Gujarat*—Coming to South Gujarat we see that the birth rate is high. Unlike other divisions so far dealt with, the fecundity rate has fluctuated since 1901; but as the proportion of the child population has more or less remained stationary, the variations in fertility must be put down to the rise and fall in the number of married females. The middle age proportion is high in spite of the high birth rate, because

(v) *Kathiawad*—Here we have the highest fecundity rate; the proportion of the child population is definitely rising, and the birth rate is similarly progressive. The adult population shows a similarly continuous migration and the incidence of diseases that select adversely against the able-bodied. Broadly speaking, Kathiawad and South Gujarat show a more progressive character than the State generally while the City indicates the greatest dependence for its increase through migration. These broad conclusions were anticipated in our general analysis

of the movement of population and are now confirmed by the age returns. The variations in proportionate figures are no indication directly of the movement of population. For a more direct measure of the cumulative trend of various factors, we must study changes in absolute figures which we do in the next paragraph.

YEAR	Age Period		
	0-15	15-60	60 and over
1901 ..	37.4	59.5	3.1
1911 ..	35.5	60.0	4.5
1921 ..	40.8	54.9	5.3
1931 ..	41.8	54.1	4.1

### § 3. VARIATION IN AGE-RETURNS

#### 112. Variation by Age-periods (absolute figures) : Subsidiary

**Table VI**—Hitherto we have dealt with proportionate figures but the variations in absolute figures are a valuable index in finding out in what particular way the dominant influences of each decade asserted themselves on the different sections of the population: the young, the adolescent, the adult and the old. In the margin the variations per cent in each of the principal age groups for each of the last four decades are compared to the general rate of movement in the State. Subsidiary Table VI carries the analysis to all the divisions, but we need here only discuss the figures generally for the whole State.

YEAR GROUPS	1891 to 1901	1901 to 1911	1911 to 1921	1921 to 1931
0-10 .. .. .	-35.6	+22.0	+ 6.1	+17.1
10-15 .. .. .	+ 1.1	-28.4	+42.5	+13.1
15-40 .. .. .	-12.4	+ 2.2	- 7.1	+18.1
40-60 .. .. .	-14.7	+ 4.9	+ 8.7	+ 8.4
60 and over .. .. .	-40.6	+20.9	+23.0	+ 4.5
<i>General Rate of variation.</i>	-19.2	+ 4.1	+ 4.6	+14.9

The first decade 1891-1901 was afflicted by the terrible famine at its end, and a little earlier by plague and cholera. The former killed off the young and old; the latter affected, but rather less severely, the adult population. In 1901, therefore, the brunt was borne by the young and old, who lost from 35 to 40 per cent. The adult lost rather less, by about 12 to 15. The adolescent escaped. In the next decade the selective influence of famines was subdued, but the havoc of 1900 left its mark in the adolescent group (10-15) who lost by 28 per cent. The old and young experienced a rebound and increased by over 20 per cent although the general increase was only 4. The third decade was scarred by famine and scarcity, and towards its end havoc was again played by influenza and plague. By this time, however, people gained in foresight; there being greater organisation to meet its onset, famine lost its sting and the old and the young were spared. But the epidemics had their toll mostly on the able-bodied. Thus the age-group 15-40 showed a decline of 7 per cent. The adolescent grew by leaps and bounds (42.5 per cent), and the old were not lagging behind. In 1931, at the end of a normal decade of fairly healthy conditions, the general increase of 14.9 per cent was shared by all age-groups except the old, who increased by only 4.5 per cent; possibly the small-pox epidemic at the close of the decade carried off a large number of these. The adult population grew by 18.1 per cent as much by immigration as by natural increase. The high survival rate enabled the child population to increase by 17 per cent. The adolescent age-categories appear also to be well-filled and provided that the next decade is not marred by any sudden sweep of disease or other calamity, an advance in the rate of growth may be expected.

**113. Age Distribution by Religion and Caste:** (a) *By Religion*—The age distribution in each of the main religious communities for the last four censuses is given in Subsidiary Table II and for three censuses in V-A. The Table below reproduces some of the principal statistics (for males) for the last two censuses:—

RELIGION	Year	Proportion of Males in certain age-groups				
		0-5	5-15	15-40	40-60	60 and over
Hindu .. .. .	1931	15	25	39	17	4
	1921	12	26	40	18	4
Tribal .. .. .	1931	17	26	39	16	2
	1921	14	29	38	16	3
Muslim .. .. .	1931	14	24	40	17	5
	1921	12	26	39	18	5
Jain .. .. .	1931	13	23	40	19	5
	1921	10	25	40	20	5

The figures disclose what the usual experience is of previous censuses. The Hindu proportions in this census are affected by the fact that they have now to reckon in a large proportion of the Raniparaj, who were shown under Tribal in other years. The Tribals marry late but die young—their earlier age-categories are therefore fuller, because of the high fertility. The Muslims have more or less the same age-constitution as Hindus, but the Jains show a high ratio of the adult, and less of the children than the other communities. Probably the last named have a high survival value as the death rate is low; being a trading community, economic motive perhaps rules their families to be rather smaller sized than other classes. Subsidiary Table V-A sheds further light on the birth rate and fecundity variations in the different religions. The Tribal aborigines show there the highest proportion of children below 10 to persons aged 15 and 40 and married females of similar age-limits (*vide* Subsidiary Table V-A). The Zoroastrian children show the least proportion as calculated on persons aged 15-40, but as against married females their proportion is relatively the highest, showing a very high rate of survival. Considering that marriage amongst Parsis is uniformly adult, and also that the proportion of married females to their women of all ages is only 19 (as compared to 36 for the general population), the fecundity rate or at all events the survival rate must be reckoned very high indeed. But these conclusions based as they are on the data furnished by a very limited unit like this State can be only tentative as the influence of regional factors on the age-returns cannot be eliminated so long as the birthplace returns are not correlated with age in the Indian Census.

(b) *By Caste*—The age returns of different castes may now be taken up. Subsidiary Table III and IV give the required ratios in detail. The castes selected are (i) such as formed two per mille of the population; (ii) all Brahmans and Vantias, and most of the depressed castes and the Raniparaj were also selected irrespective of their strength; besides, (iii) a few other castes of local importance, required for all-India tabulation, were also included in this Table. These castes were grouped before compilation according to a literacy percentage scale, into three classes—Advanced, Intermediate and Illiterate. The first class includes all Brahmans and Vantias, and the Lewa Patidars and Marathas among other Hindus, and the Saiyads, Vohras and other trading communities of the Muslim population. The

GROUP	Males numbering per mille aged				
	0-6	7-13	14-16	17-43	44 and over
Advanced ..	165	163	65	405	202
Intermediate ..	187	174	74	394	171
Illiterate ..	207	180	71	384	158

Intermediate group includes the rest of the agriculturists, the bulk of the artisans and of the depressed classes and a small proportion of the Raniparaj. The Illiterate comprises the labouring classes and the remainder of the depressed classes and the Raniparaj. The marginal table gives the principal



ratios for males of the three classes. The age-groups selected are not the quinary groups of other tables but the septenary and ternary groups of the crude ages as returned. These figures were not subjected to any subsequent smoothing as those for divisions and religions. That is why their reliability is open to question. But taken broadly, they confirm the conclusions that

- (i) the Illiterate sections are more "progressive" demologically than the rest of the population, but that
- (ii) they are less long-lived than the others ;
- (iii) the adult group is the most predominant amongst the Advanced castes, in which the aged also bulk most largely ; and finally
- (iv) the general increase in population is most in evidence amongst the more fertile but less intellectual strata of society.

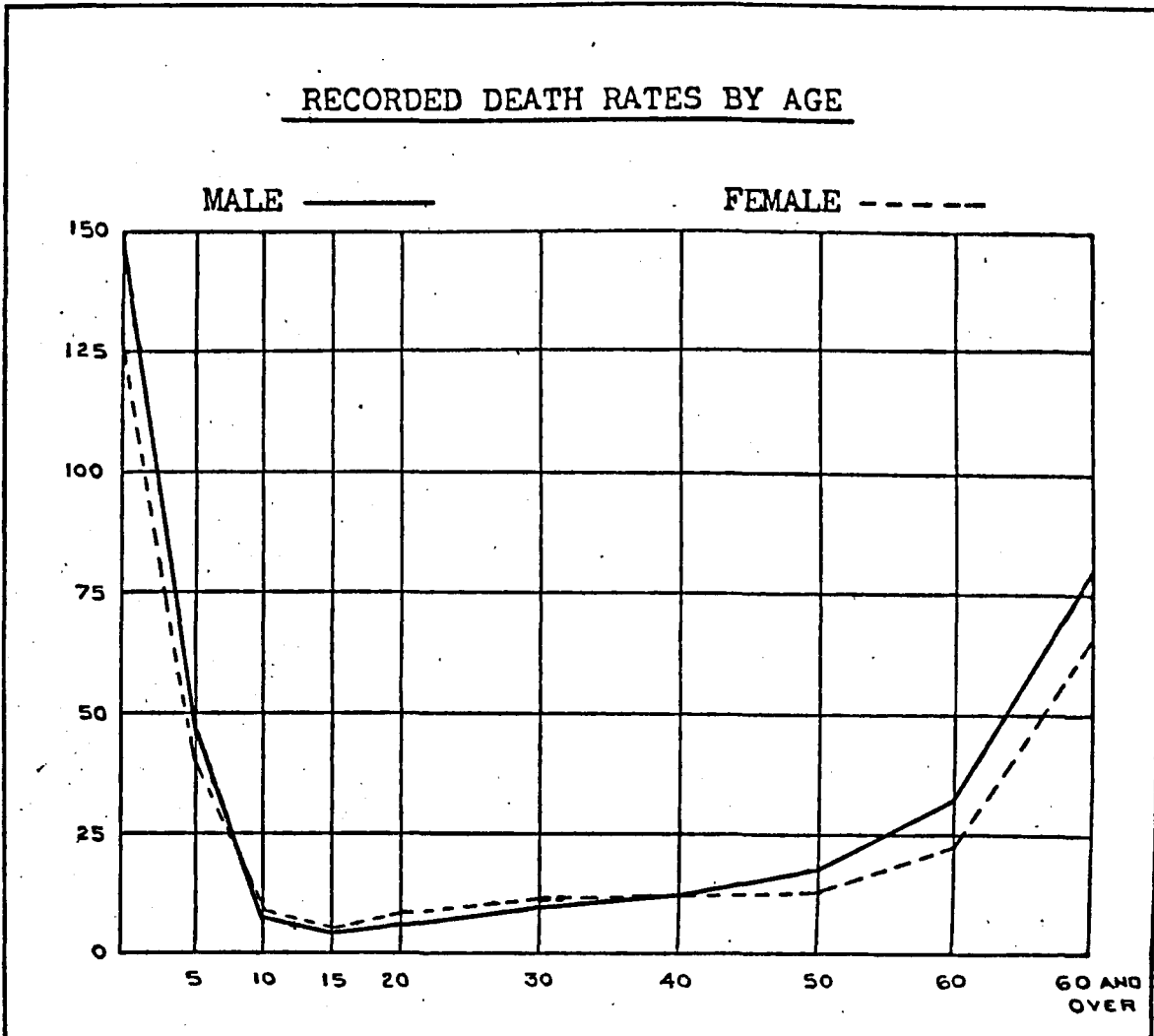
Subsidiary Table IV gives the proportions of children under 14 to persons and married females aged 14-43. These ratios subject to the limitation pointed out already represent roughly the degree of fecundity in the different strata of society. As pointed out in the 1921 Report, there are many disturbing factors and it is difficult to tell whether ascendancy in the social scale has any effect on fertility. Many curious anomalies occur which at once destroy any preconceived theories on this matter. Thus Prabhus have always shown a high proportion of children, in spite of their high intellectual attainments. The Marathas have a small proportion. Lewa Patidars, Sutars, Barias, Bhangis, Bharwads, Talavias—a curious collocation—all have a high proportion of married females of child bearing ages, but they have not a correspondingly high ratio of children. The highest fecundity rate (proportion of children to married females aged 15-40) is amongst the Prabhus, Gamits, Bhils, Vaghris, Thakardas and Memons. Thus the first and the last named find themselves in this matter in strange company. In any case, as pointed out in the Report of 1921, it is too early yet to convict any of the higher castes amongst Hindus, Jains and Muslims with the Malthusian Microbe. But census statistics, the reader must be warned, cannot be used for drawing any conclusions regarding comparative fertility, where figures are governed largely "by a concentrated and selective mortality, and the census only gives us, as it were, one photograph arbitrarily picked out of a continuous reel."\*

#### § 4. CORRELATION WITH VITALITY RETURNS

**114. Vitality Returns: Births and Deaths**—We now come to four subsidiary tables which give details of vital occurrences which cumulatively may be expected to throw light on the variations, both proportionate and absolute, in the age returns. The registration of births and deaths is unhappily defective. How short they are of the truth is only too painfully evident from the facts disclosed and the tests laid down in the opening chapter. It is profitless therefore to make much of them, except on the assumption that the margin of error being fairly constant, the variations in the birth and death rates point to real changes due to the interaction of natural forces. Subsidiary Tables VII and VIII need not detain us long. The highest birth rate attained during the decade was, for males in 1930, and for females in 1927. The lowest for both sexes was in 1928. The birth rate for females was almost invariably lower than for males. In individual divisions, the highest birth rate recorded was 33.9 per mille for males in 1930 in Kathiawad : the lowest (18.9) was for females in 1928 in North Gujarat. Coming to deaths, which are more accurately registered than births, we have Subsidiary Tables VIII and IX—VIII showing the death rate in the divisions for each year of the decade and IX which is a very useful table, giving the varying rates of recorded mortality for the different age-periods. A diagram is given below illustrating the

\* *Vide India Census Report, 1921, page 131.*

reported death rates by age and sex. If mortality rates for individual ages could be recorded, the curve would have had a more perfect *ogee* shape than shown below.



The mean mortality rates for males and females may for the present be deferred till the next chapter. In the mean time it will suffice to point out that the mortality at both ends of life is out of all proportion to the middle ages. The lowest is in the age-group 10-15, which is usually the healthiest period; the death rate for aged 60 and over is about half of the mortality amongst infants. Even the adults aged 50-60 are healthier than children who are between 1 and 5 years of age. The greatest barrier is of course at the entrance to life, where the mean expectation is to live for only 28 years, but once that barrier is successfully crossed, the survivor expects to live for much longer. For instance at age 10, Prof. Mukherji has calculated that the mean expectation is 36 years for males and 38 years for females.

**115. The Incidence of Disease**—Subsidiary Table X gives the recorded incidence of certain diseases since 1921. Plague and cholera were happily scarce, but small-pox in a virulent form visited the State in 1929-30, claiming 8,616 deaths (about 4 per mille of population). North Gujarat lost 5,091 lives from this cause alone in that year. Kathiawad and Central Gujarat in varying degrees were also affected. The average annual toll of "fever" was 35,140 or 16.9 per mille, but the last two years of the decade were the most unhealthy. Pneumonia claimed 2,795 deaths annually. On the whole as pointed out more than once already, the decade's health was better than in the previous ten years—probably the best since 1891.

**116. Infantile Mortality**—Lastly, Subsidiary Table XI deals with the important problem of infant mortality. The subject is so bound up

intimately with the growth of population that some brief reference to it must be permitted even in a Report of this kind. Registration however in this matter is notoriously defective. In 1921, the annual average of infant deaths for the previous ten years was shown to be 27,622 against the recorded average of 11,049. In 1931, we have estimated the annual number of infant deaths for the last decade to be 16,216 against the recorded total of 9,124. The recorded infant death rate, (*i. e.*, the proportion of deaths amongst children

DECADE	Recorded infant death-rate		Recorded infant deaths per cent of total recorded deaths (both sexes)
	Male	Female	
1911-21 ..	19.3	18.7	18.7
1921-31 ..	15.96	13.70	20.42

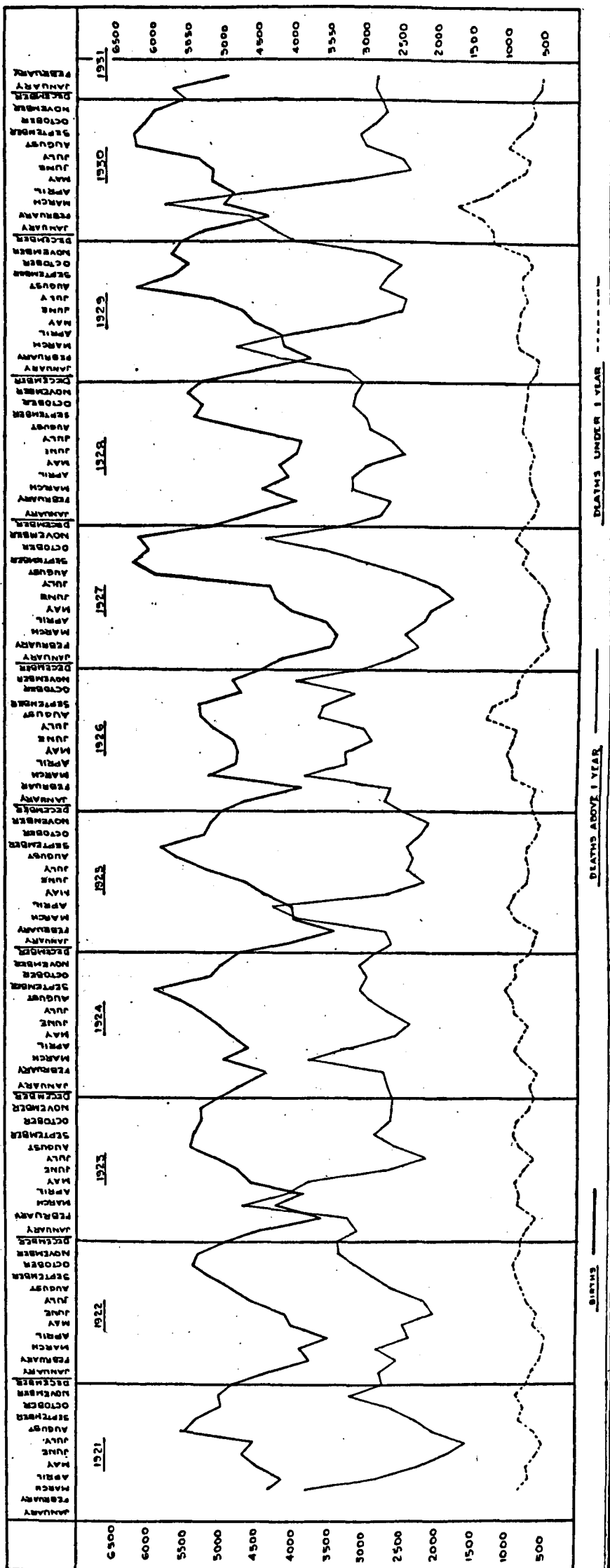
under one year to one year births) is 15.96 for males and 13.7 for females. The real infant death rate on the estimated volume of births (87,062—*vide* para 35 *supra*) is 18.63 per cent. For the preceding decade, the corresponding corrected ratio on the estimated volume of births was 30.76 per cent. The normal infant mortality rate has been calculated by Prof. Mukherji in the next part of this chapter at 25.76 per cent. From this the estimated rate above shown may be accepted as correct. In any event, whether we take the registered data, or the corrected estimates the infant mortality of this decade appears to compare very favourably with the previous one. The causes of mortality amongst infants generally are familiar enough, and Baroda is no exception to the common Indian experience. "The chief of these are the poor vitality of immature motherhood, ignorant midwifery, disregard of hygiene and after-care and underfeeding among the poor class women."\* The percentage of recorded infant mortality rate is unduly high in Baroda City. It is no less than 26.38 for males and 25.91 for females. Births and deaths are fairly accurately recorded here; in view of the excellent facilities for maternity welfare existing in the City, the high rate has to be explained. In the first place, it must be remembered that a good proportion of the births of children of families residing in the City occurs in the native places of the mothers, so that, of the births registered here, the infant deaths seem to be a much greater proportion than is really the case. In para 75, we have calculated a total of 36,466 births in the last ten years in the City. If we assume that instead of 8,772 recorded infant deaths, the true total was 9,000, the infant mortality rate is reduced to 24.7 per cent. Even then the rate is high but it is inevitable under the congested urban conditions of Indian cities.

**117. Infant Mortality in the City compared to other Cities: the Work of the Chimnabai Maternity Welfare League**—But this rate may be compared with that prevailing in other Indian cities, which are truly described as the graveyard of babies. The figures in the margin for other cities are from the Census Report of India for 1921. One reason for this relatively favourable result in Baroda is ascribable to the work of the Maharani Chimnabai Maternity and Child Welfare League, a benevolent organisation established 9 years ago, which does good work in this direction through a trained staff of Lady Health Visitors and Medical Inspectors of school children. It maintains 4 baby clinics in the different wards of the City, through which over 3,000 mothers are benefitted every year. Besides 714 poor mothers were helped with cash, clothes, free milk and food from its funds in 1930. 594 ante-natal cases were treated and examined. By means of baby-weeks, health exhibitions and lantern lectures, an active propaganda in support of modern methods of child births and home-craft was kept alive. The organisation had access to large funds including a munificent donation from Her Highness the Maharani's privy purse. The success of this work is reflected in the reduction of the infant mortality rate from 35.2 in 1921 to 24.7 in 1931.

Infant Mortality in Cities		
Name of City		Percentage of births
Bombay	.. ..	55.6
Calcutta	.. ..	38.6
Rangoon	.. ..	30.3
Madras	.. ..	28.2
Karachi	.. ..	24.3
Delhi	.. ..	23.3
Baroda	.. ..	24.7

\*The Baroda Census Report of 1921, page 158.

————— BIRTHS, DEATHS & INFANTILE MORTALITY —————  
 ————— IN BARODA STALL —————



**118. Infant Mortality correlated with Births and Deaths**—Finally, before closing this part, it will be interesting to compare the incidence of infant mortality with the variations in the births and deaths in the decade. In 1921, following the example of the Bengal Report of 1911, a diagram was plotted for showing the comparative curves of births and deaths in the general population, and deaths amongst infants, per each month of the previous ten years. The diagram did not succeed in its main purpose of proving that a synchrony existed between the curves of births and deaths,—partly because the decade itself was abnormal, and also because the main premises on which the synchrony was based were perhaps not applicable to this State. The Bengal Report observed that the conception curve was the steepest in the healthiest months, so that when the births occurred nine months later, they synchronised always with an unhealthy period of the year, when the death rate was also the highest. Thus the synchrony was plainly observable in the Bengal vitality returns. In this State, healthiness in climate was not the determinant cause so much in forcing up the conception curve. In the 1921 Report, I held that the main reason which influences the rise and fall of the conception curve is economic consideration. The months of highest incidence of births are as the accompanying diagram shows August, September and October. From the middle of September, the rains hold off, the mosquitoes increase and the fever season sets in. The highest death rate months are therefore November and to a less extent December. A further unhealthy season is the interval between winter and summer—February-April. The highest peak of the death curve is usually attained in March every year. Now three things appear confirmed from the experience of the last two decades :—

(a) The conceptions are most frequent in November–January when the fever prevalence begins to be virulent. From December to April the harvest of the two crops is gathered in, the surplus produce is sold in the markets, and the material condition of the people, at least with moderately successful crops, is at its best. Thus the main motive is economic.

(b) The very low level of the birth curve in February–March is possibly due to two reasons. The increasing incidence of fever and other diseases in March and April does have an inhibiting effect on conceptions in those months, judging by the quite appreciable drop in the birth curve in November and December. Secondly, May, which is in the heart of the dead season for agriculture, has the lowest point for conceptions, which is shown in the diagram by February, always marking the lowest point in births. “The subsequent months of the monsoon,” as pointed out in the 1921 Census Report of the State, “with its urgency of agricultural operations, are marked by a comparative infrequency of conceptions although there is a rebound from the depression in May.”

(c) Lastly, the conclusion that a high infant mortality, by shortening the the suckling period,\* encourages conceptions, and therefore births later on. The peaks in infant mortality in the diagram are invariably followed by a high birth rate point, nine or ten months later.

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\* Newsholmes, Vital Statistics, pages 74-75.

## SUBSIDIARY TABLE I

AGE DISTRIBUTION OF 10,000 OF EACH SEX IN THE STATE AND EACH NATURAL DIVISION

Age	1931		1921		1911		1901	
	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9
<b>Baroda State</b>								
0—1	352	364	308	331	394	416	145	156
1—2	290	306	145	160	188	208	133	139
2—3	269	292	240	277	316	343	205	226
3—4	274	286	257	294	292	340	220	249
4—5	274	267	292	285	299	302	260	286
0—5	1,459	1,515	1,242	1,347	1,489	1,609	963	1,056
5—10	1,272	1,217	1,411	1,360	1,141	1,044	1,254	1,236
10—15	1,208	1,154	1,229	1,171	935	825	1,357	1,200
15—20	977	1,003	847	751	887	818	1,036	941
20—25	930	977	723	786	970	1,026	998	1,007
25—30	739	759	842	843	986	1,006	978	959
30—35	698	693	813	837	840	895	869	831
35—40	622	631	701	668	712	656	679	653
40—45	561	561	628	681	666	705	632	693
45—50	478	450	435	410	406	364	380	399
50—55	382	356	484	476	439	462	419	461
55—60	258	252	210	172	170	150	167	190
60—65	206	213	242	288	211	272	..	..
65—70	96	94	81	77	64	64	268	374
70 and over	114	125	112	133	84	104	..	..
Mean age	23.69	23.63	23.96	24.04	22.71	22.77	23.56	23.76
<b>Baroda City</b>								
0—5	1,144	1,359	921	1,133	1,078	1,255	733	877
5—10	977	1,036	1,046	1,122	859	902	1,020	1,038
10—15	995	1,023	1,087	986	889	787	1,091	881
15—20	1,151	1,105	859	807	935	909	946	824
20—40	3,764	3,354	3,703	3,342	3,860	3,531	3,843	3,613
40—60	1,625	1,652	1,890	1,945	1,905	1,931	1,992	2,159
60 and over	344	471	494	665	474	685	375	608
Mean age	24.77	24.69	26.14	26.24	24.55	25.65	27.15	28.52
<b>Central Gujarat excluding City</b>								
0—5	1,383	1,476	1,152	1,284	1,397	1,535	846	892
5—10	1,198	1,166	1,348	1,308	1,084	992	1,232	1,228
10—15	1,144	1,106	1,173	1,157	869	746	1,303	1,082
15—20	970	998	819	716	847	768	945	830
20—40	3,058	3,112	3,125	3,140	3,620	3,670	3,734	3,750
40—60	1,788	1,690	1,922	1,870	1,810	1,813	1,679	1,851
60 and over	459	452	461	525	373	476	261	367
Mean age	24.58	24.16	24.95	24.81	23.61	23.77	25.06	26.05
<b>Kathiawad</b>								
0—5	1,621	1,668	1,294	1,386	1,567	1,677	931	1,136
5—10	1,352	1,295	1,495	1,482	1,077	1,062	1,273	1,149
10—15	1,249	1,175	1,286	1,221	904	806	1,493	1,502
15—20	999	996	778	681	1,015	900	936	897
20—40	2,856	2,915	3,037	3,029	3,370	3,403	3,428	3,193
40—60	1,502	1,475	1,631	1,610	1,669	1,653	1,681	1,757
60 and over	421	476	479	591	398	499	258	366
Mean age	22.64	22.93	23.50	23.68	22.06	22.87	24.50	24.69
<b>North Gujarat</b>								
0—5	1,470	1,480	1,287	1,377	1,543	1,661	959	1,012
5—10	1,326	1,237	1,453	1,387	1,192	1,032	1,259	1,237
10—15	1,281	1,207	1,272	1,186	931	798	1,407	1,259
15—20	986	1,000	888	748	901	810	1,156	1,044
20—40	2,852	2,993	2,999	3,105	3,508	3,651	3,473	3,432
40—60	1,682	1,662	1,699	1,731	1,615	1,676	1,507	1,692
60 and over	403	421	402	466	310	372	239	324
Mean age	23.37	23.65	23.29	23.65	22.10	22.74	23.71	24.60
<b>South Gujarat</b>								
0—5	1,583	1,632	1,359	1,409	1,611	1,660	1,302	1,463
5—10	1,325	1,256	1,481	1,379	1,247	1,184	1,360	1,358
10—15	1,192	1,129	1,232	1,180	1,097	1,039	1,327	1,172
15—20	898	998	820	839	834	853	964	916
20—40	3,039	3,132	3,043	3,201	3,267	3,386	3,211	3,080
40—60	1,576	1,462	1,631	1,547	1,554	1,431	1,508	1,559
60 and over	387	391	434	445	390	447	328	452
Mean age	23.06	22.73	23.53	22.44	22.25	22.09	23.49	23.88

## SUBSIDIARY TABLE II

## SUBSIDIARY TABLE II

## AGE DISTRIBUTION OF 10,000 OF EACH SEX IN EACH MAIN RELIGION

Age	1931		1921		1911		1901	
	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9
<b>Hindu—</b>								
0—5 ..	1,461	1,519	1,237	1,344	1,473	1,604	910	993
5—10 ..	1,275	1,217	1,402	1,353	1,128	1,026	1,268	1,239
10—15 ..	1,214	1,159	1,223	1,172	929	812	1,372	1,215
15—20 ..	979	1,003	859	740	896	818	1,045	948
20—40 ..	2,979	3,054	3,083	3,125	3,536	3,605	3,555	3,490
40—60 ..	1,679	1,619	1,762	1,760	1,685	1,702	1,597	1,763
60 and over ..	413	429	434	506	353	433	253	352
Mean age ..	23.66	23.6	23.99	24.14	22.86	22.94	23.70	24.66
<b>Tribal—</b>								
0—5 ..	1,701	1,887	1,435	1,562	1,902	2,023	1,433	1,637
5—10 ..	1,397	1,384	1,654	1,554	1,385	1,310	1,252	1,304
10—15 ..	1,194	1,150	1,265	1,185	914	909	1,295	1,172
15—20 ..	803	955	781	842	724	817	1,028	946
20—40 ..	3,074	3,097	3,001	3,167	3,348	3,423	3,240	3,129
40—60 ..	1,574	1,283	1,571	1,427	1,455	1,229	1,427	1,412
60 and over ..	257	244	293	263	272	289	325	400
Mean age ..	22.61	20.83	22.27	21.84	20.59	19.92	22.54	22.12
<b>Muslim—</b>								
0—5 ..	1,432	1,476	1,177	1,271	1,430	1,528	985	1,016
5—10 ..	1,256	1,204	1,323	1,300	1,120	1,049	1,182	1,197
10—15 ..	1,172	1,124	1,225	1,164	952	856	1,310	1,141
15—20 ..	970	1,012	781	766	874	820	967	916
20—40 ..	3,068	3,114	3,120	3,183	3,391	3,534	3,503	3,416
40—60 ..	1,645	1,598	1,838	1,731	1,803	1,700	1,733	1,828
60 and over ..	457	472	536	585	430	513	320	486
Mean age ..	23.95	23.9	24.87	24.55	23.42	23.47	23.80	25.26
<b>Jain—</b>								
0—5 ..	1,315	1,282	1,030	1,051	1,195	1,218	873	1,042
5—10 ..	1,169	1,115	1,245	1,180	1,116	993	1,019	993
10—15 ..	1,139	1,073	1,282	1,142	1,022	933	1,182	1,066
15—20 ..	981	964	818	744	888	766	999	839
20—40 ..	2,985	3,083	3,096	3,213	3,436	3,537	3,767	3,523
40—60 ..	1,901	1,962	1,984	2,030	1,905	1,963	1,847	2,048
60 and over ..	510	521	545	640	438	590	313	489
Mean age ..	25.23	25.75	25.89	26.44	24.65	25.31	25.34	26.33

## SUBSIDIARY TABLE III

## AGE DISTRIBUTION OF 1,000 OF EACH SEX IN CERTAIN CASTES

CASTE	MALES (NUMBER PER MILLE) AGED					(FEMALES (NUMBER PER MILLE) AGED				
	0-6	7-13	14-16	17-43	44 and over	0-6	7-13	14-16	17-43	44 and over
1	2	3	4	5	6	7	8	9	10	11
<b>Advanced</b> .. .. .	<b>165</b>	<b>163</b>	<b>65</b>	<b>405</b>	<b>202</b>	<b>169</b>	<b>157</b>	<b>64</b>	<b>413</b>	<b>197</b>
<i>Hindu and Jain</i> .. .. .	<i>163</i>	<i>160</i>	<i>66</i>	<i>407</i>	<i>204</i>	<i>167</i>	<i>156</i>	<i>63</i>	<i>414</i>	<i>200</i>
Bhavsar (Hindu and Jain) .. .. .	146	184	70	401	199	159	148	69	410	214
Brahmabhat (Barot) .. .. .	166	159	61	394	220	165	140	58	417	220
<i>Brahman</i> .. .. .	<i>150</i>	<i>153</i>	<i>63</i>	<i>414</i>	<i>220</i>	<i>154</i>	<i>151</i>	<i>61</i>	<i>417</i>	<i>217</i>
Anavala .. .. .	142	170	67	420	201	153	164	56	427	200
Audich .. .. .	155	159	62	404	220	149	151	61	418	221
Deshastha .. .. .	141	140	73	419	227	164	162	64	399	211
Khedawal .. .. .	173	169	66	365	227	150	173	63	402	212
Konkanastha .. .. .	146	146	84	417	207	173	155	67	411	194
Mewada .. .. .	141	159	64	396	240	161	149	64	388	238
Modh .. .. .	157	150	59	399	235	155	135	57	422	231
Nagar .. .. .	157	168	64	362	249	148	160	60	396	236
Tapodhan .. .. .	184	180	77	392	167	178	158	73	409	182
Other .. .. .	132	128	54	468	218	156	143	60	430	211
Ghanchi .. .. .	180	171	75	407	167	172	165	67	419	177
Kachhia (Khambhar) .. .. .	175	168	65	407	185	168	155	66	413	198
Lewa Patidar (Hindu and Jain) .. .. .	165	161	65	403	206	172	157	64	411	196
Luhana .. .. .	192	190	73	366	179	185	176	59	399	181
Maratha Kshatriya .. .. .	160	145	56	494	145	172	141	59	447	181
Prabhu .. .. .	188	186	78	390	158	208	198	95	370	129
Soni .. .. .	173	164	65	423	175	168	158	67	421	186
Sutar .. .. .	179	167	75	394	185	174	164	70	412	180
<i>Vania (Hindu and Jain)</i> .. .. .	<i>161</i>	<i>162</i>	<i>66</i>	<i>407</i>	<i>204</i>	<i>165</i>	<i>158</i>	<i>60</i>	<i>412</i>	<i>205</i>
Disawal .. .. .	162	154	58	390	236	145	141	56	421	237
Kapol .. .. .	190	176	81	351	202	192	192	52	365	199
Khadayata .. .. .	151	152	67	428	202	188	159	69	400	184
Lad .. .. .	167	156	63	423	191	171	160	63	405	201
Porwad .. .. .	153	157	66	407	217	149	148	59	423	221
Shrimali .. .. .	163	169	66	400	202	168	159	61	410	201
Other .. .. .	156	159	67	419	199	165	159	58	416	202
<b>Muslim</b> .. .. .	<b>193</b>	<b>187</b>	<b>66</b>	<b>377</b>	<b>177</b>	<b>187</b>	<b>166</b>	<b>68</b>	<b>408</b>	<b>171</b>
Khoja .. .. .	212	212	77	328	171	222	189	63	369	157
Memon .. .. .	192	200	72	374	162	206	177	67	401	149
Pinjara .. .. .	202	178	66	384	170	180	152	68	422	178
Saiyad .. .. .	172	164	66	420	178	177	153	70	417	183
Vohra (Agricultural) .. .. .	199	200	67	365	169	190	165	64	397	184
Vohra (Trading) .. .. .	195	180	58	365	202	171	171	74	425	159
<b>Intermediate</b> .. .. .	<b>187</b>	<b>174</b>	<b>74</b>	<b>394</b>	<b>171</b>	<b>185</b>	<b>168</b>	<b>74</b>	<b>407</b>	<b>166</b>
<i>Hindu, Jain and Tribal</i> .. .. .	<i>188</i>	<i>175</i>	<i>75</i>	<i>391</i>	<i>171</i>	<i>185</i>	<i>169</i>	<i>74</i>	<i>406</i>	<i>166</i>
Anjana Chaudhari .. .. .	156	170	79	426	169	165	165	81	403	186
Baria .. .. .	177	165	80	394	184	185	156	68	424	167
Bava and Gosain .. .. .	143	143	66	420	228	183	159	64	402	192
Chamar (Khalpa) .. .. .	203	205	81	359	152	192	181	82	404	141
Darji (Hindu and Jain) .. .. .	197	185	67	370	181	168	159	70	418	185
Garoda .. .. .	199	212	78	345	166	178	168	76	418	160
Gola (Rice-pounders) .. .. .	201	181	72	432	114	185	166	64	428	157
Kadwa Patidar (Hindu and Jain) .. .. .	193	175	80	384	168	176	188	84	393	159
Karadia .. .. .	227	167	77	400	129	220	164	70	395	151
Kumbhar (Hindu and Jain) .. .. .	192	180	79	378	171	191	170	75	395	169
Luhar .. .. .	190	187	72	380	171	174	159	68	408	191
Mochi .. .. .	197	171	72	307	163	186	170	68	416	160
Patanwadia .. .. .	196	165	65	387	187	189	159	63	422	167



SUBSIDIARY TABLE III—concluded.

AGE DISTRIBUTION OF 1,000 OF EACH SEX IN CERTAIN CASTES

CASTE	MALES (NUMBER PER MILLE) AGED					FEMALES (NUMBER PER MILLE) AGED				
	0—6	7—13	14—16	17—43	44 and over	0—6	7—13	14—16	17—43	44 and over
1	2	3	4	5	6	7	8	9	10	11
<i>Primitive and Forest Tribes (Hindu and Tribal)</i> .. .. .	213	181	61	394	151	231	171	59	408	131
Chodhra .. .. .	209	179	61	393	158	226	172	62	405	135
Dhanka .. .. .	216	139	45	426	174	223	145	53	435	144
Dhodia .. .. .	218	190	63	391	138	239	171	56	410	124
Rajput .. .. .	170	161	69	426	174	173	150	75	422	180
Sathawara .. .. .	208	179	66	389	158	186	154	70	407	183
Talabda .. .. .	190	173	71	396	170	186	160	68	392	194
Targala (Hindu and Jain) .. .. .	193	164	67	373	203	172	152	62	395	219
Valand .. .. .	175	175	73	396	181	176	157	73	420	174
Vankar (Dhed) .. .. .	198	190	78	366	168	188	171	76	404	161
<i>Muslim</i> .. .. .	180	161	63	421	175	187	157	66	417	173
Fakir .. .. .	167	168	63	418	184	204	157	67	395	177
Ghanchi .. .. .	194	162	68	393	183	183	166	72	411	168
Malek .. .. .	185	156	65	406	188	187	147	57	426	183
Molesalam .. .. .	196	163	63	392	186	187	144	62	419	188
Momna .. .. .	207	186	69	375	163	196	174	75	397	158
Pathan .. .. .	166	152	57	451	174	191	152	64	421	172
Shaikh .. .. .	168	150	58	455	169	178	151	63	435	173
Sindhi .. .. .	178	162	73	418	169	191	172	71	380	186
Tai .. .. .	178	183	76	388	175	173	164	78	424	161
<i>Indian Christian</i> .. .. .	166	166	92	449	127	166	217	86	383	148
<i>Illiterate</i> .. .. .	207	180	71	384	158	220	168	67	405	140
Bhangi .. .. .	204	194	71	382	149	196	170	69	427	138
Bharwad .. .. .	179	169	88	400	164	170	170	88	405	167
Chunvalia .. .. .	211	183	73	387	146	221	154	64	412	149
<i>Primitive and Forest Tribes (Hindu and Tribal)</i> .. .. .	219	173	60	392	156	237	161	59	411	132
Bhil .. .. .	215	171	59	393	162	249	161	62	397	131
Dubla .. .. .	228	169	56	390	157	230	161	52	407	150
Gamit .. .. .	211	182	62	412	133	238	174	61	409	118
Nayakda .. .. .	213	179	60	400	148	221	162	54	428	135
Tadvi .. .. .	208	164	64	399	165	221	148	54	428	149
Talavia .. .. .	232	168	54	366	180	230	151	56	420	143
Vasawa .. .. .	230	179	64	387	140	247	168	63	406	116
Ravalia .. .. .	206	185	79	382	148	207	165	78	407	143
Shenva .. .. .	208	200	75	365	152	195	182	74	404	145
Thakarda (Hindu and Jain) .. .. .	201	186	76	373	164	220	174	69	394	143
Vagher .. .. .	193	191	64	383	169	223	181	52	389	155
Vaghri .. .. .	224	185	72	367	152	237	175	63	396	129

## SUBSIDIARY TABLE IV

PROPORTION OF CHILDREN UNDER 14 AND OF PERSONS OVER 43 TO  
THOSE AGED 14-43 IN CERTAIN CASTES : ALSO OF MARRIED FEMALES  
AGED 14-43 PER 100 FEMALES

CASTES	PROPORTION OF CHILDREN, BOTH SEXES PER 100		PROPORTION OF PERSONS OVER 43 PER 100 AGED 14-43		Number of Married Females aged 14-43 per 100 Females of all ages
	Persons aged 14-43	Married Females aged 14-43	Males	Females	
1	2	3	4	5	6
<b>Advanced Group</b>					
Brahman .. .. .	64	174	46	45	36
Lewa Patidar .. .. .	69	169	44	41	42
Luhana .. .. .	83	197	41	40	39
Maratha Kshatriya .. .. .	58	180	26	36	39
Prabhu .. .. .	83	279	34	28	28
Sutar .. .. .	72	165	40	37	42
Vania .. .. .	67	172	43	41	38
<b>Intermediate</b>					
<i>i.—Military and Dominant</i>					
Rajput .. .. .	66	166	35	36	41
<i>ii.—Agriculturists</i>					
Kadwa .. .. .	78	179	36	33	41
Anjana .. .. .	66	164	33	38	41
Baria .. .. .	71	161	39	34	45
<i>iii.—Artisan group</i>					
Darji .. .. .	76	162	41	38	42
Kumbhar .. .. .	79	175	38	36	42
Luhar .. .. .	76	169	38	40	41
Mochi .. .. .	76	169	35	33	44
<i>iv.—Labouring group</i>					
Talabda .. .. .	76	169	36	42	42
Patanwadia .. .. .	76	166	41	35	45
Vankar .. .. .	81	171	38	34	43
<b>Illiterate</b>					
Bhangi .. .. .	81	177	33	28	44
Bharwad .. .. .	70	158	34	34	45
Bhil .. .. .	87	199	36	28	41
Gamit .. .. .	85	231	28	25	36
Talavia .. .. .	87	184	43	30	43
Thakarda .. .. .	85	202	36	31	41
Vaghri .. .. .	92	209	35	28	41
<b>Muslim</b>					
<i>i.—With Foreign strain</i>					
Saiyad .. .. .	68	191	37	38	36
Pathan .. .. .	66	189	34	35	39
Shaikh .. .. .	64	172	33	35	40
<i>ii.—Local converts</i>					
Vohra (both classes) .. .. .	81	187	43	36	38
Memon .. .. .	85	204	37	32	38
Malek .. .. .	71	174	40	38	39

SUBSIDIARY TABLE V

PROPORTION OF CHILDREN UNDER 10 AND OF PERSONS AGED 60 AND OVER TO THOSE AGED 15-40 : ALSO OF MARRIED FEMALES AGED 15-40 PER 100 FEMALES

NATURAL DIVISION	PROPORTION OF CHILDREN BOTH SEXES PER 100						PROPORTION OF PERSONS AGED 60 AND OVER PER 100 AGED 15-40						Number of married females aged 15-40 per 100 females of all ages		
	Persons aged 15-40			Married Females aged 15-40			1931		1921		1911		1931	1921	1911
	1931	1921	1911	1931	1921	1911	Male	Fe-male	Male	Fe-male	Male	Fe-male			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Baroda State ..	68	69	60	157	167	145	10	11	11	13	8	10	36	33	37
Baroda City ..	48	48	44	134	132	119	7	11	11	16	10	15	38	35	35
Central Gujarat ..	64	65	56	147	157	135	11	11	12	14	8	11	38	34	39
Kathiawad ..	76	75	61	178	183	146	11	12	12	16	9	12	34	32	37
North Gujarat ..	70	71	61	160	172	148	11	11	10	12	7	8	34	33	37
South Gujarat ..	72	71	68	165	170	158	10	9	11	11	10	11	35	33	36

SUBSIDIARY TABLE V-A

PROPORTION IN CERTAIN RELIGIONS OF CHILDREN UNDER 10 AND OF PERSONS AGED 60 AND OVER TO THOSE AGED 15-40 : ALSO OF MARRIED FEMALES AGED 15-40 PER 100 FEMALES

RELIGION AND NATURAL DIVISION	PROPORTION OF CHILDREN OF BOTH SEXES PER 100						PROPORTION OF PERSONS AGED 60 AND OVER PER 100 AGED 15-40						Number of married females aged 15-40 per 100 females of all ages		
	Persons aged 15-40			Married females aged 15-40			1931		1921		1911		1931	1921	1911
	1931	1921	1911	1931	1921	1911	Male	Fe-male	Male	Fe-male	Male	Fe-male			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Baroda State</b>															
All Religions ..	68	69	60	157	167	145	10	11	11	13	8	10	36	33	37
Hindu ..	68	68	59	156	165	143	10	11	11	13	8	10	36	34	38
Tribal ..	81	80	80	203	205	184	7	6	8	7	7	7	32	31	37
Muslim ..	66	65	59	158	156	143	11	11	14	15	10	12	35	33	37
Jain ..	61	57	52	155	150	141	13	13	14	16	10	14	32	30	32
Zoroastrian ..	53	54	59	182	158	161	31	25	31	27	24	24	19	22	24
<b>Baroda City</b>															
All Religions ..	48	48	44	134	132	119	7	11	11	16	10	15	38	35	35
Hindu ..	48	49	44	134	132	118	7	10	11	16	10	15	38	35	37
Muslim ..	47	46	47	136	128	122	8	11	13	17	10	16	38	35	38
<b>Central Gujarat</b>															
All Religions ..	64	65	56	147	157	135	11	11	12	14	8	11	38	34	39
Hindu ..	64	65	55	146	157	133	11	11	12	14	8	11	38	34	40
Muslim ..	65	62	56	155	153	138	11	11	13	15	9	11	36	34	38
<b>Kathiawad</b>															
All Religions ..	76	75	61	178	183	146	11	12	12	16	9	12	34	32	37
Hindu ..	76	74	60	177	182	144	11	12	12	14	9	11	34	32	38
Muslim ..	79	82	73	183	183	164	12	12	16	17	13	13	33	33	36
<b>North Gujarat</b>															
All Religions ..	70	71	61	160	172	148	11	11	10	12	7	8	34	33	37
Hindu ..	71	72	62	161	174	149	10	10	10	12	7	8	35	33	38
Muslim ..	69	67	59	160	160	145	12	11	13	13	9	9	34	33	37
<b>South Gujarat</b>															
All Religions ..	72	71	68	165	170	158	10	9	11	11	10	11	35	33	36
Hindu ..	72	66	66	162	146	150	10	9	13	13	10	11	36	36	37
Muslim ..	64	66	66	153	149	147	12	12	17	16	15	14	34	33	35

**SUBSIDIARY TABLE VI**  
**VARIATION IN POPULATION AT CERTAIN AGE-PERIODS**

NATURAL DIVISIONS	VARIATION PER CENT IN POPULATION (INCREASE + OR DECREASE —)						
	PERIOD	All Ages	0-10	10-15	15-40	40-60	60 and over
1	2	3	4	5	6	7	8
Baroda State ..	1891-1901	— 19.2	— 35.6	+ 1.1	— 12.4	— 14.7	— 40.6
	1901-1911	+ 4.1	+ 22.0	— 28.4	+ 2.2	+ 4.9	+ 20.9
	1911-1921	+ 4.6	+ 6.1	+ 42.5	— 7.1	+ 8.7	+ 23.0
	1921-1931	+ 14.9	+ 17.1	+ 13.1	+ 18.0	+ 8.4	+ 4.5
Baroda City ..	1891-1901	— 10.9	— 16.0	+ 11.8	— 11.9	— 6.7	— 29.7
	1901-1911	— 4.3	+ 6.9	— 19.0	— 4.2	— 11.4	+ 12.9
	1911-1921	— 4.7	— 2.1	+ 17.9	— 10.0	— 4.7	— 4.2
	1921-1931	+ 19.2	+ 27.4	+ 15.3	+ 28.4	+ 1.5	— 16.5
Central Gujarat ..	1891-1901	— 22.9	— 38.0	— 2.3	— 17.0	+ 3.3	— 42.4
	1901-1911	+ 8.75	+ 29.6	— 26.4	+ 4.5	— 14.9	+ 47.4
	1911-1921	+ 4.3	+ 6.0	+ 49.7	— 8.6	+ 9.2	+ 21.7
	1921-1931	+ 16.1	+ 19.1	+ 12.2	+ 21.0	+ 6.5	+ 7.6
Kathiawad ..	1891-1901	— 3.8	— 25.8	+ 55.2	— 4.5	+ 15.8	— 36.9
	1901-1911	+ 2.79	+ 23.0	— 41.3	+ 5.6	— 0.5	+ 48.1
	1911-1921	— 0.1	+ 5.1	+ 46.2	— 13.5	— 2.7	+ 19.0
	1921-1931	+ 14.7	+ 20.5	+ 10.9	+ 18.3	+ 5.4	— 3.5
North Gujarat ..	1891-1901	— 24.1	— 43.1	— 7.9	— 13.1	— 11.7	— 51.9
	1901-1911	— 0.3	+ 21.2	— 35.4	— 2.9	+ 2.5	+ 19.7
	1911-1921	+ 8.2	+ 9.6	+ 53.6	— 5.6	+ 12.9	+ 39.1
	1921-1931	+ 12.1	+ 12.4	+ 13.5	+ 13.4	+ 9.3	+ 6.7
South Gujarat ..	1891-1901	— 6.0	— 19.6	+ 10.3	+ 0.2	— 0.5	— 9.2
	1901-1911	+ 11.6	+ 16.1	— 4.6	+ 13.8	+ 8.7	+ 19.9
	1911-1921	+ 1.5	+ 0.1	+ 14.5	— 3.8	+ 7.9	+ 6.5
	1921-1931	+ 18.8	+ 22.4	+ 14.3	+ 21.3	+ 13.6	+ 5.0

**SUBSIDIARY TABLE VII**  
**REPORTED BIRTH RATE BY SEX AND NATURAL DIVISIONS**

YEAR	NUMBER OF BIRTHS PER 1,000 OF TOTAL ESTIMATED POPULATION AT EACH YEAR									
	Baroda State		Central Gujarat		North Gujarat		South Gujarat		Kathiawad	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11
1921 (March to Dec.) ..	23.1	21.9	24.7	24.5	19.2	17.6	25.9	24.7	30.3	28.6
1922 (Jan. to Dec.) ..	25.8	24.4	27.7	27.2	21.9	20.0	29.2	27.4	30.9	30.7
1923 ..	26.7	25.7	28.3	28.7	24.7	22.9	25.3	24.0	32.6	31.2
1924 ..	28.2	26.7	29.5	29.5	24.9	22.3	31.8	30.6	31.9	29.7
1925 ..	26.0	24.9	26.8	27.0	22.9	20.7	29.5	28.7	31.4	30.1
1926 ..	26.7	24.8	26.8	25.8	23.9	21.5	30.6	28.3	32.6	30.5
1927 ..	25.3	24.4	27.1	26.6	21.9	20.0	28.8	28.1	31.1	30.1
1928 ..	24.6	23.5	24.5	24.7	20.9	18.9	30.0	28.7	32.4	31.9
1929 ..	26.2	25.2	25.8	25.8	24.6	22.2	28.4	27.3	32.5	33.1
1930 ..	28.4	26.7	29.3	28.9	26.0	23.4	29.7	27.4	33.9	33.1
1931 (Jan.-Feb.) ..	4.5	4.4	4.2	4.5	4.6	4.1	4.6	4.2	5.4	5.5

SUBSIDIARY TABLE VIII

REPORTED DEATH RATE BY SEX AND NATURAL DIVISION

YEAR	NUMBER OF DEATHS PER 1,000 OF TOTAL ESTIMATED POPULATION AT EACH YEAR									
	Baroda State		Central Gujarat		North Gujarat		South Gujarat		Kathiawad	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11
1921 (March to Dec.)..	15.7	14.4	17.5	17.2	14.6	12.8	12.8	11.8	18.7	17.1
1922 (Jan. to Dec.) ..	19.9	18.2	21.5	21.3	17.1	14.7	19.0	17.6	23.6	25.7
1923 .. ..	22.1	20.3	24.3	24.2	19.7	16.5	22.7	21.4	24.5	21.8
1924 .. ..	20.8	19.4	23.0	22.9	19.0	16.3	20.9	19.9	21.9	20.0
1925 .. ..	18.5	17.2	20.2	20.2	17.6	15.6	19.4	17.5	15.0	13.6
1926 .. ..	22.8	21.8	25.8	26.6	20.2	18.1	22.0	21.7	23.6	21.5
1927 .. ..	17.8	17.4	19.1	19.7	17.0	15.5	17.2	16.7	17.6	18.7
1928 .. ..	20.1	18.2	22.5	22.0	17.7	15.1	20.0	18.6	21.2	18.9
1929 .. ..	21.4	19.7	22.5	21.7	20.8	18.6	19.7	18.2	22.2	20.8
1930 .. ..	23.5	22.3	24.9	24.7	21.9	19.4	22.5	21.8	26.3	26.9
1931 (Jan. to Feb.) ..	3.0	2.7	2.9	2.6	2.9	2.4	3.3	2.9	3.6	3.5

SUBSIDIARY TABLE IX

REPORTED DEATH RATE BY SEX AND AGE IN DECADE AND IN SELECTED YEARS PER MILLE LIVING AT SAME AGE BASED ON THE FIGURES OF THE CENSUSES OF 1921 AND 1931 (See note below)

AGE	AVERAGE OF DECADE (ABSOLUTE FIGURES)		AVERAGE OF DECADE (PROPORTIONAL FIGURES)		1921-22		1923-24		1927-28		1928-29		1929-30	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
ALL AGES .. ..	23,943	20,943	21.90	20.49	18.71	17.06	20.32	18.63	20.68	19.22	21.49	19.99	23.97	22.71
Under 1 year ..	5,008	4,290	147.69	126.43	128.32	105.33	140.16	116.35	119.06	101.71	120.42	107.76	156.06	143.10
1-5 .. ..	4,953	4,451	48.19	42.71	32.27	29.05	40.90	35.78	38.27	35.21	42.05	38.43	54.19	52.35
5-10 .. ..	1,180	1,074	7.60	7.70	5.80	5.75	6.46	6.31	7.57	8.09	8.06	8.16	12.32	12.49
10-15 .. ..	657	601	4.86	5.00	4.35	4.14	4.31	4.56	4.76	4.97	4.34	5.15	5.05	5.71
15-20 .. ..	585	671	6.28	8.71	5.59	7.04	5.94	7.22	5.53	7.90	5.87	6.79	6.18	7.25
20-30 .. ..	1,551	1,748	9.01	10.46	9.24	9.61	8.65	9.52	7.54	10.05	7.75	9.76	7.52	9.22
30-40 .. ..	1,853	1,717	11.12	11.12	11.25	11.09	11.35	10.67	11.12	11.22	11.36	10.92	11.11	10.52
40-50 .. ..	2,074	1,458	17.73	13.03	17.42	12.44	16.88	12.44	17.81	12.74	18.01	13.38	17.33	12.74
50-60 .. ..	2,376	1,569	31.08	23.62	29.76	22.91	29.88	22.36	32.61	22.78	35.56	24.66	29.85	22.89
60 and over ..	3,725	3,364	78.01	65.86	62.43	54.02	69.16	61.29	86.61	74.50	85.82	78.08	78.84	67.62

NOTE.—In calculating proportional figures, the census figures for 1921 and 1931 have been accepted as the basis, on which the estimated population for each year selected has been calculated according to the method of geometrical progression. For "All Ages," such estimates have been calculated only on the census population of 1921 in areas where registration of vital occurrences takes place, i.e. in the calculation, the population of the Camp and Railway Areas under non-state administration has been excluded. For the different age-periods however, the total census populations in each age-period as disclosed in the censuses of 1921 and 1931 have been taken to find out by above means of geometrical progression, the estimated population in these age periods in each year selected.

## SUBSIDIARY TABLE X

## REPORTED DEATHS FROM CERTAIN DISEASES PER MILLE OF EACH SEX

YEAR	WHOLE STATE					ACTUAL NUMBER OF DEATHS IN									
	Actual number of deaths			Ratio per mille of each Sex		Baroda City		Central Gujarat		Kathiawad		North Gujarat		South Gujarat	
	Total	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Cholera—</b>															
1920-21	65	29	36	.03	.04	4	4	10	5	9	14	4	9	2	4
1921-22	24	13	11	.01	.01	..	..	2	1	2	4	4	3	2	3
1922-23	30	17	13	.02	.01	1	..	6	6	1	..	6	1	3	9
1923-24	50	30	20	.03	.02	..	..	11	4	1	..	16	16	2	..
1924-25	13	10	3	.009	.003	1	..	5	2	..	..	3	1	1	..
1925-26	15	9	6	.008	.006	..	..	3	2	..	..	3	1	3	3
1926-27	12	6	6	.005	.006	1	..	3	2	..	..	2	2	..	2
1927-28	24	15	9	.01	.009	..	..	8	5	1	..	5	3	1	1
1928-29	27	16	11	.01	.01	1	..	2	3	..	..	12	8	1	..
1929-30	120	61	59	.06	.06	1	3	42	44	..	1	15	9	3	2
<b>Small Pox—</b>															
1920-21	431	233	198	.21	.19	6	7	52	61	14	12	142	97	19	21
1921-22	213	105	108	.10	.11	29	36	39	28	12	8	15	27	10	9
1922-23	565	333	232	.30	.23	11	10	118	91	20	15	141	87	43	29
1923-24	966	473	493	.43	.48	5	3	148	150	128	150	144	126	48	64
1924-25	1,057	573	484	.52	.47	5	4	74	68	59	48	391	334	44	80
1925-26	1,033	563	470	.51	.46	9	17	210	172	73	72	213	134	58	75
1926-27	380	205	175	.19	.17	9	7	82	66	6	6	13	14	95	82
1927-28	251	120	131	.11	.13	..	..	25	33	39	40	8	10	48	48
1928-29	865	461	404	.42	.40	31	24	75	73	109	107	219	162	27	18
1929-30	8,616	4,365	4,251	4.0	4.1	41	54	854	795	609	655	2,590	2,501	271	246
<b>Fever—</b>															
1920-21	33,712	18,086	15,626	16.4	15.2	608	502	5,514	4,789	1,878	1,660	7,514	6,236	2,572	2,439
1921-22	29,646	15,925	13,721	14.5	13.4	570	574	4,387	4,039	2,020	1,657	6,906	5,673	2,042	1,778
1922-23	38,522	20,455	18,067	18.6	17.6	612	645	6,103	5,469	1,977	1,694	8,177	6,735	3,586	3,524
1923-24	33,292	17,849	15,443	16.2	15.1	597	582	5,207	4,502	1,705	1,445	7,451	6,191	2,889	2,723
1924-25	35,634	18,944	16,690	17.2	16.3	672	599	5,520	5,070	1,271	1,054	8,430	7,117	3,051	2,850
1925-26	32,991	17,292	15,699	15.7	15.3	626	671	5,575	5,129	1,230	1,074	7,171	6,214	2,690	2,611
1926-27	32,936	17,149	15,787	15.6	15.4	792	755	4,935	4,605	1,342	1,318	7,374	6,361	2,706	2,748
1927-28	37,365	19,701	17,654	17.9	17.2	712	667	5,779	5,216	1,522	1,404	8,782	7,700	2,906	2,667
1928-29	39,141	20,653	18,488	18.3	18.2	809	799	6,051	5,924	1,057	1,488	8,473	7,236	3,063	3,041
1929-30	38,166	20,184	17,982	18.3	17.5	796	793	6,328	5,495	1,453	1,383	8,253	7,188	3,354	3,123
<b>Dysentery and Diarrhoea—</b>															
1920-21	663	379	284	.34	.28	40	27	132	97	68	50	59	40	80	70
1921-22	600	348	252	.32	.25	71	29	112	86	50	40	72	53	43	44
1922-23	642	368	274	.33	.27	58	32	123	101	43	39	65	42	79	60
1923-24	705	412	293	.37	.28	62	59	120	81	56	38	91	42	83	78
1924-25	737	431	296	.39	.30	68	56	124	77	60	54	70	45	89	74
1925-26	638	391	247	.36	.24	53	28	105	101	67	55	64	32	102	81
1926-27	957	545	412	.50	.40	65	46	134	114	100	93	102	13	144	146
1927-28	688	397	291	.36	.28	60	33	93	80	60	34	86	44	98	100
1928-29	616	326	290	.30	.23	44	31	108	83	39	41	45	38	90	97
1929-30	546	389	257	.35	.25	32	25	71	56	55	55	62	49	69	72
<b>Plague—</b>															
1920-21	16	4	12	.004	.012	1	..	1	5	..	1	2	5	..	1
1921-22	15	6	9	.005	.009	..	..	..	..	4	7	..	..	2	2
1922-23	253	109	144	.1	.14	..	..	7	4	95	135	7	2	..	3
1923-24	15	11	4	.01	.004	..	..	2	..	2	2	6	1	1	1
1924-25	3	3	..	.003	..	..	..	1	..	..	..	1	..	1	..
1925-26	6	6	..	.005	..	..	..	..	..	2	..	4	..	..	..
1926-27	9	3	6	.003	.006	..	..	2	3	..	1	1	2	..	..
1927-28	102	53	49	.05	.05	1	..	..	1	..	..	6	5	46	43
1928-29	129	70	59	.06	.06	2	..	..	..	..	1	1	1	67	57
1929-30	4	1	3	.001	.003	..	..	1	3	..	..	..	..	..	..
<b>Pneumonia—</b>															
1920-21	2,613	1,584	1,029	1.4	1.0	326	292	644	393	171	91	275	126	168	127
1921-22	2,683	1,601	1,082	1.5	1.1	333	295	638	400	147	103	304	177	179	107
1922-23	3,114	1,906	1,208	1.7	1.2	348	310	773	423	146	75	392	200	247	200
1923-24	2,661	1,624	1,037	1.5	1.0	325	292	675	384	119	85	305	147	200	129
1924-25	2,562	1,627	1,035	1.4	1.0	255	289	625	394	118	63	295	134	234	155
1925-26	2,807	1,681	1,126	1.5	1.1	293	319	676	356	145	96	313	183	254	172
1926-27	2,727	1,686	1,141	1.4	1.1	254	256	594	362	148	103	351	237	239	163
1927-28	2,861	1,838	1,023	1.7	1.0	298	231	691	357	169	75	412	202	208	168
1928-29	3,059	1,895	1,164	1.7	1.1	267	218	744	439	187	99	417	234	260	174
1929-30	2,867	1,768	1,099	1.6	1.1	247	192	646	406	182	95	431	226	262	180
<b>All other causes—</b>															
1920-21	4,465	2,356	2,139	2.1	2.1	467	445	799	714	243	189	465	454	362	337
1921-22	4,702	2,449	2,253	2.2	2.2	608	496	824	747	221	187	504	501	292	322
1922-23	5,380	2,777	2,603	2.5	2.5	623	561	982	926	218	190	577	596	377	330
1923-24	4,715	2,408	2,307	2.2	2.2	578	530	817	797	220	222	480	451	313	307
1924-25	4,422	2,307	2,115	2.1	2.1	507	463	774	682	224	194	429	402	373	354
1925-26	4,948	2,543	2,405	2.3	2.3	576	531	827	790	338	294	390	403	412	367
1926-27	4,680	2,332	2,348	2.1	2.3	538	457	789	817	268	265	407	402	330	347
1927-28	4,635	2,370	2,265	2.2	2.2	534	422	806	778	310	286	394	453	336	326
1928-29	4,559	2,373	2,186	2.2	2.1	545	456	750	703	298	230	404	428	376	369
1929-30	4,875	2,480	2,395	2.3	2.3	531	470	796	812	335	320	445	441	373	352

## SUBSIDIARY TABLE XI

## INFANTILE MORTALITY

NATURAL DIVISION	1921 March to 1931 February				Percentage of deaths under one year to births			Total number of deaths	Percentage of deaths under one year to total deaths (both sexes)
	Number of births		Number of deaths under one year		Male	Female	Total		
	Male	Female	Male	Female					
1	2	3	4	5	6	7	8	9	10
Baroda State ..	307,613	274,965	49,106	42,133	15.96	13.70	15.66	446,906	20.42
Central Gujarat (including City) ..	108,622	95,973	20,567	18,020	18.93	18.78	18.86	166,963	23.11
Central Gujarat (exclusive of City) ..	91,068	79,990	15,936	13,879	17.50	17.35	17.43	136,352	21.87
City ..	17,554	15,983	4,631	4,141	26.38	25.91	26.22	30,611	28.66
Kathiawad ..	31,720	29,019	5,474	4,658	17.26	16.05	16.68	41,018	24.70
North Gujarat ..	113,664	99,378	16,230	13,385	14.28	13.47	13.90	168,338	17.59
South Gujarat ..	53,607	50,595	6,835	6,070	12.75	12.00	12.38	70,587	18.28

## CHAPTER IV—AGE

## PART II

## AGE DISTRIBUTION AND MORTALITY RATES

**119. Introductory**—It was for the first time after the Census of 1921 that an investigation was made into the age distribution and the rates of mortality of the Baroda State population. In the following pages I propose to make a similar investigation with the figures of the 1931 and past censuses. A general survey based on the crude returns as smoothed into quinary groups by the preliminary process enjoined on all provinces and states by the Census Commissioner for India, has been given in Part I of this chapter. I shall confine myself only to statistical analysis of the population figures supplied to me.

**120. Data in Hand**—The data available for the purpose included :—

- (1) The State Census returns for the decades 1891-1901, 1901-1911, 1911-1921 and 1921-1931, showing for each sex the numbers living at each age.
- (2) The State Census Reports for 1911 and 1921.
- (3) The Government of India Actuarial Reports for 1901, 1911 and 1921.
- (4) Birthplace returns showing the numbers born and enumerated elsewhere in the State.

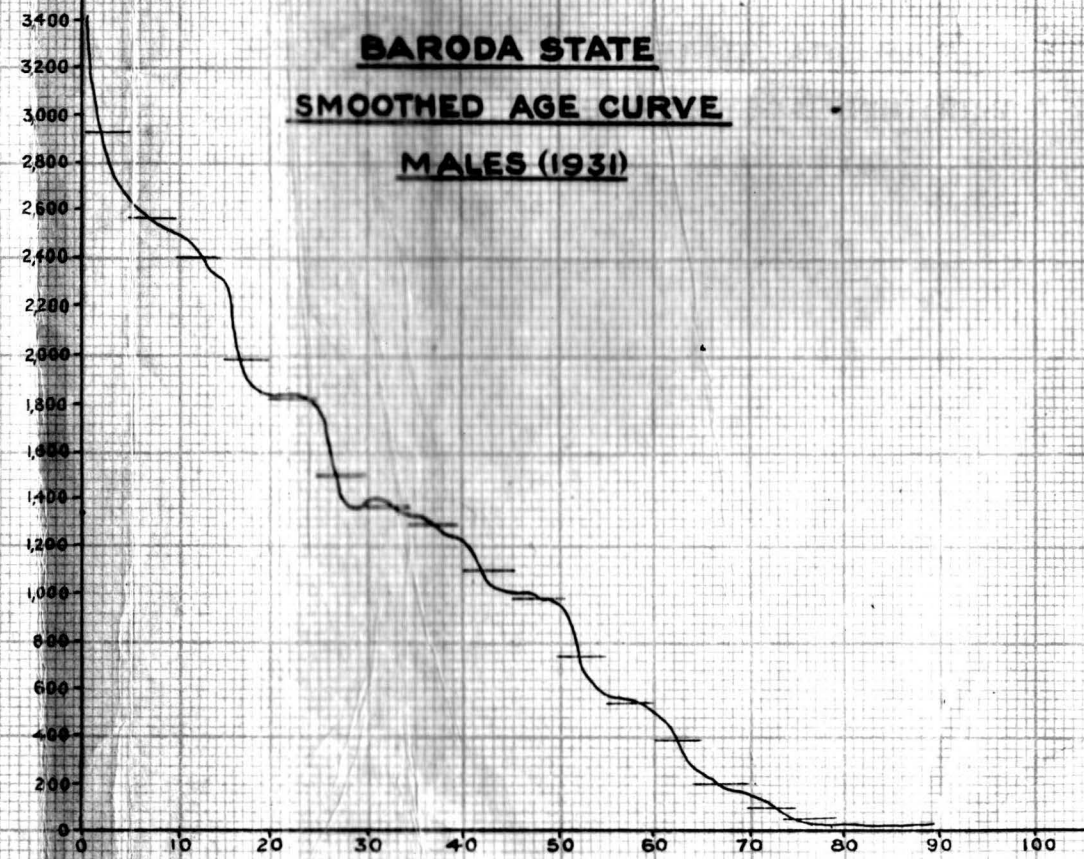
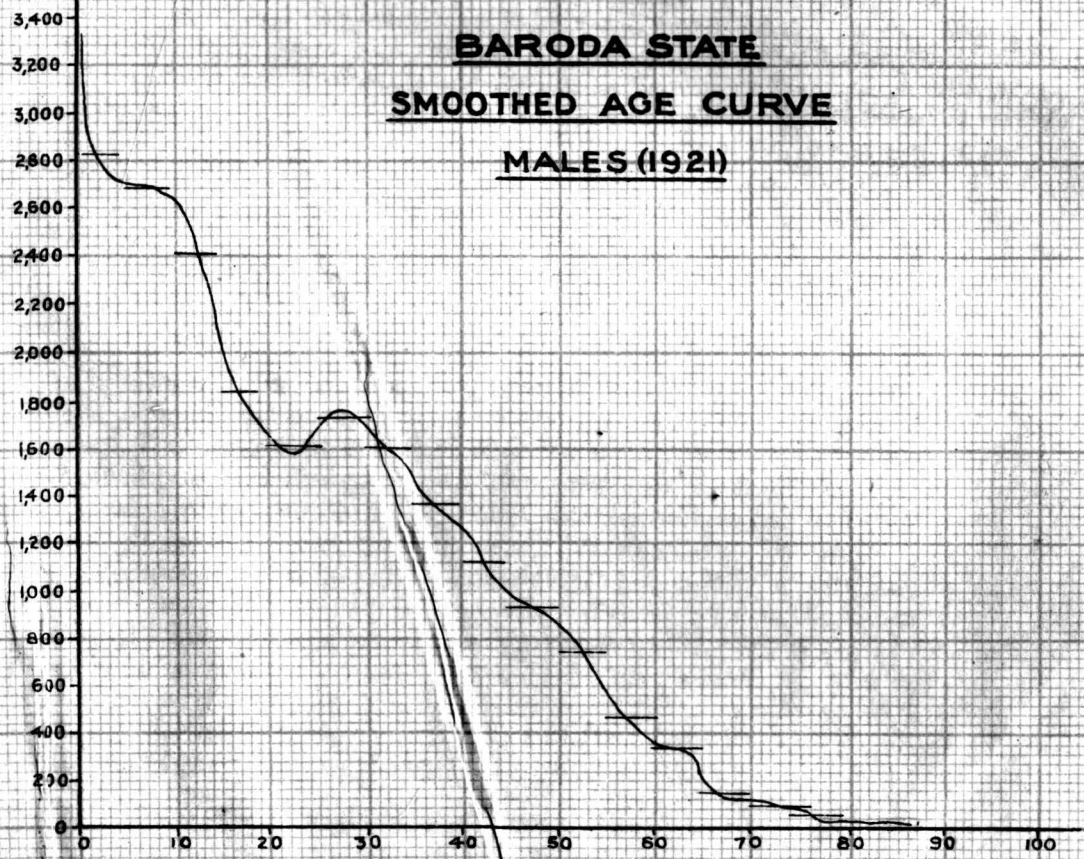
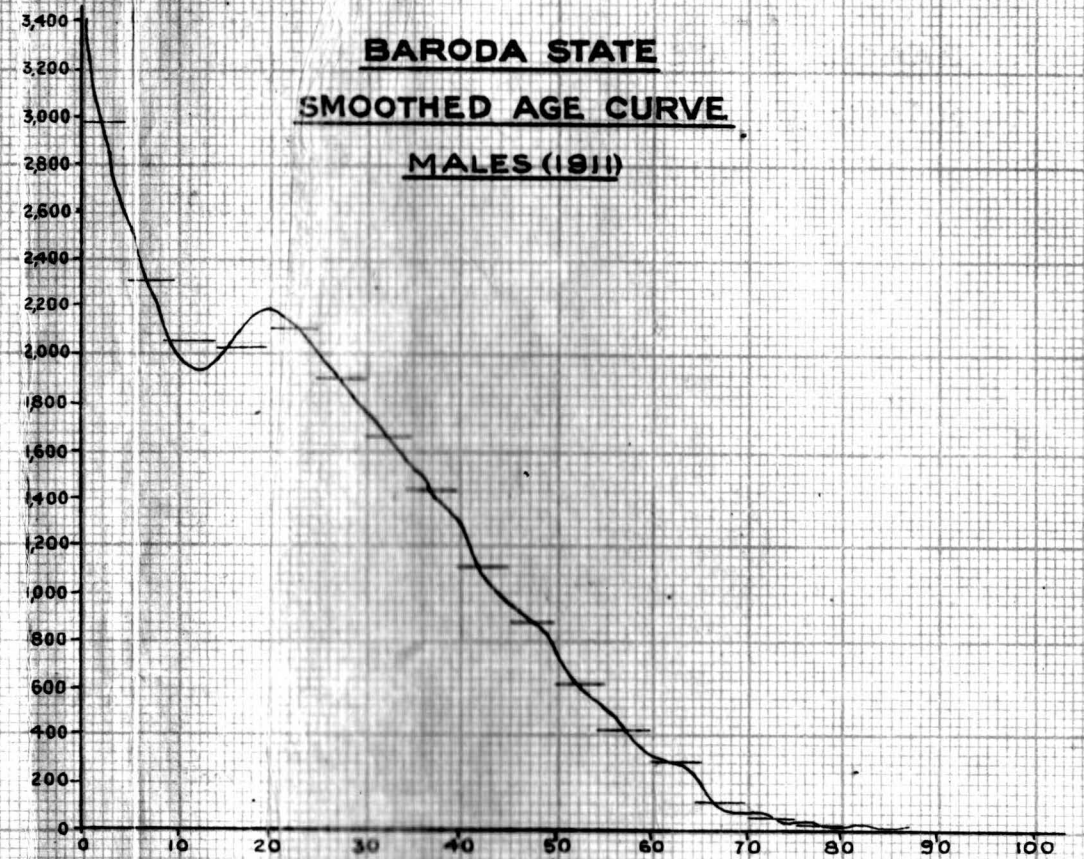
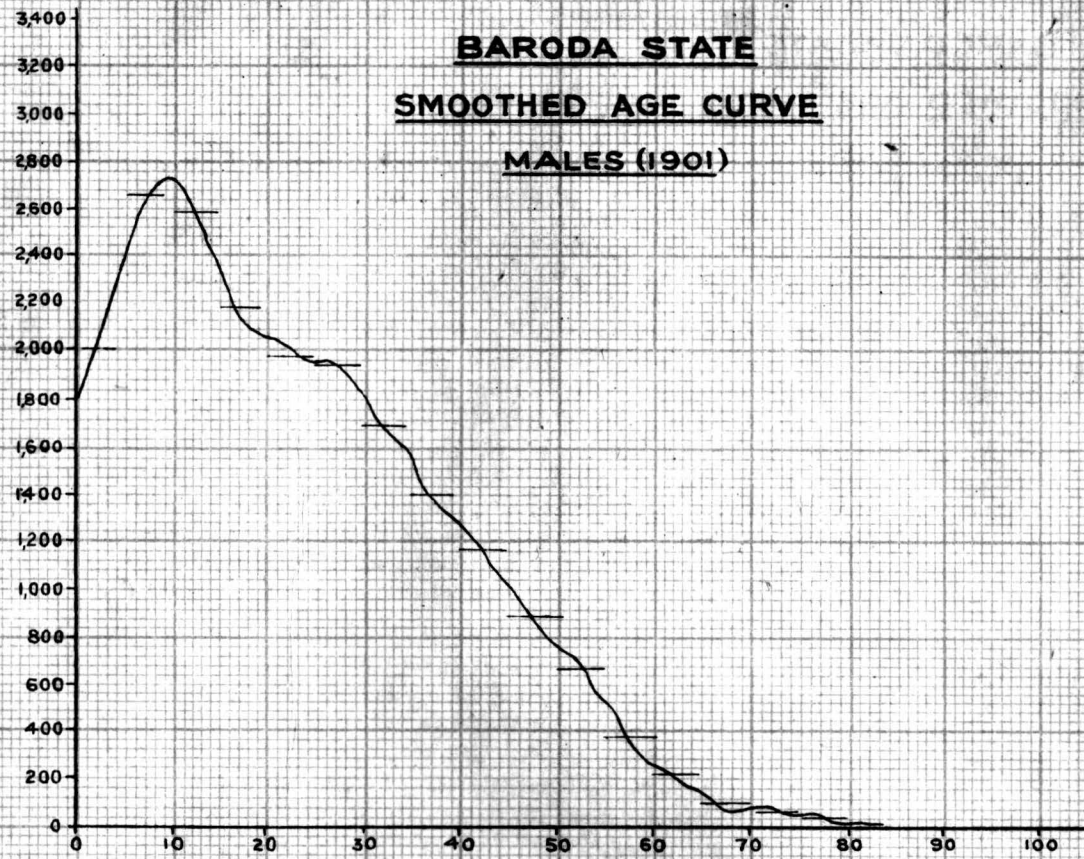
**121. The Period under Consideration**—In order to arrive at the correct figures representing the population living at different ages it is essential to include in the investigation figures of past censuses. Censuses have generally been taken in India after each decade and as the period of ten years is but a small span in the life of a population, the law of its growth or decay cannot be deduced from results based on the figures of a single census only. Further, it is also necessary to take note of the special events of each decade which affect vital statistics. As population (for purposes of mathematical investigation) is a continuous whole, the depression created in the population curve by a famine or an epidemic 15 or 20 years ago runs through the population for years to come. To embody the effects of all these characteristic facts, it is therefore necessary to take into consideration the figures of population covering as long a period as possible. I have included in my investigation the figures of the Baroda State population for the Censuses of 1901, 1911, 1921 and 1931.

**122. Review of the Decades since 1901**—I now proceed to take a review of these decades.

(i) *The decade 1901-1911*—The preceding decade 1891-1900 was full of unprecedented calamities. In 1894 the rainfall was insufficient, and the later years were also not propitious. Following upon this came the great famine of 1898-1901 which even now stands as an unforgettable landmark. In common with the rest of Gujarat the State of Baroda suffered immensely. The effect of the famine was both extensive and severe. The Government of India Commission of 1901, appointed to assess the effects of this calamity, moderately estimated about a million deaths in British territory together with another three millions in the Indian states. Together with this there was the plague epidemic which alone took away no less than 77,975 lives during the years 1899-1910. The extent of the havoc done by the famine of 1900 is shown by the figures of the 1901 Census which showed an enormous decrease of 19.2 per cent in the State population. Quite a large proportion of this decrease was in the age-group 0-5 so much so that the number of infants returned in 1901 Census between the ages 0-2 was abnormally low. Thus the decade 1901-1911 began with a big depression in the population curve. That the famine carried away far larger number of children than adults is shown by the depression in the part of the curve corresponding to the earlier ages. A very interesting fact is shown by the four smoothed age curves of the Baroda State population drawn from figures of the Censuses of 1901, 1911, 1921 and 1931 (Graph No. 1). They show convincingly how the depression in the age curve created by the disastrous famine of 1898-1900 has travelled from decade to decade to ages 10, 20 and 30 in the enumerations of 1911, 1921, and 1931 respectively. The curve for 1931 further shows that the present population has very nearly regained the enormous loss sustained thirty years ago.



**GRAPH N°1**



I shall subsequently discuss in detail the factors which have brought about the gradual levelling up of the depression from decade to decade.

(ii) *The decade 1911-1921*—The next decade was smooth till 1915. In 1915-16 cholera broke out which fortunately was not severe in this State—the recorded deaths being only 7,431. In 1917 the rainfall was excessive being in some parts of the State 20 inches more than the normal. Following this came the plague epidemic of 1917 which took away 27,460 lives. Then in 1918 came the great influenza epidemic which in its devastating effects was almost as severe as the famine of 1900. The reported death rate in the State in that year reached the appalling magnitude of 62.9 per mille for males and 64.1 per mille for females. The State paid a heavy toll of 71,472 lives in a brief period of three months of that year. Perhaps even this big figure does not cover the total amount of havoc done by the calamity. In the Registration records of 1918 the number of deaths from fever was shown at 40,331 in place of the usual average 35,000. It is reasonably surmised that the excess in deaths by fever was due to the fact that in that period influenza passed by the name of fever in many cases. Transferring at least half of the excess in deaths by fever to influenza, the total deaths by influenza may be estimated to about 74,200.

(iii) *The Toll of Influenza*—Unlike the famine of 1900, the influenza epidemic killed a far larger number of adults in the ages 16-19 rather than children and old persons. This important aspect of the influenza epidemic has special bearing on the smoothed age curve already referred to. The abnormal number of deaths in the adult ages lowered the age curve in the period 16-19. The age group near 20 in the curve for 1921 being already loaded with a depression due to the famine of 1900, the new dip created in the immediately previous ages by the influenza epidemic of 1918 had thus the tendency of levelling up the relative undulations of the two successive age periods. This is one of the factors which has brought about the comparative smoothing of the 1931 curve near age 30 which corresponds to the dip in the 1921 curve ten years before.

(iv) *The decade 1921-1931*—The decade 1921-1931 has fortunately been a normal one, from the point of view of epidemics and such like calamities. Except the floods which swept over Gujarat in 1927, there have been no untoward happenings. The devastating effects of this flood were far less than expected—thanks to the relief activities of the State. The total lives lost numbered only about 51, which had practically no effect on the life of the population as a whole. The next two years were not bad, so that the loss sustained by the peasantry in cattle and crops was very nearly made up in the later years. Thus it is but natural that no trace of this calamity can be found in the present census figures.

(v) *Influence of the Past*—The smoothed age curve drawn from the census figures of 1931 gives convincing evidence that the loss incurred by the State population in the disastrous famines of 1898-1900, is now very nearly recouped. The population even now bears the scar of that great wound in the form of a slight depression near age 30 in the smoothed age curve of 1931.

**123. Double Weight for figures of 1911 and 1931**—Out of the four censuses included in this investigation the figures of both 1901 and 1921 were abnormal. The figures of 1901 reflected the condition of a population weakened and thinned out by the havoc of an unprecedented famine. As the census was taken within twelve months of the famine year, the population had hardly any time to recoup its losses. Next, the Census of 1921 was taken within two years of the influenza epidemic which had killed quite a large percentage of the adult population. Both these censuses therefore do not reflect the normal condition and age distribution of the State population. The other two decades were comparatively normal as they were generally free from untoward occurrences affecting vital statistics and the age distribution of the population. In view of the above facts I have decided to give double weight to the census figures of 1911 and 1931 in comparison to those of 1901 and 1921 for the purposes of my investigation.

**124. Errors of Age**—Before the census figures could be subjected to a mathematical analysis, it is necessary to correct the errors in the statement of age which are inherent in the population statistics of all countries. These errors are more in degree in an uneducated population which is unfortunately the case in India.

**125. Types of Error**—In any census enumerations age can be recorded in three different ways: (1) Age last birthday, (2) Age next birthday, and (3) Age nearest birthday. But whatever be the definition of age adopted the types of error given below would be common to them all:—

(i) *Accidental Errors*—It has to be admitted that quite a large percentage of the Indian population do not know their correct ages. Even those that are aware of their ages, often

TABLE No. I

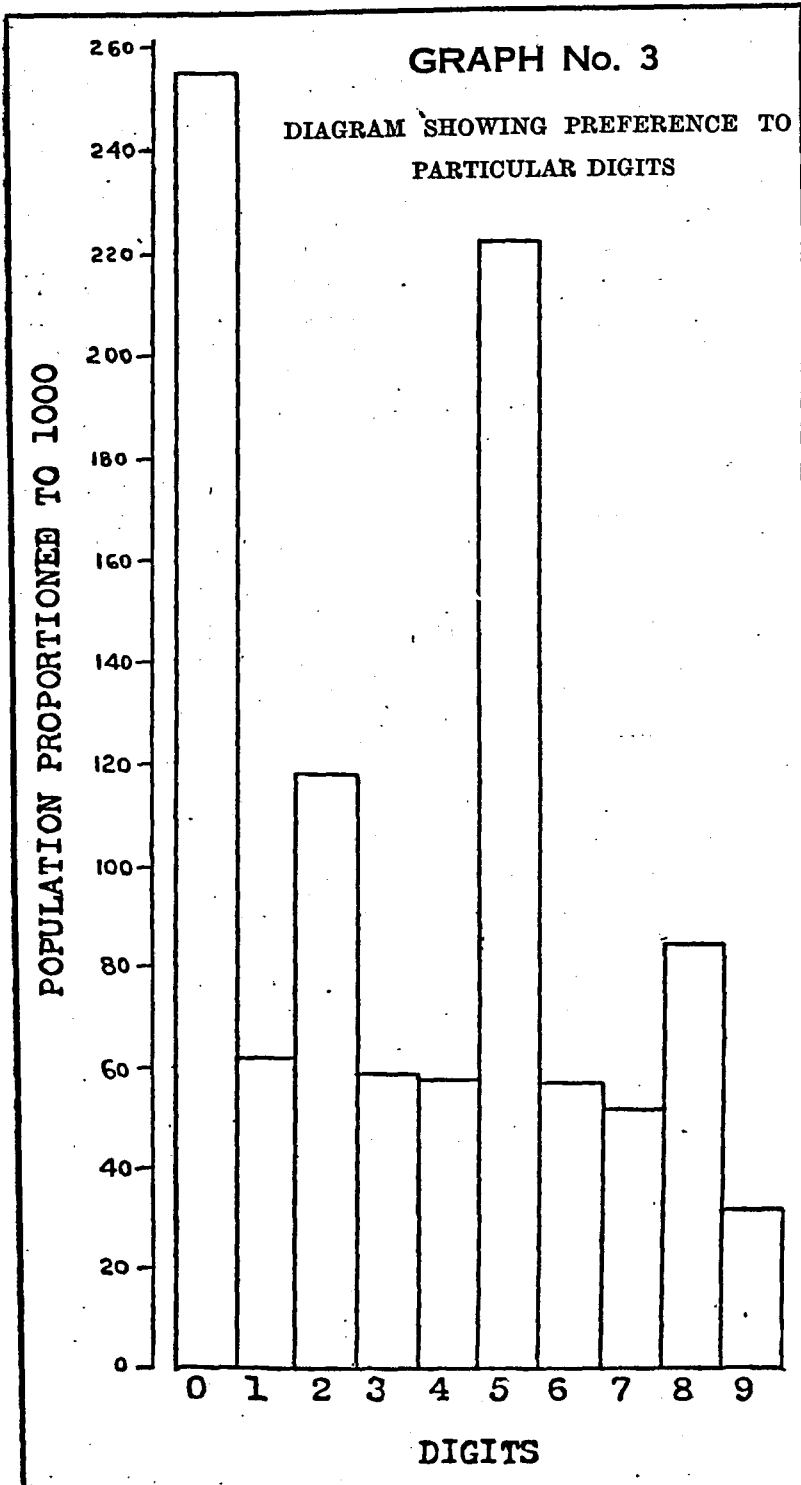
Digit of age returned in Census	Number per 1000 recorded in respect of each digit of age	Order of preference
1	2	3
0	255	I
1	62	V
2	118	III
3	59	VI
4	58	VII
5	223	II
6	57	VIII
7	52	IX
8	84	IV
9	32	X

give them in multiples of 5 or in even numbers. In the large number of cases in which the enumerator has to fill up the age column himself the amount of error is hardly mitigated—it being a psychological fact that multiples of 5 and even numbers are more readily guessed than numbers ending in digits 1, 3, 7, 9. Thus in the age schedules of the enumerator certain digits and their multiples get an unaccountable preference over others. The accompanying table gives the preference shown to respective digits as obtained from 1931 Census figures (males).

From the Table it is clear that more than 25 per cent of the population state their ages in multiples of 10 and another 22 per cent in uneven multiples of 5. Of the remaining digits, the even ones get a decided preference over the odd numbers. Numbers ending with digit 9 seem to be most unlucky as only 3 per cent of the population are returned at those ages. Thus in actual census figures the number of persons returned at

age 30 is 112,469 whereas at the adjacent ages 29 and 31 the numbers returned are 5,312 and

6,600 only. It is evident that persons living at age 30 cannot be so much in excess to persons at the adjacent ages 29 and 31. The two following graphs show the discrepancies above referred to. Graph No. 2 illustrates the uneven and disproportionate distribution of the State population from age to age as obtained from the 1931 Census enumerations.



Graph No. 3 illustrates the preference in respect of each digit out of a sample population of 1000.

It may be remarked that the errors described above are not special to the Baroda State. The census figures of other Indian provinces are mostly of the same nature. The order of preference to respective digits as deduced in the 1921 Indian Census Report is as 0, 5, 2, 8, 6, 4, 3, 7, 1, 9, which is very nearly the same as in the State population. The amount of misstatement for instance in a province like Bengal is seen from the following table which gives the deviations obtained from a comparison between the reported and graduated numbers per 100,000 of sample population. Side by side with these numbers are set out the numbers for Baroda State deduced in the same way for the 1921 Census.

TABLE NO. II

*Estimated misstatement of age based on a comparison of the reported and graduated numbers of Males at each age in Baroda State (calculated after 1921 Census). Similar numbers in Bengal (calculated after 1911 Census) given in Column 5.*

AGE	Reported Numbers 1921 (Baroda)	Graduated Numbers 1921 (Baroda)	Difference between the graduated and reported numbers (Baroda)		Difference between the graduated and reported numbers (Bengal)	
1	2	3	4		5	
			+	-	+	-
0	3,081	3,786	.....	705	.....	1,321
1	1,444	3,281	.....	1,837	.....	2,195
2	2,400	3,012	.....	612	.....	377
3	2,571	2,831	.....	260	.....	5
4	2,924	2,705	219	.....	.....	51
5	3,420	2,613	807	.....	853	.....
6	2,586	2,544	42	.....	142	.....
7	2,622	2,489	133	.....	378	.....
8	3,501	2,443	1,058	.....	1,159	.....
9	1,981	2,404	.....	423	.....	379
10	3,813	2,369	1,444	.....	1,469	.....
11	1,529	2,337	.....	808	.....	977
12	3,619	2,306	1,313	.....	1,572	.....
13	1,690	2,277	.....	587	.....	1,151
14	1,637	2,247	.....	610	.....	392
15	3,235	2,217	1,018	.....	.....	126
16	1,732	2,187	.....	455	.....	76
17	1,076	2,155	.....	1,079	.....	1,106
18	1,890	2,122	.....	232	538	.....
19	529	2,087	.....	1,558	.....	1,157
20	3,578	2,050	1,528	.....	1,039	.....
21	602	2,010	.....	1,408	.....	1,183
22	1,918	1,969	.....	51	295	.....
23	567	1,926	.....	1,359	.....	1,073
24	564	1,881	.....	1,317	.....	634
25	5,333	1,836	3,497	.....	2,816	.....
26	633	1,789	.....	1,156	.....	528
27	778	1,741	.....	963	.....	644
28	1,425	1,693	.....	268	450	.....
29	249	1,644	.....	1,395	.....	967
30	5,532	1,595	3,937	.....	3,253	.....
31	313	1,546	.....	1,233	.....	1,026
32	1,678	1,496	182	.....	703	.....
33	344	1,447	.....	1,103	.....	922
34	263	1,397	.....	1,134	.....	772
35	5,315	1,347	3,968	.....	2,148	.....
36	453	1,298	.....	845	74	.....
37	374	1,249	.....	875	.....	690
38	683	1,201	.....	518	.....	86
39	187	1,153	.....	966	.....	763
40	4,792	1,105	3,687	.....	3,213	.....
41	220	1,059	.....	839	.....	725
42	947	1,012	.....	65	.....	87
43	172	967	.....	795	.....	754
44	149	923	.....	774	.....	558
45	3,373	878	2,495	.....	1,601	.....
46	196	835	.....	639	.....	513
47	202	793	.....	591	.....	538
48	455	752	.....	297	.....	189
49	123	712	.....	589	.....	554
50	3,889	672	3,227	.....	2,282	.....
51	199	634	.....	435	.....	490
52	539	597	.....	58	.....	178
53	111	561	.....	450	.....	491
54	97	429	.....	429	.....	415
55	1,621	492	1,129	.....	519	.....
56	139	460	.....	321	.....	283
57	114	428	.....	314	.....	348
58	171	398	.....	227	.....	216
59	57	369	.....	312	.....	336
60	2,104	341	1,763	.....	1,562	.....
61	73	314	.....	241	.....	288
62	168	289	.....	121	.....	143
63	44	264	.....	220	.....	276

TABLE NO. II—*contd.*

AGE	Reported Numbers 1921 (Baroda)	Graduated Numbers 1921 (Baroda)	Difference between the Graduated and reported Numbers (Baroda)		Difference between the Graduated and reported Numbers (Bengal)	
			+	—	+	—
1	2	3	4		5	
64	34	241	+	—	+	—
65	655	219	.... 436	.... 207	.... 175	.... 220
66	41	198	....	.... 157	....	.... 199
67	39	179	....	.... 140	....	.... 176
68	51	160	....	.... 109	....	.... 119
69	21	143	....	.... 122	....	.... 150
70	506	127	.... 379	....	.... 445	....
71	20	112	....	.... 92	....	.... 108
72	52	98	....	.... 46	....	.... 39
73	10	85	....	.... 75	....	.... 88
74	10	73	....	.... 63	....	.... 68
75	198	62	.... 136	....	.... 101	....

From this table we see that the excess in quinary and decennial ages in cases of both Bengal and Baroda are practically the same. For instance, the deviations at ages 9, 10, 11 in the case of Baroda are —423, +1,444, —808 whereas for Bengal they are —379, +1,469, —977 respectively.

In the light of the above discussions regarding the nature and amount of error in age returns, it seems doubtful whether even an accurate mathematical formula of correction would be able to iron out the roughness in the data near quinary and decennial ages. As has already been emphasised the ages 0, 5, 10, 15, etc. usurp among themselves more than 47 per cent of the total population leaving the remaining only to be claimed by the other 80 individual ages. The difficulty of finding suitable formulæ to effect the requisite redistribution has been recognised by all statisticians dealing with Indian Census figures. I have only to add that whatever be the methods adopted, the final result cannot be anything more than a rough approximation to the actual state of affairs. It is expected that the spread of education in the masses would make them gradually conscious of the statistical importance of age figures.

(ii) *Systematic Errors*—To add to the accidental misstatements of age referred to above there are other kinds of error known as systematic errors. These being more or less deliberate may be classified under the following heads:—

(a) On account of certain social handicaps the ages of unmarried girls who have attained maidenhood are seldom stated accurately. Thus quite a large percentage of the female population aged 14 to 16 are enumerated in the lower ages 11, 12 and 13.

(b) On account of legal restrictions imposed on marriage age there is a tendency to overstate the ages of young wives specially if they attain motherhood.

(c) There is a general tendency to be considered young. In European countries this tendency is very much pronounced in the fair sex so that the figures of recorded female population in the ages 25-45 can never be trusted. In India this tendency is more pronounced in bachelors and widowers approaching the middle of life.

TABLE No. III

AGE	Number of persons recorded
1	2
70	18,123
75	6,124
80	6,180
85	1,028
90	1,034
95	231
100	190
105	33
110	13
115	5
120	8

(d) There is a marked desire for old persons to overstate their ages. This may be illustrated by the following table giving the returns at the older quinary and decennial ages beginning from seventy. As the death-rate increases rapidly after age 60 or 65, numbers at successive ages in the table are greater than they actually should be. In all 38,158 persons have been returned at the ages 70-120 which is wholly disproportionate to the total population. Further the returns at these ages are so extremely abrupt from age to age that they cannot be usefully utilised for the construction of a life table. These inaccuracies at the older ages even affect the figures in the life table at earlier ages for "the expectation of life at each age under 70 is dependent on the rates of mortality at all ages above 70."

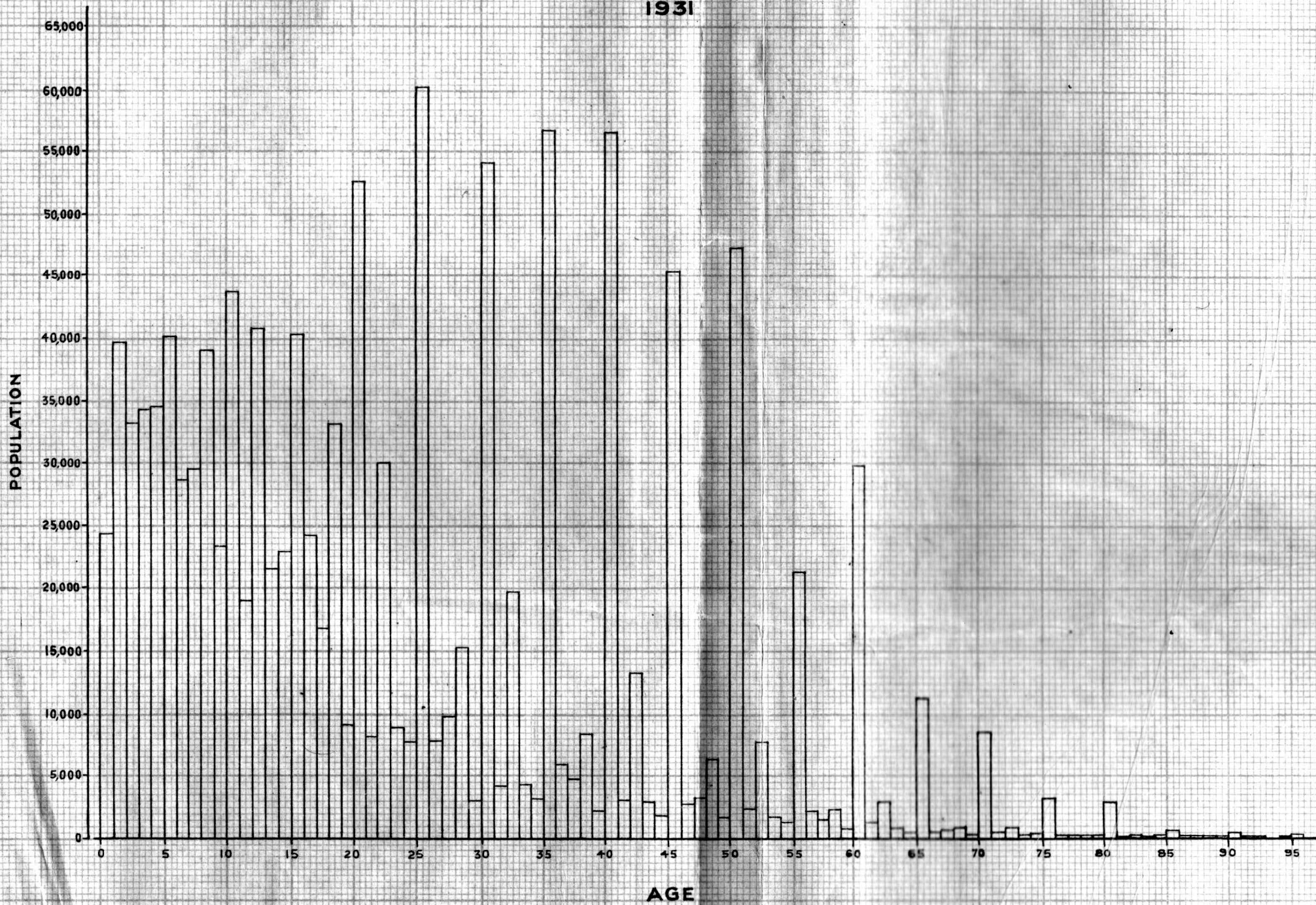
GRAPH N°2

**BARODA STATE**

**DIAGRAM SHOWING INACCURACIES OF AGE RETURNS**

**(MALES)**

**1931**



**126. Method of Correction as adopted in 1921**—(COLUMNAR DIFFERENCING).—In order to effect the necessary amount of corrections in the crude population figures, a mathematical formula was adopted in the previous Census Reports. The numbers were first grouped in quinary groups 0-4, 5-9, (age last birthday) and then by means of the above formula, one half of the excess at the ages which are multiples of 5 over and above the mean value of the numbers at the preceding and the following ages, was transferred to the preceding age group. This greatly reduced the plumbings at multiples of 5 and it was argued that no further corrections were needed for small errors in intermediate ages like 22, 23, etc. For instance a man aged 33 may return his age as 32 or 34 but since individual ages were discarded and only quinary groups were taken for final graduation, inaccuracies of the above type had no effect as long as the reported age fell in the proper quinary group. For purposes of calculations the process took the following form :—

$$\begin{aligned} & (U_{5n} + U_{5n+1} + U_{5n+2} + U_{5n+3} + U_{5n+4}) - \frac{1}{2} [U_{5n} - \frac{1}{2} (U_{5n-1} + U_{5n+1})] \\ & + \frac{1}{2} [U_{5n+5} - \frac{1}{2} (U_{5n+4} + U_{5n+6})] = \sum_0^4 U_{5n+t} - \frac{1}{4} (\Delta^2 U_{5n+5} - \Delta^2 U_{5n}) \end{aligned}$$

**127. Definition of Age**—Before discussing the above method, it is necessary to consider the degree of accuracy that might be obtained by changing the definition of age. In previous censuses age was recorded as at last birthday so that the correctness of the data depended on the assumption that the majority of the population understood the meaning of age last birthday. In Punjab in 1891 age was recorded as at next birthday whereas in the 1901 Census age was recorded as at last birthday. In both these cases it was found by comparing the figures with standard graduated tables that the nature and amount of misstatement were unchanged. This no doubt was due to the fact that the majority of the population or even of the enumerators did not understand the implications either of last or next birthday. The preferences to particular digits in both cases were in the order 0, 5, 2, 8, 6, 4, 3, 7, 1, 9, so that the amount of correction necessary was the same. For these reasons it was suggested in the 1921 Government of India Actuarial Report that the ages recorded by the enumerators were probably on the basis of nearest birthday in spite of the definite instructions to record them as at last birthday. As the majority of the Indian population is unconscious about their correct age and more so as regards the finer distinction of last and next birthday the above suggestion seems to be plausible. For these reasons for the Census of 1931, it was decided to record age as at nearest birthday instead of last birthday. It is to be seen how this change in the definition of age, brings about the desired amount of accuracy in the age returns of future censuses.

**128. Methods of Grouping**—The next is the question of grouping the age returns conveniently. It has been pointed out by Mr. Meikle\* that there are fifteen different ways of grouping. The method so long has been to schedule the figures in groups of 5 so that ages which were multiples of 5 came at the beginning of each quinary group, *i.e.* groups 0-4, 5-9, . . . . The grouping can also be arranged so that multiples of 5 are placed at second, third, fourth or fifth place in each quinary group. Thus each of the methods of recording age, *i.e.* as at last, next or nearest birthday would give rise to five different ways of grouping. It has already been pointed out that the greatest plumbings of the age returns were at multiples of 5. By grouping the figures into groups 0-4, 5-9, . . . . *i.e.* by having multiples of five in the first place of each group, a great amount of loading was unavoidably brought about at the beginning of each group. The method of correction of these groups by the Columnar differencing formula was mainly necessary to disperse the accumulation of the data at those points. From the graphs enclosed in the present report, it is evident that the heapings at ages like 20, 25, 30, . . . . are very much in excess to the dips at the adjacent ages 19, 21, 24, 26, 29, 31, etc. It is doubtful whether the amount of the transfers from each of the age groups to the preceding ones effected by the application of the Columnar differencing formula would smooth out the ups and downs which are so greatly in contrast in the crude data. It has therefore to be decided at the very outset whether or not the method of grouping should be changed in the interests of accuracy.

\* Government of India Actuarial Report, 1921.

**129. Method recommended by Mr. Meikle**—Of the fourteen other methods described by Mr. Meikle, he has recommended that groups should be so made as to have multiples of 5 at the 2nd or 4th place of each group. Both the 2nd and 4th place methods have got special advantages and to get the benefit of both it has been suggested to combine them alternately. We can have the best advantages of both these methods if we replace the quinary groups by groups of 3 and 7 ages alternately, so that, ages which are respectively odd and even multiples of 5 come in the middle place of these groups *e.g.* 4-6, 7-13, 14-16, 17-23, etc., all ages being recorded as at nearest birthday. The exact limits of age for each group which would be obtained by this system of grouping with ages stated at nearest birthday are given by the following table :—

TABLE NO. IV

Groups of age stated according to age nearest birthday	Limits of exact age in the sub-division of each group in Column I
1	2
0	0— $\frac{1}{2}$
1	$\frac{1}{2}$ — $1\frac{1}{2}$
2	$1\frac{1}{2}$ — $2\frac{1}{2}$
3	$2\frac{1}{2}$ — $3\frac{1}{2}$
4 to 6	$3\frac{1}{2}$ — $6\frac{1}{2}$
7 to 13	$6\frac{1}{2}$ — $13\frac{1}{2}$
14 to 16	$13\frac{1}{2}$ — $16\frac{1}{2}$
17 to 23	$16\frac{1}{2}$ — $23\frac{1}{2}$
24 to 26	$23\frac{1}{2}$ — $26\frac{1}{2}$
27 to 33	$26\frac{1}{2}$ — $33\frac{1}{2}$
34 to 36	$33\frac{1}{2}$ — $36\frac{1}{2}$
etc.	etc.

It is now necessary to evolve a method of adjustment to deduce from the above ternary and septenary groups, the usual quinary groups, *i.e.* 0-1, 1-2, 2-3, 4-5, 5-10, 10-15, etc. In past Indian censuses ages have always been arranged in quinary groups and to facilitate comparison it is a prime necessity to schedule our data ultimately in the above form.

(a) *The process for the earliest ages*—To get the groups 0-1, 1-2, 2-3, 3-4, we may amalgamate the first group 0— $\frac{1}{2}$  with half of the second  $\frac{1}{2}$ — $1\frac{1}{2}$  and the remaining half of the second with half of the third group and so on. Thus we may get the figures of population living

over exact age 0 and under 1  
 " " " 1 " " 2  
 " " " 2 " " 3

which would perhaps be more accurate than the figures obtained from statements of age at last or next birthday. It may be argued that by taking the mean of the consecutive groups as described above, we overlook the decrement of the population from age to age. In order to find the actual percentage of each group which is to be amalgamated with the previous group, reference must be made to a standard graduated table which no doubt embodies the real variation of population in successive ages.

(b) *The process for the quinary groups*—To obtain the quinary groups 5-10, 10-15, 15-20, etc., from the ternary and septenary groups we have to ascertain how many persons of the age group 4-6 (nearest birthday) are over exact age 5 and how many persons of group 7-13 are below exact age 10 and how many of group 13-16 are below exact age 15 and so on. The percentages of such transfers can be worked out by reference to a standard graduated table. I calculated the corresponding ratios by utilising the Baroda graduated figures of 1921 and found them to be very nearly the same as those obtained by Mr. Meikle except for the age groups 57-63 and 67-73. For these ages the ratios of persons below and above 60 and 70 respectively found by reference to the Baroda graduation (1921) was



56 : 44 and 60 : 40 whereas those adopted in the Indian Report were 55 : 45 and 58 : 42. For the correction of the State Census figures I have adopted the ratios 56 : 44 and 60 : 40 for the age groups above referred to. The following table gives the complete method of correction described above for the 1931 figures (males) :—

TABLE NO. V

TABLE SHOWING THE WORKING OF THE METHODS OF CORRECTION APPLIED TO 1931 CENSUS FIGURES WITH AGES RECORDED AS AT NEAREST BIRTHDAY  
(Males—1931)

Groups of age stated according to age nearest birthday	Limits of exact age in the sub-division of each group in Column (1)	Number in each group in Column (2) stated as percentages of the total number in the corresponding group in Column (1)	Population recorded in each group in Column (1)	Population redistributed into groups shown in Column (2)	Population in each group shown in Column (7)	Limits of exact age in the corresponding group in Column (6)	Numbers in Column (6) proportioned to 100,000
1	2	3	4	5	6	7	8
0	0 - $\frac{1}{2}$	100	24,408	24,408	45,074	0-1	3,583
1	$\left\{ \begin{array}{l} \frac{1}{2} - 1 \\ 1 - 1\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 52 \\ 48 \end{array} \right.$	39,742	$\left\{ \begin{array}{l} 20,666 \\ 19,076 \\ 17,120 \end{array} \right.$		36,196	1-2
2	$\left\{ \begin{array}{l} 1\frac{1}{2} - 2 \\ 2 - 2\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51.5 \\ 48.5 \end{array} \right.$	33,242	$\left\{ \begin{array}{l} 16,122 \\ 17,560 \end{array} \right.$	33,682		2-3
3	$\left\{ \begin{array}{l} 2\frac{1}{2} - 3 \\ 3 - 3\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right.$	34,432	$\left\{ \begin{array}{l} 16,872 \\ 17,576 \end{array} \right.$		34,448	3-4
4-6	$\left\{ \begin{array}{l} 3\frac{1}{2} - 4 \\ 4 - 5 \\ 5 - 6\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 17 \\ 34 \\ 49 \end{array} \right.$	103,389	$\left\{ \begin{array}{l} 35,152 \\ 50,661 \\ 110,506 \end{array} \right.$	161,167		4-5
7-13	$\left\{ \begin{array}{l} 6\frac{1}{2} - 10 \\ 10 - 13\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right.$	216,678	$\left\{ \begin{array}{l} 106,172 \\ 44,541 \end{array} \right.$		150,713	5-10
14-16	$\left\{ \begin{array}{l} 13\frac{1}{2} - 15 \\ 15 - 16\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right.$	87,336	$\left\{ \begin{array}{l} 42,795 \\ 82,331 \end{array} \right.$	125,126		10-15
17-23	$\left\{ \begin{array}{l} 16\frac{1}{2} - 20 \\ 20 - 23\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 52 \\ 48 \end{array} \right.$	158,328	$\left\{ \begin{array}{l} 75,997 \\ 38,668 \end{array} \right.$		114,665	15-20
24-26	$\left\{ \begin{array}{l} 23\frac{1}{2} - 25 \\ 25 - 26\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right.$	75,820	$\left\{ \begin{array}{l} 37,152 \\ 57,246 \end{array} \right.$	94,398		20-25
27-33	$\left\{ \begin{array}{l} 26\frac{1}{2} - 30 \\ 30 - 33\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 52 \\ 48 \end{array} \right.$	110,088	$\left\{ \begin{array}{l} 52,842 \\ 33,366 \end{array} \right.$		86,208	25-30
34-36	$\left\{ \begin{array}{l} 33\frac{1}{2} - 35 \\ 35 - 36\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right.$	65,424	$\left\{ \begin{array}{l} 32,058 \\ 48,264 \end{array} \right.$	80,322		30-35
37-43	$\left\{ \begin{array}{l} 36\frac{1}{2} - 40 \\ 40 - 43\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 53 \\ 47 \end{array} \right.$	91,064	$\left\{ \begin{array}{l} 42,800 \\ 25,985 \end{array} \right.$		68,785	35-40
44-46	$\left\{ \begin{array}{l} 43\frac{1}{2} - 45 \\ 45 - 46\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 52 \\ 48 \end{array} \right.$	49,972	$\left\{ \begin{array}{l} 23,987 \\ 37,924 \end{array} \right.$	61,911		40-45
47-53	$\left\{ \begin{array}{l} 46\frac{1}{2} - 50 \\ 50 - 53\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 54 \\ 46 \end{array} \right.$	70,230	$\left\{ \begin{array}{l} 32,306 \\ 13,388 \end{array} \right.$		45,694	45-50
54-56	$\left\{ \begin{array}{l} 53\frac{1}{2} - 55 \\ 55 - 56\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 52 \\ 48 \end{array} \right.$	25,746	$\left\{ \begin{array}{l} 12,358 \\ 21,999 \end{array} \right.$	34,357		50-55
57-63	$\left\{ \begin{array}{l} 56\frac{1}{2} - 60 \\ 60 - 63\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 56 \\ 44 \end{array} \right.$	39,234	$\left\{ \begin{array}{l} 17,285 \\ 6,580 \end{array} \right.$		23,865	55-60
64-66	$\left\{ \begin{array}{l} 63\frac{1}{2} - 65 \\ 65 - 66\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 53 \\ 47 \end{array} \right.$	12,416	$\left\{ \begin{array}{l} 5,836 \\ 7,050 \end{array} \right.$	12,886		60-65
67-73	$\left\{ \begin{array}{l} 66\frac{1}{2} - 70 \\ 70 - 73\frac{1}{2} \end{array} \right.$	$\left\{ \begin{array}{l} 60 \\ 40 \end{array} \right.$	11,750	$\left\{ \begin{array}{l} 4,700 \end{array} \right.$		13,168	65-70
74 and over	73 $\frac{1}{2}$ and over	100	8,468	8,468	1,257,817		70 and over

**130. Smoothed Age Curve for 1931**—Both the male and female figures of 1931 were thus corrected and made into quinary groups and then proportioned to 100,000. To obtain the figures of population that belong to each individual age, the above figures in quinary groups were redistributed graphically as shown by Graphs No. 4 and 5.

The distribution so obtained for males and females are recorded in the following table. These figures give approximately the true population out of a sample of 100,000 at each age in 1931 which would have been the case had ages been recorded correctly.

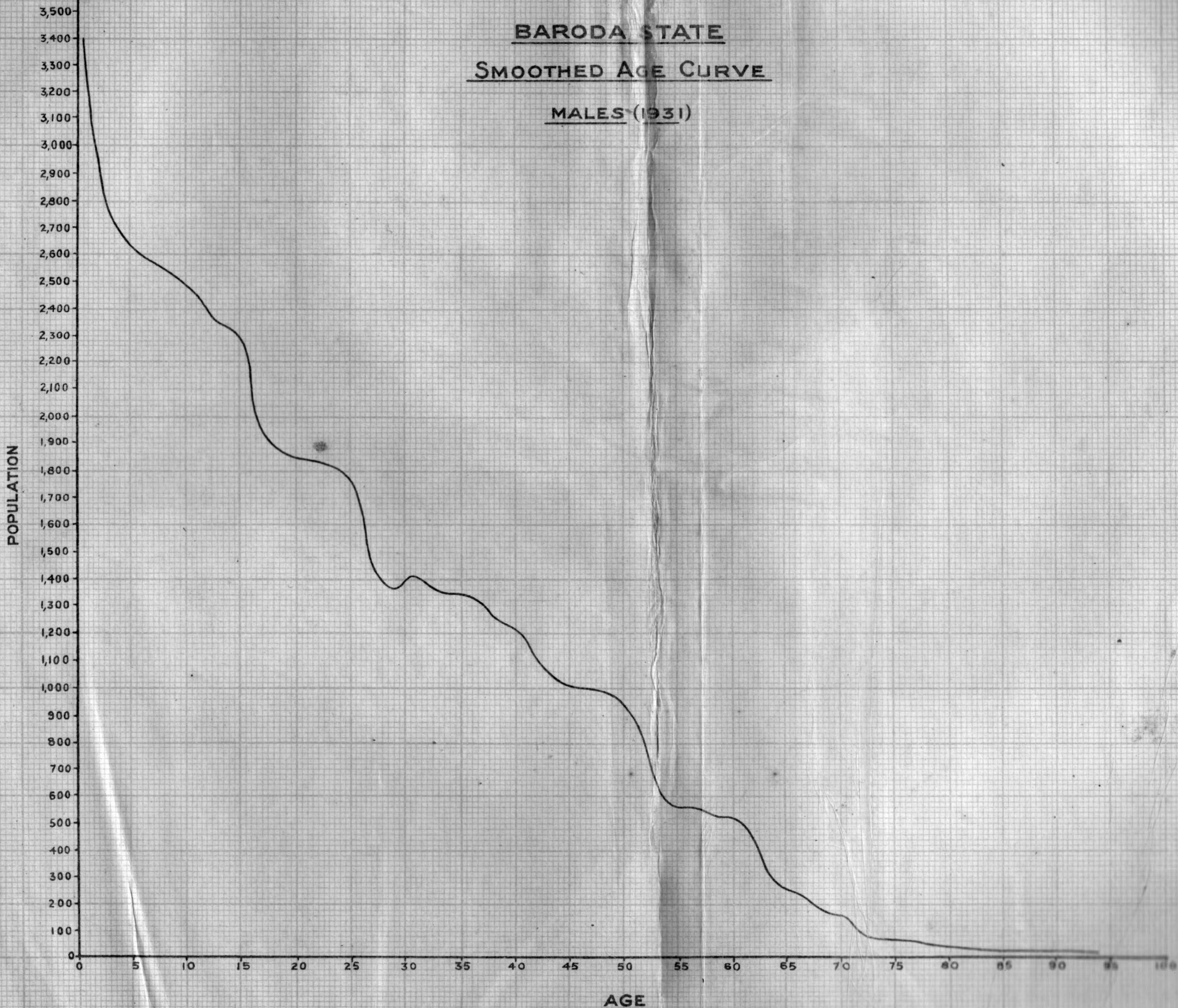
TABLE NO. VI

PERSONS LIVING AT EACH AGE DEDUCED FROM THE SMOOTHED AGE CURVES OF 1931

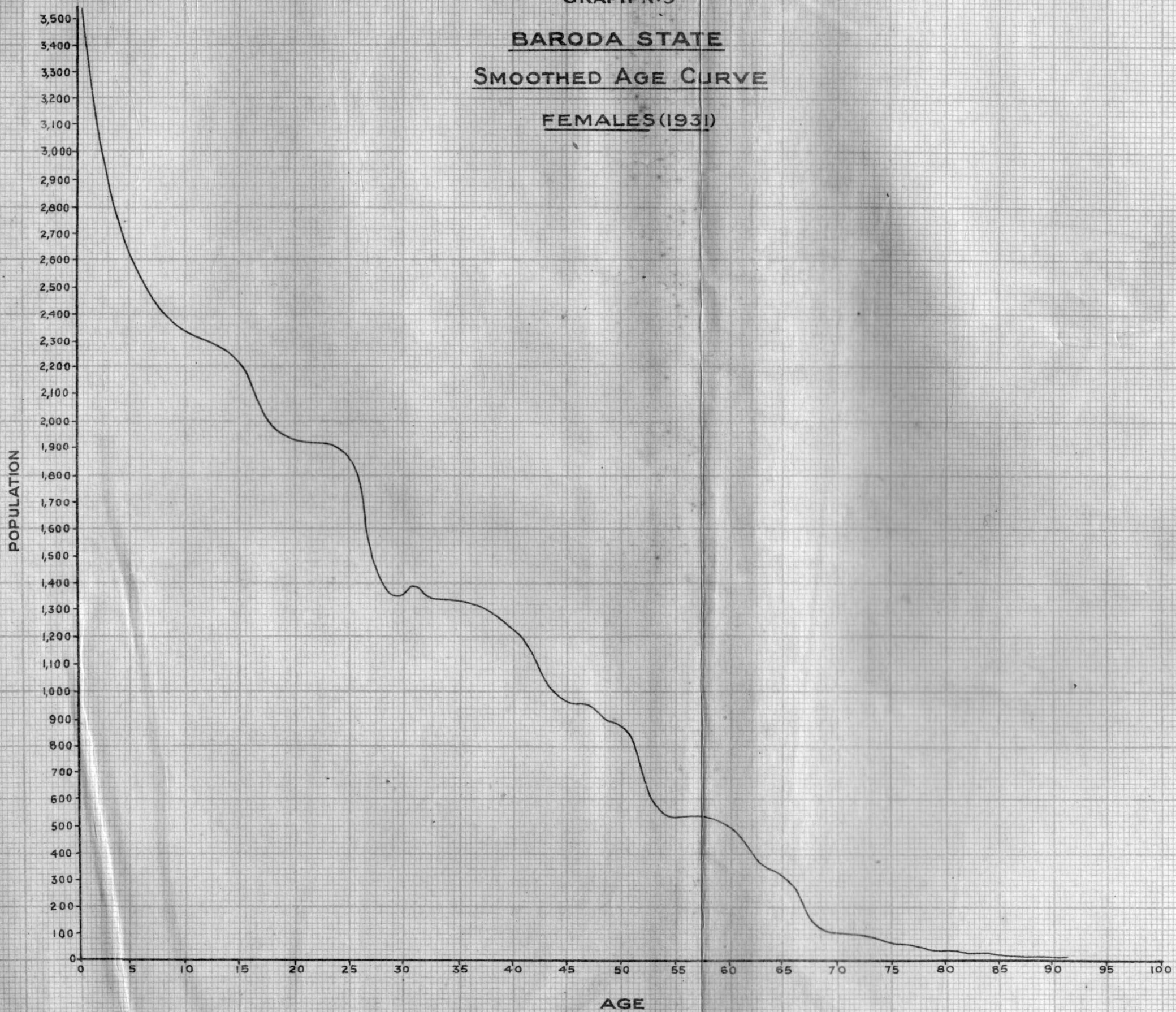
Age limits	Males	Females	Age limits	Males	Females	Age limits	Males	Females
1	2	3	1	2	3	1	2	3
0-1	3,402	3,506	32-33	1,368	1,356	64-65	261	329
1-2	3,039	3,224	33-34	1,351	1,340	65-66	246	311
2-3	2,843	2,997	34-35	1,339	1,336	66-67	225	262
3-4	2,728	2,818	35-36	1,335	1,332	67-68	199	171
4-5	2,661	2,685	36-37	1,314	1,321	68-69	175	127
5-6	2,615	2,576	37-38	1,275	1,303	69-70	161	118
6-7	2,582	2,498	38-39	1,239	1,279	70-71	142	109
7-8	2,563	2,437	39-40	1,223	1,254	71-72	88	104
8-9	2,541	2,391	40-41	1,197	1,220	72-73	74	98
9-10	2,512	2,346	41-42	1,142	1,154	73-74	67	84
10-11	2,483	2,329	42-43	1,078	1,088	74-75	62	76
11-12	2,436	2,312	43-44	1,040	1,011	75-76	59	64
12-13	2,379	2,295	44-45	1,012	976	76-77	52	57
13-14	2,348	2,274	45-46	1,003	962	77-78	47	51
14-15	2,336	2,242	46-47	997	957	78-79	41	45
15-16	2,277	2,191	47-48	983	935	79-80	38	41
16-17	2,040	2,102	48-49	975	902	80-81	34	37
17-18	1,912	2,022	49-50	964	890	81-82	30	33
18-19	1,868	1,973	50-51	916	862	82-83	28	30
19-20	1,851	1,939	51-52	820	768	83-84	26	28
20-21	1,842	1,931	52-53	723	625	84-85	25	27
21-22	1,834	1,923	53-54	609	571	85-86	23	25
22-23	1,821	1,919	54-55	565	552	86-87	21	23
23-24	1,816	1,907	55-56	559	544	87-88	19	21
24-25	1,803	1,892	56-57	552	541	88-89	18	20
25-26	1,758	1,844	57-58	544	537	89-90	17	18
26-27	1,592	1,664	58-59	525	524	90-91	15	17
27-28	1,430	1,458	59-60	520	510	91-92	13	14
28-29	1,358	1,384	60-61	509	478	92-93	12	13
29-30	1,367	1,356	61-62	456	438	93-94	11	12
30-31	1,402	1,382	62-63	397	392	94-95	11	11
31-32	1,394	1,389	63-64	305	351	95 and over	92	109

GRAPH NO 4

BARODA STATE  
SMOOTHED AGE CURVE  
MALES (1931)



GRAPH N°5  
BARODA STATE  
SMOOTHED AGE CURVE  
FEMALES (1931)



**131. Correction of Previous Census Figures**—Before proceeding to graduation it is necessary to incorporate with the 1931 figures, the figures of 1901, 1911 and 1921. In all the past censuses (i) age was recorded as at last birthday, (ii) quinary groups were made by keeping multiples of age 5 at the first place of each group, and (iii) the quinary groups were subjected to the Columnar differencing method for the purpose of correcting minor misstatements of age.

As discussed above for the 1931 Census all these three basic methods of recording, grouping, and final correction of age returns have been changed to achieve greater accuracy. It is not impossible to compare the final quinary groups in Tables A and B of the present Report, with the corresponding groups in Table A of the 1921 Report since the final groups 0-5, 5-10, etc., giving populations living between exact ages 0-5, 5-10, . . . . agree to the 1921 groups of 0-4, 5-9 . . . . with ages at last birthday. But in order to get the advantage of more accurate methods of correction as applied to 1931 figures, I have thought it better to change the crude data of 1901, 1911 and 1921 from *last* to *nearest* birthday. This would moreover make the figures of previous censuses absolutely comparable at each stage with the 1931 figures as both would then be based on the same principles of correction. The problem is to ascertain the probable population figures if ages were recorded as at *nearest* birthday when the corresponding figures with ages at *last* birthday are known. The enumeration corresponding to age  $x$  (last birthday) in the previous censuses contains persons of age  $x$  and over and below age  $x + 1$ . After consulting a number of graduated and ungraduated tables I decided to take 51 per cent of the numbers living between ages  $x$  and  $x + 1$  to be between ages  $x$  and  $x + \frac{1}{2}$ . Similarly 51 per cent of the entry at age  $x-1$  (last birthday) has been taken to be between ages  $x-1$  and  $x-\frac{1}{2}$  and 49 per cent between ages  $x-\frac{1}{2}$  and  $x$ . Thus the group corresponding to age  $x$  nearest birthday would be the number of persons living between ages  $x-\frac{1}{2}$  and  $x + \frac{1}{2}$ . The following table shows the working for the first four annual age groups\*—

TABLE NO. VII

Age group (last birthday)	Half-yearly sub-divisions of the periods in col. 1	Percentages of persons belonging to sub-divisions in col. 2	Age group (nearest birthday)
1	2	3	4
0	$\left\{ \begin{array}{l} 0 - \frac{1}{2} \\ \frac{1}{2} - 1 \end{array} \right\}$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right\}$	0
1	$\left\{ \begin{array}{l} 1 - 1\frac{1}{2} \\ 1\frac{1}{2} - 2 \end{array} \right\}$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right\}$	1
2	$\left\{ \begin{array}{l} 2 - 2\frac{1}{2} \\ 2\frac{1}{2} - 3 \end{array} \right\}$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right\}$	2
3	$\left\{ \begin{array}{l} 3 - 3\frac{1}{2} \\ 3\frac{1}{2} - 4 \end{array} \right\}$	$\left\{ \begin{array}{l} 51 \\ 49 \end{array} \right\}$	3

The remaining 49 per cent of persons at age 3 (last birthday) is transferred to age 4 nearest birthday and so on. Since the total sum for the intermediate ages 5, 8, 9, . . . . . in the groups 4-6, 7-13, etc., remains the same it is only necessary to make the corrections for the first and the last ages of each successive group. Thus 49 per cent of the entry at age 3 (last birthday) is transferred to the age group 4-6, and 49 per cent of the entry at age 6 is added to the next age group 7-13. In short every age group is to be increased by 49 per cent of the entry at the last annual age period in the previous age group and decreased by 49 per cent of the entry at its own last annual age period. The following table shows in detail the working of the complete process of correction to the 1911 Census figures (males). Columns 1 to 5 refer to the modification of the crude data from last to nearest birthday and columns 7 to 11 refer to the method of correction and grouping from ternary and septenary groups as applied to 1931 Census figures.

TABLE NO. VIII

SPECIMEN TABLE SHOWING THE WORKING OF THE ADJUSTMENTS AND CORRECTIONS AS APPLIED TO THE MALE AND FEMALE FIGURES OF 1901, 1911 AND 1921 CENSUSES

(Males 1911)

AGE GROUP.	Adjustments	Net increase or decrease for each age group in Col. (1)	Recorded entry for each age group in Col.(1) with ages recorded as at last birthday	Corrected entry for each age group in Col.(1) with ages as at nearest birthday	Groups of age stated according to nearest birthday	Limits of exact age in the subdivision of each group in Col. (6)	Percentages as in Col. (3) of Table No. (5)	Population redistributed into groups shown in Col. (7)	Population in each age group shown in Col. (11)	Limits of exact age for the corresponding groups in Col. (10)	Numbers in Col. (10) proportioned to 100,000
1	2	3	4	5	6	7	8	9	10	11	12
0	-20,386	-20,386	41,605	21,219	0	0- $\frac{1}{2}$	100	21,219			
1	+ 20,386	+10,679	19,811	30,490	1	1- $\frac{1}{2}$	52	15,855	37,074	0-1	3,512
	- 9,707		19,811	30,490	1	1-1 $\frac{1}{2}$	48	14,635			
2	+ 9,707	- 6,650	33,382	26,732	2	1 $\frac{1}{2}$ - 2	51.5	13,767	28,402	1-2	2,690
	-16,357		33,382	26,732	2	2-2 $\frac{1}{2}$	48.5	12,965			
3	+16,357	+ 1,225	30,881	32,106	3	2 $\frac{1}{2}$ - 3	51	16,374	29,339	2-3	2,778
	-15,132		30,881	32,106	3	3-3 $\frac{1}{2}$	49	15,732			
4-6	+15,132	+ 4,016	88,003	92,019	4-6	3 $\frac{1}{2}$ - 4	17	15,643	31,375	3-4	2,971
	-11,116		88,003	92,019	4-6	4- 5	34	31,286	31,286	4-5	2,963
			88,003	92,019	4-6	5- 6 $\frac{1}{2}$	49	45,090			
7-13	+11,116	+ 3,390	147,268	150,658	7-13	6 $\frac{1}{2}$ -10	51	76,836	121,926	5-10	11,547
	- 7,726		147,268	150,658	7-13	10-13 $\frac{1}{2}$	49	73,822			
14-16	+ 7,726	- 398	67,494	66,596	14-16	13 $\frac{1}{2}$ -15	51	33,964	107,786	10-15	10,208
	- 3,624		67,494	66,596	14-16	15-16 $\frac{1}{2}$	49	32,632			
17-23	+ 3,624	+ 4,984	137,109	142,093	17-23	16 $\frac{1}{2}$ -20	52	73,888	106,520	15-20	10,088
	- 3,640		137,109	142,093	17-23	20-23 $\frac{1}{2}$	48	68,205			
24-26	+ 3,640	- 65	82,959	82,894	24-26	23 $\frac{1}{2}$ -25	51	42,276	110,481	20-25	10,463
	- 3,705		82,959	82,894	24-26	25-26 $\frac{1}{2}$	49	40,618			
27-33	+ 3,705	+ 1,507	113,543	115,050	27-33	26 $\frac{1}{2}$ -30	52	59,826	100,444	25-30	9,512
	- 2,198		113,543	115,050	27-33	30-33 $\frac{1}{2}$	48	55,224			
34-36	+ 2,198	- 201	64,447	64,246	34-36	33 $\frac{1}{2}$ -35	51	32,765	87,989	30-35	8,338
	- 2,399		64,447	64,246	34-36	35-36 $\frac{1}{2}$	49	31,481			
37-43	+ 2,399	+ 1,484	82,594	84,078	37-43	36 $\frac{1}{2}$ -40	53	44,561	76,042	35-40	7,201
	- 915		82,594	84,078	37-43	40-43 $\frac{1}{2}$	47	39,517			
44-46	+ 915	- 131	37,086	36,955	44-46	43 $\frac{1}{2}$ -45	52	19,217	58,734	40-45	5,562
	- 1,046		37,086	36,955	44-46	45-46 $\frac{1}{2}$	48	17,738			
47-53	+ 1,046	+ 451	52,964	53,415	47-53	46 $\frac{1}{2}$ -50	54	23,844	46,582	45-50	4,411
	- 595		52,964	53,415	47-53	50-53 $\frac{1}{2}$	46	24,571			
54-56	+ 595	+ 31	16,371	16,402	54-56	53 $\frac{1}{2}$ -55	52	8,529	33,100	50-55	3,135
	- 564		16,371	16,402	54-56	55-56 $\frac{1}{2}$	48	7,873			
57-63	+ 564	+ 389	24,590	24,979	57-63	56 $\frac{1}{2}$ -60	56	13,988	21,861	55-60	2,070
	- 175		24,590	24,979	57-63	60-63 $\frac{1}{2}$	44	10,991			
64-66	+ 175	+ 14	6,133	6,147	64-66	63 $\frac{1}{2}$ -65	53	3,258	14,249	60-65	1,349
	- 161		6,133	6,147	64-66	65-66 $\frac{1}{2}$	47	2,889			
67-73	+ 161	+ 112	5,563	5,675	67-73	66 $\frac{1}{2}$ -70	60	3,405	6,294	65-70	596
	- 49		5,563	5,675	67-73	70-73 $\frac{1}{2}$	40	2,270			
73 and over	+ 49	+ 49	4,132	4,181	73 and over	73 $\frac{1}{2}$ and over	100	4,181	6,451	70 and over	611

The process detailed in Table No. VIII was applied to the male and female figures of 1901, 1911 and 1921 and the quinary groups so obtained were utilised for the purposes of final graduation. The figures for graduation for males and females were obtained by taking the weighted mean of 1901, 1911, 1921 and 1931 figures by giving double weight to 1911 and 1931. The smoothed quinary groups together with their means obtained according to the above method are set out in Tables A and B at the end of this Report.

**132. Migration**—Before proceeding to graduation it is necessary to discuss the effects of migration on the age distribution of the State population. Unless the balance of immigrants over emigrants be of an appreciable percentage, it is not likely to affect the general age distribution and much less the rates of mortality of the population deduced after graduation. In Indian provinces generally the balance of migration is comparatively small; thus in the presidencies of Bengal, Bombay and Madras the balance was calculated to be hardly about 2 per cent after the 1921 Census. The corresponding figure for Baroda State was 1 per cent as deduced in 1921. As this was negligible, no allowance was made for migration in the graduation of 1921.

So far I have not been supplied with complete data regarding migration. Birthplace returns from different British provinces where the State born population is likely to be enumerated were not available. The only reliable figures to which I had access were those of the political immigrants known as the *hijratis*. But even in this case the data was incomplete for my purposes since no age schedules were prepared for the *hijratis*. Had I decided to use the figures of political immigrants, it would have been necessary for me to distribute the 26,755 lives (14,424 males, 12,331 females) into different age groups on an arbitrary basis. This would neither have been justifiable nor profitable since the ultimate change brought about by this adjustment in the rates of mortality would have been negligible. I have therefore made no correction for migration disturbances.

**133. Methods of Graduation**—The figures, obtained after the above adjustments, embody in themselves the variation and distribution of the Baroda State population group by group. The processes of correction and of taking the weighted mean of four decennial censuses have no doubt greatly smoothed out the anomalies that are inherent in population returns. It is now necessary to subject the mean figures to a process of graduation by some standard mathematical formula. The process of graduation will remove systematic and other anomalies in the data and would bring about a smooth progression in the figures from age to age. The most familiar types of formulæ which are utilised for graduating statistical data are those given by Karl Pearson's extensions of the Gaussian formula. This later method is fundamentally based on the differential equation:—

$$\frac{1}{u} \frac{du}{dx} = kx$$

Pearson's extension takes the form:—

$$\frac{1}{u} \frac{du}{dx} = \frac{x+a}{b_0 + b_1x + b_2x^2}$$

which gives rise to a variety of forms and may be fitted to any type of frequency distribution by proper choice of the arbitrary constants. Other forms of special importance in vital statistics are the formulæ first given by Gompertz and then modified by Makeham. Sir George Hardy in the Indian Census Reports of 1881, 1891, and 1901 utilised the second modification of Gompertz's law of mortality for graduating the Indian population figures. In the Report of 1911 Mr. T. G. Ackland graduated the mean figures by using Karl Pearson's frequency curves. In 1921, Mr. H.G.W. Meikle graduated the ratios of  $T_x$  (*i.e.*, population above age  $x$ ) to  $T_x$  of some well graduated Table by a curve of the type  $y = 1 - ax - bx^2 + cx^3$ .

In the present Report, I propose to graduate the figures by Karl Pearson's frequency curves. In doing so I follow the same method as was used in the State Actuarial Report of 1921. It is not possible to detail here the complete laborious process of graduation. Suffice it to say that the constants involved in the equation of the graduating curve were ultimately calculated from the moments of the given distribution referred to a convenient base. The final equation obtained by me for graduating the male figures may be exhibited in the form:—

$$y = .032462 x^{.388535} (95.1988 - x)^{2.652325}$$

**134. Graduation for female figures**—Regarding the graduation of female population figures, it has been a custom in the past to base their graduation on the equation obtained for the males. As the errors in statements of age differ both in nature and degree in case of males and females in different periods of life, it is hardly advisable to deduce the graduation of one from the other. Mr. Meikle holding this view writes “there is great danger in basing the rate of mortality for females on calculations depending on the ratio of the males to females as shown in the crude census figures as was done on the previous occasions.”

I have therefore graduated the female population figures directly by the same methods as applied to the males. The equation of the graduating curve in this case may be written as :—

$$y = .0424063 x^{.981055} (95.75425 - x)^{2.618365}$$

The graduated distribution at individual ages for males and females is embodied in Table C, the values for quinary groups being given in Tables A and B at the end of this chapter. The graduated mean age curves for the State are given in Graphs No. 6 and 7.

**135. Ages of Infancy and Childhood**—In all the Census Reports from 1872 to 1921, it has been emphasised that the data for the ages of infancy and childhood were extremely defective. Not only are the ages stated most inaccurately but even a substantial percentage of the infant population is omitted altogether in the census enumeration. Even in an advanced country like England it was admitted that about 7 per cent of the juvenile population in the first two years of life escaped the Census of 1911. There is no doubt that such omissions are common in the Indian population also. Due to these defects in the data at earlier age periods it has always been a difficult matter to determine the correct age distribution and rates of mortality at these ages.

**136. The Proclaimed Clans Experience**—To remedy this defect the Government of India kept strict legal supervision over the vital occurrences in a certain class of people known as the Proclaimed Clans. The experience so obtained was analysed by Sir George Hardy and formed into a life table in the Census Reports of 1881, 1891 and 1901. In obtaining the age distribution and rates of mortality for the State population I utilised the functions deduced by Sir George Hardy for the earlier ages with modifications so as to fit as smoothly as possible with the mean graduated figures of the State population at later ages.

**137. The Life Table**—The inaccuracies and omissions in the data were considered by Mr. Meikle to be so enormous that he did not think it worthwhile to compute the Life Table for the Indian population in the 1921 Actuarial Report. He has also not given the rates of mortality for the ages of infancy. In this connection he writes :—

“At infantile ages I am so strongly of opinion that the shortage is due partly to non-enumeration, that I have omitted to quote the rates of mortality for these ages, as not only would no useful purpose be served by doing so but the rates, if published, might be misleading. I have also omitted to calculate the expectation of life.”

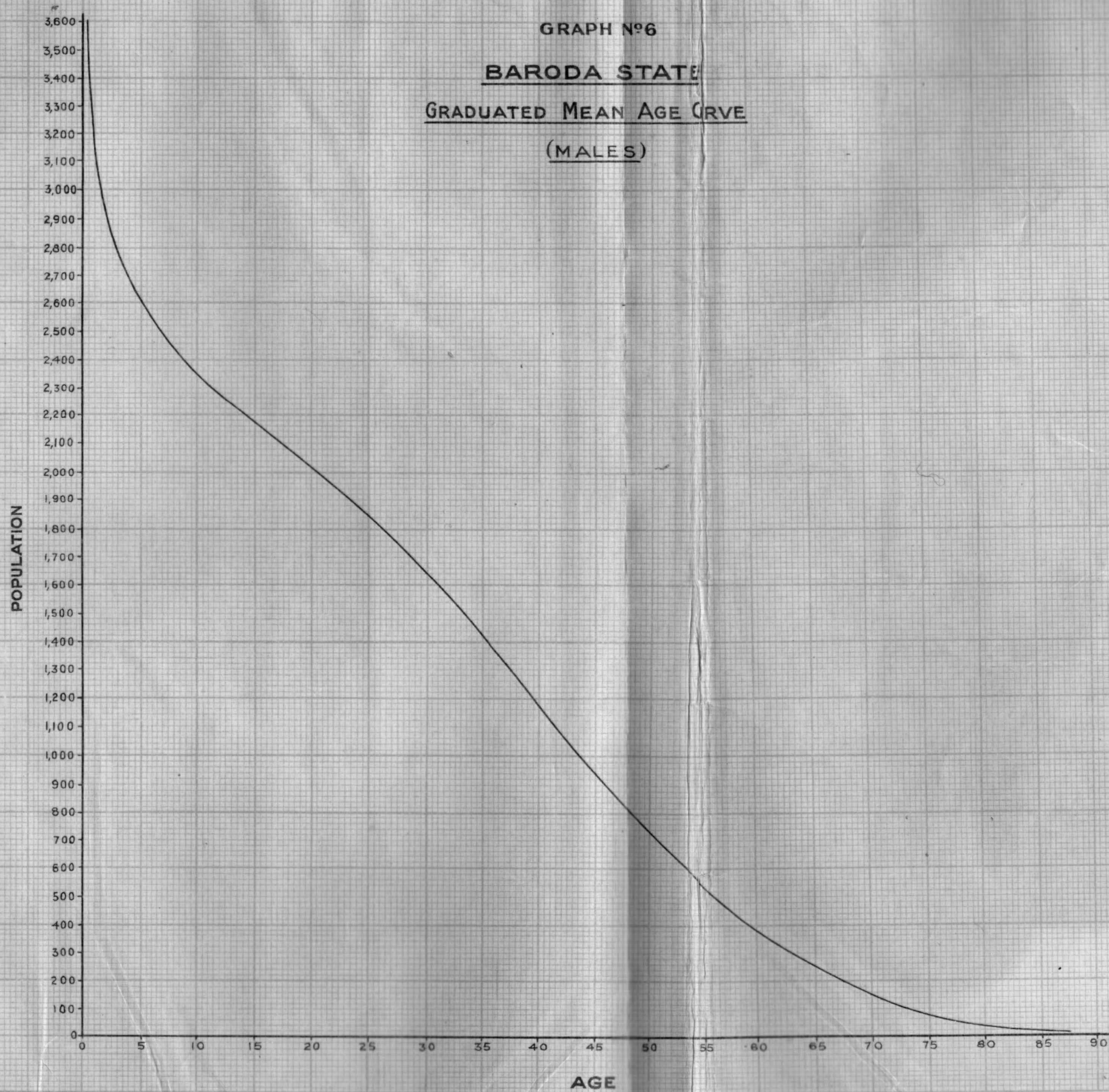
Further he adds :—

“The  $q_x$  column based on Indian Census returns is not reasonably dependable, and it is wrong to pretend that it is, consequently we are not justified in preparing an  $e_x$  column.”

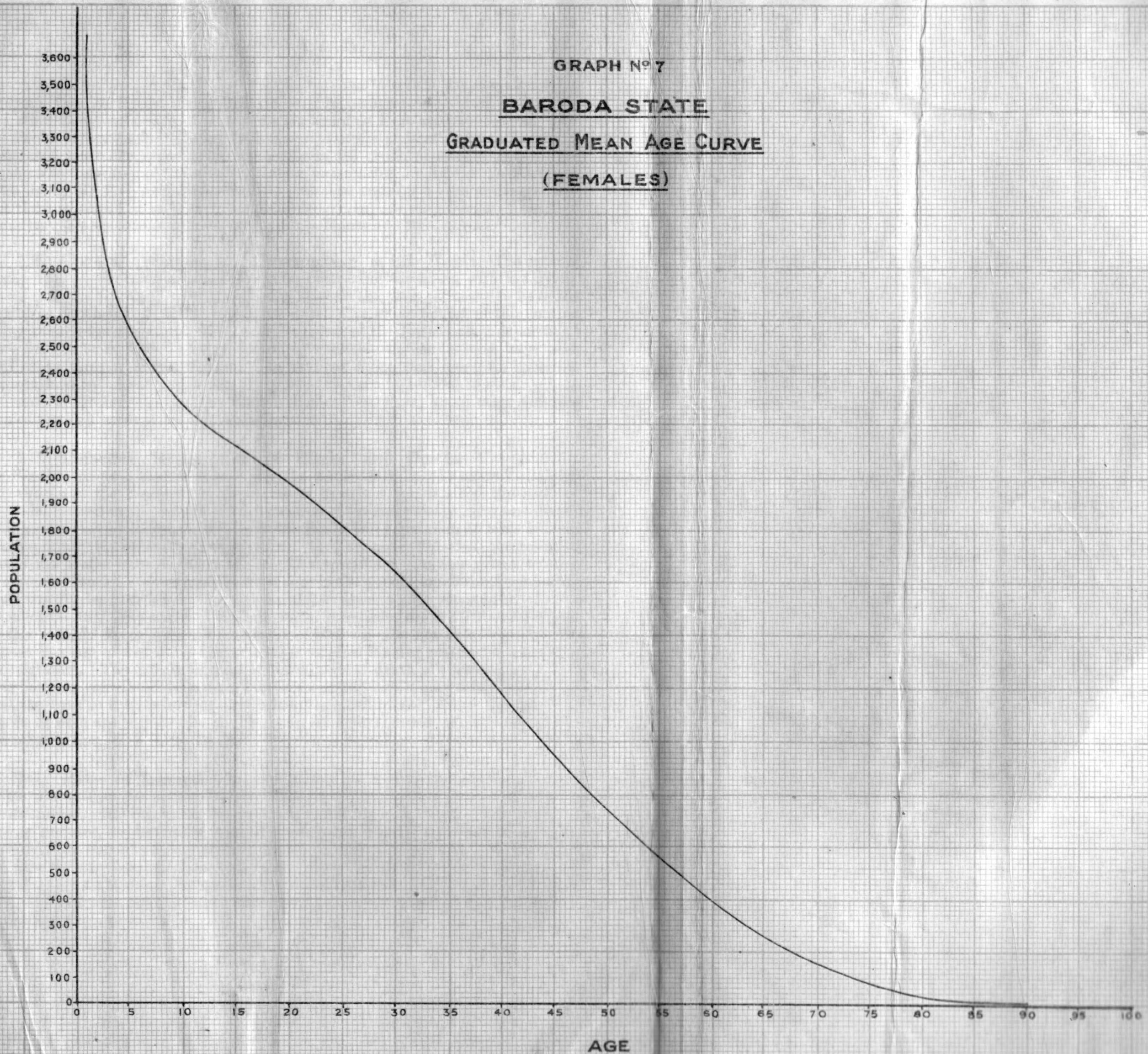
**138. Why a Life Table is Desirable**—I agree with Mr. Meikle in his emphatic assertion regarding the amount of error present in the Indian population statistics. It is no doubt true that the magnitude of error present, more than outweigh the adjustments effected by the application of mathematical processes.



GRAPH N°6  
BARODA STATE  
GRADUATED MEAN AGE CURVE  
(MALES)



GRAPH N° 7  
BARODA STATE  
GRADUATED MEAN AGE CURVE  
(FEMALES)



But even then I do not think that the construction of a Life Table is altogether useless. The Life Tables so obtained may not be comparable to those of England and other European countries since these are based on more accurate figures. But the Tables computed for different Indian provinces are at least comparable among themselves since the types of error inherent in the crude population figures are common to the whole of India. The tables constructed by Sir George Hardy in 1901 and by Mr. T. G. Ackland in 1911 are even now useful as a basis of comparison. For these reasons I have thought it desirable to compute the columns of the Life Table by methods similar to those of Sir George Hardy and Mr. Ackland.

**139. General Method of Constructing a Life Table**—The general method for constructing a Life Table is by comparing the living with the dying. Along with the figures of population living at each age, it is necessary to have the figures of population dying at respective ages. The crude figures of the number dying at each age recorded in the Death Registers of the Registration department have first to be corrected and graduated by methods similar to what have been applied to the population figures. The number living and dying at each age proportioned to a total population of 100,000 can then be utilised to obtain all the functions of the Life Table. The English Tables Nos. 7 and 8 and other accurate Tables were all constructed by this principle.

**140. Defective Registration of Births and Deaths**—Unfortunately for Baroda and as a matter of fact for the whole of India, the records of births and deaths of the Registration departments have not yet attained the level of dependable accuracy. In spite of the extension of the compulsory Birth and Death Notification Act to all municipalities in the State, the population at large has not taken seriously the necessity of registration. In the decade 1911-1921, the recorded births and deaths were 580,390 and 612,055 respectively. As this gave a balance in favour of deaths, the increase of 4.6 per cent in the population during that decade could hardly be justified by the excess of immigrants over emigrants. In the decade 1921-1931 the number of births and deaths recorded are 582,578 and 446,906. In this case the balance 135,672 in favour of births is also not able to explain the census increase of 316,485 (14.9 per cent) even after making reasonable allowance for migration. The margin of error in the records of death of persons aged 5 and over has been calculated in Chapter I to be about 30.7 and it may safely be asserted that the error in the records for ages below 5 is much more. Hence the figures of deaths at each age supplied by the Registration offices cannot at all be used for the construction of a Life Table.

**141. Rates of Increase**—In view of the above facts the only course open to me is to utilise the average rate of increase of population in the period under consideration. Having found this rate it is possible, on the basis of a geometrical rate of increase, to determine from the graduated figures of population living at each age, the numbers living at each age six months before and six months after the date midway between these two years. Then by dividing the numbers living between ages  $x$  and  $x+1$  six months after the middle date by those living between ages  $x-1$  and  $x$  six months before that date, we get the probability of living a year at the age  $x-\frac{1}{2}$  as under :—

$$\frac{L_x}{L_{x-1}} = \frac{l_{x+\frac{1}{2}}}{l_{x-\frac{1}{2}}} = P_{x-\frac{1}{2}}$$

The rates of increase in the male population during the decades 1901-1911, and 1911-1921 were found to be 4.69 and 4.226 whereas in the present decade (1921-1931) the increase has been 14.288 per cent. From these the average rate of increase during the period of 30 years (1901-1931) was deduced. This average rate, which was supposed to be constant at all ages, was utilised to obtain the values of  $p_{x-\frac{1}{2}}$  from the graduated numbers living at each age by the method described in the last paragraph. The values of the probabilities  $p_x$  at integral ages were then deduced by interpolation. Exactly similar methods were used for obtaining the values of the probabilities  $p_x$  in the case of female lives.

**142. Columns in the life table explained**—The Life Tables (Tables D and E given at the end) consist of 7 columns. Column (2) represents the numbers that would reach their xth birthday out of a total of 100,000 born, column (3) gives the numbers dying between consecutive ages, column (4) embodies the mortality per cent as deduced from the number living and dying between ages  $x$  and  $x+1$ . Use column (5) represents the numbers living between ages  $x$  and  $x+1$ , and were deduced for ages 14 and over by taking the arithmetic mean of the consecutive numbers in column (2). For earlier ages the arithmetic means had to be modified as it would have been erroneous to suppose that the deaths were evenly distributed throughout the year in the periods of infancy and childhood. The figures of column (6) give the numbers living above age  $x$ , obtained by summation of the numbers in the previous column from bottom upwards. The last column (7) represents the complete expectation of life or mean after lifetime at age  $x$ , deduced by dividing the numbers in column (6) by those in column (2), regard being had, at the older ages, to the fractional part of the numbers omitted in column (2).

**143. Comparative Expectations of life**—I give below the expectations of life at decennial ages of the different Indian Provinces as deduced by Sir George Hardy and Mr. Ackland from the results of the 1891, 1901 and 1911 Censuses. Side by side with these are set out the corresponding figures for Baroda State for 1921 and 1931 and also those of England for 1901 and 1911.

TABLE IX (MALES)  
COMPARATIVE EXPECTATIONS OF LIFE

AGE	BENGAL PRESIDENCY			UNITED PROVINCES			PUNJAB			BURMA		
	1891	1901	1911	1891	1901	1911	1891	1901	1911	1891	1901	1911
0 ..	22.78	21.57	21.47	24.45	25.30	21.21	26.58	23.18	21.23	..	30.29	31.48
10 ..	33.85	32.95	32.54	34.10	35.26	31.44	38.07	35.45	31.38	..	39.93	39.88
20 ..	27.77	27.50	27.10	27.75	28.43	25.27	31.76	29.59	26.12	..	33.28	32.82
30 ..	22.51	22.64	22.15	22.35	22.01	20.89	25.60	24.54	21.60	..	27.68	27.30
40 ..	17.98	18.28	17.56	17.74	16.76	17.18	20.22	19.99	17.55	..	22.58	22.04
50 ..	13.83	13.93	13.39	13.56	12.64	13.47	15.58	15.43	14.15	..	17.45	16.51
60 ..	9.89	9.52	9.27	9.63	8.92	9.84	11.41	10.70	10.63	..	12.18	11.00
70 ..	6.35	5.61	5.40	6.15	5.50	6.50	7.60	6.39	6.53	..	7.37	6.66
80 ..	3.59	2.86	2.49	3.43	2.96	3.42	4.48	3.28	3.11	..	3.84	3.61
90 ..	1.69	1.07	.95	1.60	1.23	1.11	2.26	1.38	1.13	..	1.75	1.77

AGE	MADRAS PRESIDENCY			BOMBAY PRESIDENCY			BARODA STATE		ALL INDIA			ENGLAND		
	1891	1901	1911	1891	1901	1911	1921	1931	1891	1901	1911	1891	1901	1911
0 ..	26.92	26.21	25.92	26.12	22.77	22.52	22.44	27.66	24.59	23.63	22.59	..	44.07	48.53
10 ..	38.70	36.93	37.78	37.20	34.62	33.33	32.97	36.38	35.46	34.73	33.36	..	49.65	51.81
20 ..	32.55	30.43	31.60	30.87	28.39	26.43	25.86	28.76	29.24	28.59	27.46	..	41.04	43.01
30 ..	26.57	24.24	25.35	24.67	22.27	21.32	20.42	22.19	23.66	22.90	22.45	..	33.06	34.76
40 ..	21.06	18.60	20.06	18.94	16.90	17.23	16.17	17.19	18.75	17.91	18.01	..	25.65	26.96
50 ..	15.91	14.05	15.74	13.88	12.48	13.51	12.51	13.34	14.28	13.59	13.97	..	18.89	19.76
60 ..	11.06	10.10	11.70	9.59	8.73	9.94	9.22	9.78	10.12	9.53	10.00	..	12.90	13.49
70 ..	6.94	6.27	7.68	6.05	5.38	6.55	6.08	6.49	6.48	5.80	6.19	..	8.02	8.39
80 ..	3.85	3.35	3.98	3.39	2.81	3.48	3.24	3.49	3.65	3.07	3.06	..	4.40	4.86
90 ..	1.82	1.56	1.50	1.65	1.07	1.41	1.00	1.48	1.69	1.23	1.15	..	2.32	2.56

TABLE X (FEMALES)

COMPARATIVE EXPECTATIONS OF LIFE

AGE	BENGAL PRESIDENCY			UNITED PROVINCES			BURMA			MADRAS PRESIDENCY		
	1891	1901	1911	1891	1901	1911	1891	1901	1911	1891	1901	1911
0 ..	23.73	22.51	21.58	25.25	23.93	21.50	..	32.21	32.61	27.99	27.13	27.65
10 ..	32.76	32.03	32.44	32.97	34.90	31.94	..	38.92	40.22	37.78	36.27	37.62
20 ..	27.76	27.55	27.20	27.71	28.89	25.88	..	32.98	32.67	32.78	30.65	32.02
30 ..	23.52	23.86	22.45	23.31	23.33	21.42	..	28.96	27.21	27.90	25.06	26.01
40 ..	19.43	19.99	17.91	19.15	18.38	17.51	..	24.62	22.24	22.78	19.56	20.73
50 ..	15.16	15.14	13.67	14.85	13.82	13.69	..	19.00	16.75	17.41	15.03	16.28
60 ..	10.65	10.18	9.40	10.36	9.52	9.99	..	13.16	11.15	11.89	10.86	12.00
70 ..	6.68	5.87	5.43	6.45	5.74	6.56	..	7.77	6.72	7.28	6.60	7.79
80 ..	3.70	2.95	2.48	3.54	3.02	3.43	..	3.96	3.63	3.97	3.51	4.00
90 ..	1.59	1.31	.95	1.65	1.50	1.06	..	1.83	1.77	1.85	1.77	1.50

AGE	BOMBAY PRESIDENCY			BARODA STATE		ALL-INDIA			ENGLAND	
	1891	1901	1911	1921	1931	1891	1901	1911	1901	1911
0 ..	27.07	24.05	22.86	22.91	26.35	25.54	23.96	23.31	47.70	52.38
10 ..	36.15	33.69	33.50	33.33	37.71	34.40	33.86	33.74	51.98	54.53
20 ..	30.92	28.52	26.54	25.99	29.91	29.28	28.64	27.96	43.45	45.77
30 ..	25.69	22.98	21.57	20.63	22.75	24.69	23.82	22.99	35.43	37.36
40 ..	20.31	17.78	17.60	16.66	17.70	20.20	19.12	18.49	27.81	29.37
50 ..	15.07	13.37	13.81	12.96	13.67	15.59	14.50	14.28	20.63	21.81
60 ..	10.24	9.30	10.13	9.45	10.04	10.87	10.02	10.11	14.08	15.01
70 ..	6.33	5.58	6.62	6.23	6.58	6.80	5.98	6.22	8.74	9.25
80 ..	3.47	2.92	3.49	3.31	3.52	3.76	3.12	3.06	4.84	5.36
90 ..	1.59	1.20	1.42	1.25	1.41	1.75	1.64	1.10	2.68	2.94

In comparing the values of the expectations of life deduced in the present Report with those of 1891, 1901, 1911 and 1921 (Baroda), it must be remembered that the decade ending with 1891 was completely free from famine and epidemics whereas the following decades were generally characterised by severe calamities which affected the vitality of the population to a large extent. In constructing the Life Tables after the 1901 Census, the figures of 1891 were given double weight as compared to those of 1881 and 1901. But even then the expectations of life for 1901 in the above table show a definite decline as compared to those of 1891. The same may be said regarding the figures for 1911. Comparing the Baroda State figures for 1931 in the above table with those of Bombay Presidency to which they are directly comparable we find that they are almost in line with those of 1891 for the Bombay Presidency. It has already been mentioned that in deducing the present figures I have given double weight to the figures of 1911 and 1931 in comparison to those of 1901 and 1921. As the decade (1921-1931) was a most happy one, showing a censal increase of 14.9 per cent, the above combination in taking the weighted mean had thus the effect of correcting the unhealthy bias of the previous decades due mainly to famines and epidemics. The expectations of life for Bombay as deduced after 1901 and 1911 and for (Baroda) 1921, thus indicate an inferior vitality in the population to the corresponding expectations calculated after 1891 and 1931 Censuses. The State population has now fully made up the losses incurred since 1901, and the totals of 1931 Census exceed those of 1891 by 27,611 or 1.2 per cent. This great regain has undoubtedly reflected its vitalising influence on the figures of expectations of life calculated by me. Thus it is that the 1931 figures for this State in the above table show a definite improvement as compared to the corresponding State figures of 1921 and Bombay figures of 1901 and 1911. In view of the above arguments it is but natural that the expectations of life calculated after 1931 Census should agree with those of the "normal decade" ending in 1891 rather than with those of 1901, 1911 or 1921, both in the case of males and females.

**144. Rates of Mortality**—Regarding the rates of mortality also it is found by comparison of the 1921 and 1931 figures that there has been a definite improvement since 1921. The table constructed by me takes very nearly a middling course

between the tables for Burma and Bombay Presidency constructed by Mr. Ackland after 1911 Census. As is well known the province of Burma has a very high place among all the Indian provinces for showing a lighter mortality rate and greater expectancy of life and hence it is gratifying to note that the present Baroda table has some likeness to that of Burma.

**145. Improvement in Expectation of Life**—The high figures of expectation of life for England as compared to those of the Indian population show what education, sanitation, better methods of living and superior climatic conditions can do to enhance the longevity of the human race. Leaving the question of climate aside, it may safely be asserted that there is room for improvement in sanitation and methods of living of the Indian population, which would undoubtedly increase the value of a life in India. The Baroda State, in matters of education and social uplift, has in the past given a lead to the rest of India and it is expected that work in these directions would be intensified more and more in the near future. For unless the people live well and are made conscious of their own potentialities by the light of education, there can be no hope of regeneration.

**146. Suggestions and Recommendations**—Before I finish this memorandum I feel it my duty to make a few suggestions which would facilitate future statistical investigations :—

- (i) In order that a correct life table may be constructed by comparing the living with the dying it is absolutely necessary that proper supervision should be kept on the records of births and deaths in the different parts of the State. The offence of not registering a birth or death should be made punishable by a substantial fine and the fine should be exacted as far as possible.
- (ii) It has been found that deaths in the first two years of life often go unrecorded. Hence it is imperative that special care should be taken regarding the accurate registration of deaths in these ages.
- (iii) If it be not possible to adopt the above suggestions completely for the whole of the State, a few representative areas may be selected and strict supervision may be kept over them. These areas may then supply reliable data on the basis of which a life table may be constructed after the methods of Sir George Hardy in the case of Proclaimed Clans.
- (iv) It may also be profitable to collect data regarding certain typical communities. For instance Life Tables may be constructed for an advanced community like the Parsis in the State and a comparison with their rates of mortality and expectations of life may reveal interesting facts.
- (v) Lastly I may mention that full details regarding the immigrants and emigrants should be noted. The records of age for the migrant population are necessary if correct adjustments are to be made for migration in the population figures. This would obviate the necessity of applying an assumed age distribution for the migrant population by approximate calculations.

**147. Conclusion**—Before I conclude, I take this opportunity to express my feelings of deep gratitude to the Census Commissioner, Mr. S. V. Mukerjea, B.A. (Oxon), F.S.S., but for whose uniform courtesy and ready help this report would not have been completed in time. I am also indebted to the Office Staff for the help they gave me. As I was not a professional actuary, I had to submit myself to a hard course of preparation before I could take up the work. Hence I feel all the more grateful to the Census Commissioner for the encouragement and facilities he extended to me on all occasions. I also record here my humble acknowledgment of the favour shown to me by His Highness's Government by allowing me the opportunity of serving the State by doing this important work.

A. C. MUKHERJI, M.A.,  
*Professor of Mathematics, Baroda College.*

SHOWING AGE DISTRIBUTION OF 100,000 PERSONS OF EACH SEX FOR THE CENSUSES OF 1901-1931 IN THE BARODA STATE

TABLE A  
(MALES)

Age	1901	1911	1921	1931	Mean 1901-1931	Graduated Mean Numbers
1	2	3	4	5	6	7
0-5	9,982	14,913	12,787	14,673	13,657	14,674
5-10	13,310	11,547	14,161	12,813	12,699	12,372
10-15	12,938	10,208	12,764	11,982	11,680	11,303
15-20	10,852	10,088	8,808	9,948	9,956	10,551
20-25	9,836	10,463	8,466	9,116	9,577	9,691
25-30	9,693	9,512	8,624	7,505	8,725	8,726
30-35	8,426	8,333	8,069	6,854	7,812	7,681
35-40	6,986	7,201	6,911	6,386	6,845	6,500
40-45	5,793	5,562	5,458	5,469	5,552	5,286
45-50	4,445	4,411	4,786	4,922	4,650	4,167
50-55	3,353	3,135	3,520	3,633	3,401	3,168
55-60	1,866	2,070	2,440	2,731	2,318	2,303
60-65	1,076	1,349	1,610	1,897	1,530	1,584
65-70	528	596	772	1,024	756	1,010
70 and over	913	611	824	1,047	842	984

TABLE B  
(FEMALES)

Age	1901	1911	1921	1931	Mean 1901-1931	Graduated Mean Numbers
1	2	3	4	5	6	7
0-5	10,676	15,829	13,734	15,230	14,421	15,241
5-10	12,863	10,667	13,536	12,248	12,038	12,056
10-15	11,832	9,142	12,010	11,452	10,838	10,973
15-20	10,196	10,005	8,767	10,227	9,905	10,265
20-25	9,654	10,765	8,571	9,572	9,817	9,511
25-30	9,392	9,966	8,779	7,706	8,919	8,669
30-35	8,159	8,383	8,022	6,803	7,759	7,686
35-40	7,124	7,084	7,015	6,489	6,881	6,518
40-45	6,013	5,488	5,607	5,449	5,582	5,337
45-50	4,769	4,272	4,633	4,646	4,540	4,239
50-55	3,683	3,081	3,299	3,378	3,317	3,255
55-60	2,271	2,334	2,486	2,690	2,467	2,394
60-65	1,413	1,601	1,767	1,954	1,715	1,668
65-70	759	628	804	1,008	806	1,088
70 and over	1,196	755	970	1,148	995	1,105

TABLE C

GRADUATED NUMBERS LIVING BETWEEN AGES x AND (x + 1) OUT OF 100,000 OF EACH SEX IN THE BARODA STATE

AGE x	Baroda State		AGE x	Baroda State		AGE x	Baroda State	
	Male	Female		Male	Female		Male	Female
0-1	3,464	3,763	8-9	2,422	2,349	16-17	2,142	2,082
1-2	2,996	3,178	9-10	2,374	2,302	17-18	2,112	2,054
2-3	2,845	2,929	10-11	2,330	2,261	18-19	2,080	2,025
3-4	2,722	2,742	11-12	2,291	2,224	19-20	2,047	1,995
4-5	2,647	2,629	12-13	2,257	2,191	20-21	2,012	1,965
5-6	2,582	2,537	13-14	2,227	2,162	21-22	1,976	1,934
6-7	2,523	2,465	14-15	2,198	2,135	22-23	1,939	1,903
7-8	2,471	2,403	15-16	2,170	2,109	23-24	1,901	1,871

TABLE C—concl.

Age x	Baroda State		Age x	Baroda State		Age x	Baroda State	
	Male	Female		Male	Female		Male	Female
24-25	1,863	1,838	47-48	833	847	70-71	146	158
25-26	1,824	1,804	48-49	792	806	71-72	131	142
26-27	1,735	1,770	49-50	751	765	72-73	116	126
27-28	1,746	1,735	50-51	711	726	73-74	101	111
28-29	1,706	1,699	51-52	671	688	74-75	86	98
29-30	1,665	1,661	52-53	633	650	75-76	74	85
30-31	1,624	1,622	53-54	595	613	76-77	64	73
31-32	1,582	1,581	54-55	558	578	77-78	56	63
32-33	1,538	1,539	55-56	524	544	78-79	48	53
33-34	1,492	1,495	56-57	492	510	79-80	40	45
34-35	1,445	1,449	57-58	460	478	80-81	33	37
35-36	1,398	1,401	58-59	429	446	81-82	26	30
36-37	1,349	1,352	59-60	398	416	82-83	20	23
37-38	1,300	1,303	60-61	369	387	83-84	14	18
38-39	1,251	1,255	61-62	342	359	84-85	9	14
39-40	1,202	1,207	62-63	316	333	85-86	7	10
40-41	1,153	1,160	63-64	291	307	86-87	5	7
41-42	1,105	1,113	64-65	266	282	87-88	4	5
42-43	1,057	1,067	65-66	243	259	88-89	3	3
43-44	1,009	1,021	66-67	221	237	89-90	1	2
44-45	962	976	67-68	201	216	90-91	..	1
45-46	917	932	68-69	182	195	91-92	..	1
46-47	874	889	69-70	163	176			

TABLE D  
LIFE TABLE, BARODA STATE  
(MALES)

AGE x	Living at age x	Dying between ages x and x + 1	Mortality per cent	Living between ages x and x + 1	Living above age x	Mean after Lifetime at age x	AGE x
1	2	3	4	5	6	7	8
0	1,00,000	25,762	25.76	79,623	2,765,591	27.66	0
1	74,238	5,657	7.62	71,270	2,685,968	36.18	1
2	68,581	2,733	3.98	67,094	2,614,698	38.13	2
3	65,848	2,110	3.20	64,698	2,547,604	38.69	3
4	63,738	1,360	2.13	62,987	2,482,906	38.96	4
5	62,378	1,027	1.64	61,807	2,419,919	38.79	5
6	61,351	873	1.42	60,878	2,358,112	38.44	6
7	60,478	774	1.28	60,071	2,297,234	37.98	7
8	59,704	755	1.26	59,318	2,237,163	37.47	8
9	58,949	702	1.19	58,595	2,177,845	36.94	9
10	58,247	600	1.03	57,946	2,119,250	36.38	10
11	57,647	484	.84	57,405	2,061,304	35.76	11
12	57,163	373	.65	56,976	2,003,899	35.06	12
13	56,790	328	.58	56,626	1,946,923	34.28	13
14	56,462	308	.54	56,308	1,890,297	33.48	14
15	56,154	298	.53	56,005	1,833,989	32.66	15
16	55,856	342	.61	55,685	1,777,934	31.83	16
17	55,514	403	.72	55,313	1,722,299	31.02	17
18	55,111	445	.81	54,888	1,666,986	30.25	18
19	54,666	502	.92	54,415	1,612,098	29.49	19
20	54,164	550	1.01	53,889	1,557,683	28.76	20
21	53,614	584	1.09	53,322	1,503,794	28.05	21
22	53,030	654	1.23	52,703	1,450,472	27.35	22
23	52,376	667	1.27	52,043	1,397,769	26.69	23
24	51,709	684	1.32	51,367	1,345,726	26.02	24
25	51,025	707	1.38	50,672	1,294,359	25.37	25
26	50,318	715	1.42	49,961	1,243,687	24.72	26
27	49,603	747	1.50	49,229	1,193,726	24.07	27
28	48,856	793	1.62	48,460	1,144,497	23.43	28
29	48,083	815	1.69	47,655	1,096,037	22.80	29
30	47,248	844	1.78	46,826	1,048,382	22.19	30



TABLE D—concl'd.

Age x	Living at age x	Dying between ages x and x + 1	Mortality per cent	Living between ages x and x + 1	Living above age x	Mean after Lifetime at age x	Age x
1	2	3	4	5	6	7	8
31	46,404	907	1.95	45,950	1,001,556	21.58	31
32	45,497	985	2.17	45,004	955,606	21.00	32
33	44,512	1,048	2.35	43,988	910,602	20.46	33
34	43,464	1,088	2.46	42,930	866,614	19.94	34
35	42,396	1,133	2.67	41,830	823,684	19.43	35
36	41,263	1,174	2.84	40,676	781,854	18.95	36
37	40,089	1,195	2.98	39,491	741,178	18.49	37
38	38,894	1,214	3.12	38,287	701,687	18.04	38
39	37,630	1,236	3.28	37,062	663,400	17.61	39
40	36,444	1,239	3.40	35,824	626,338	17.19	40
41	35,205	1,244	3.53	34,583	590,514	16.77	41
42	33,961	1,270	3.74	33,326	555,931	16.37	42
43	32,691	1,274	3.90	32,054	522,605	15.99	43
44	31,417	1,248	3.97	30,793	490,551	15.61	44
45	30,169	1,201	3.98	29,568	459,758	15.24	45
46	28,963	1,190	4.11	28,373	430,190	14.85	46
47	27,778	1,182	4.25	27,187	401,817	14.47	47
48	26,596	1,167	4.39	26,013	374,630	14.09	48
49	25,429	1,151	4.53	24,853	348,617	13.71	49
50	24,278	1,134	4.67	23,711	323,764	13.34	50
51	23,144	1,109	4.79	22,590	300,053	12.96	51
52	22,035	1,098	4.98	21,486	277,463	12.59	52
53	20,937	1,083	5.17	20,395	255,977	12.23	53
54	19,854	1,064	5.36	19,322	235,582	11.87	54
55	18,790	1,039	5.53	18,271	216,260	11.51	55
56	17,751	1,013	5.71	17,244	197,989	11.15	56
57	16,738	991	5.92	16,243	180,745	10.80	57
58	15,747	981	6.23	15,256	164,502	10.45	58
59	14,766	970	6.57	14,281	149,246	10.10	59
60	13,796	907	6.57	13,343	134,965	9.78	60
61	12,889	872	6.76	12,453	121,622	9.43	61
62	12,017	844	7.02	11,595	109,169	9.08	62
63	11,173	854	7.64	10,746	97,574	8.73	63
64	10,319	814	7.89	9,912	86,828	8.41	64
65	9,505	779	8.19	9,115	76,916	8.09	65
66	8,726	745	8.54	8,354	67,801	7.77	66
67	7,981	712	8.92	7,625	59,447	7.45	67
68	7,269	679	9.34	6,929	51,822	7.13	68
69	6,590	644	9.77	6,268	44,893	6.81	69
70	5,946	610	10.26	5,641	38,625	6.49	70
71	5,336	576	10.80	5,048	32,984	6.18	71
72	4,760	543	11.41	4,489	27,936	5.87	72
73	4,217	508	12.05	3,963	23,447	5.56	73
74	3,709	473	12.75	3,472	19,484	5.25	74
75	3,236	433	13.57	3,017	16,012	4.95	75
76	2,797	406	14.52	2,594	12,995	4.65	76
77	2,391	371	15.52	2,205	10,401	4.35	77
78	2,021	339	16.77	1,852	8,196	4.05	78
79	1,682	304	18.07	1,530	6,344	3.77	79
80	1,378	270	19.59	1,243	4,814	3.49	80
81	1,108	237	21.39	990	3,571	3.22	81
82	871	204	23.42	769	2,581	2.96	82
83	667	172	25.79	581	1,812	2.72	83
84	495	140	28.28	425	1,231	2.49	84
85	355	110	31.00	300	806	2.27	85
86	245	84	34.29	203	506	2.06	86
87	161	60	37.27	131	303	1.88	87
88	101	41	40.59	80	172	1.70	88
89	60	29	48.33	46	92	1.53	89
90	31	15	48.81	23	46	1.48	90
91	16	8	52.81	12	23	1.42	91
92	8	4	56.99	6	11	1.31	92
93	4	2	62.01	3	5	1.13	93
94	2	1	67.88	2	2	1.02	94
95	1	1	70.27	..	..	..	..

TABLE E

## LIFE TABLE, BARODA STATE

(FEMALES)

Age x	Living at age x	Dying between ages x and x + 1	Mortality per cent	Living between ages x and x + 1	Living above age x	Mean after Lifetime at age x	Age x
1	2	3	4	5	6	7	8
0	1,00,000	25,078	25.08	81,280	2,634,677	26.35	0
1	74,922	7,711	10.29	70,891	2,553,397	34.08	1
2	67,211	4,362	6.49	64,932	2,482,506	36.94	2
3	62,849	2,715	4.32	61,437	2,417,574	38.46	3
4	60,134	1,847	3.07	59,174	2,356,137	39.18	4
5	58,287	1,386	2.38	57,577	2,296,963	39.41	5
6	56,901	1,090	1.92	56,341	2,239,386	39.35	6
7	55,811	907	1.63	55,347	2,183,045	39.11	7
8	54,904	748	1.36	54,523	2,127,698	38.75	8
9	54,156	607	1.12	53,847	2,073,175	38.28	9
10	53,549	510	.95	53,290	2,019,328	37.71	10
11	53,039	424	.80	52,824	1,966,038	37.07	11
12	52,615	337	.64	52,444	1,913,214	36.36	12
13	52,278	272	.52	52,142	1,860,770	35.59	13
14	52,006	238	.46	51,897	1,808,628	34.77	14
15	51,768	251	.48	51,643	1,756,741	33.93	15
16	51,517	283	.55	51,375	1,705,098	33.10	16
17	51,234	315	.61	51,077	1,653,723	32.28	17
18	50,919	352	.69	50,743	1,602,646	31.47	18
19	50,567	366	.72	50,384	1,551,903	30.69	19
20	50,201	395	.79	50,003	1,501,519	29.91	20
21	49,806	409	.82	49,602	1,451,516	29.14	21
22	49,397	436	.88	49,179	1,401,914	28.38	22
23	48,961	471	.96	48,725	1,352,735	27.63	23
24	48,490	511	1.05	48,235	1,304,010	26.89	24
25	47,979	528	1.10	47,715	1,255,775	26.17	25
26	47,451	556	1.17	47,173	1,208,060	25.46	26
27	46,895	591	1.26	46,599	1,160,887	24.75	27
28	46,304	651	1.41	45,979	1,114,288	24.06	28
29	45,653	698	1.53	45,304	1,068,309	23.40	29
30	44,955	759	1.69	44,575	1,023,005	22.75	30
31	44,196	809	1.83	43,792	978,430	22.14	31
32	43,387	870	2.01	42,952	934,638	21.54	32
33	42,517	942	2.21	42,046	891,686	20.97	33
34	41,575	1,020	2.45	41,065	849,640	20.43	34
35	40,555	1,081	2.67	40,014	808,575	19.93	35
36	39,474	1,114	2.82	38,917	768,561	19.47	36
37	38,360	1,117	2.91	37,801	729,644	19.02	37
38	37,243	1,120	3.01	36,683	691,843	18.57	38
39	36,123	1,125	3.11	35,560	655,160	18.13	39
40	34,998	1,130	3.23	34,433	619,600	17.70	40
41	33,868	1,133	3.35	33,302	585,167	17.28	41
42	32,735	1,141	3.49	32,165	551,865	16.85	42
43	31,594	1,144	3.62	31,022	519,700	16.45	43
44	30,450	1,132	3.72	29,884	488,678	16.04	44
45	29,318	1,121	3.82	28,758	458,794	15.64	45
46	28,197	1,108	3.93	27,643	430,036	15.25	46
47	27,089	1,092	4.03	26,543	402,393	14.85	47
48	25,997	1,081	4.16	25,456	375,850	14.46	48
49	24,916	1,071	4.30	24,381	350,394	14.06	49
50	23,845	1,064	4.46	23,313	326,013	13.67	50
51	22,781	1,056	4.64	22,253	302,700	13.29	51
52	21,725	1,046	4.81	21,202	280,447	12.91	52
53	20,679	1,035	5.01	20,161	259,245	12.54	53
54	19,644	1,021	5.20	19,133	239,084	12.17	54
55	18,623	1,001	5.38	18,123	219,951	11.81	55
56	17,622	979	5.56	17,133	201,828	11.45	56
57	16,643	956	5.74	16,165	184,695	11.10	57
58	15,687	936	5.97	15,219	168,530	10.74	58
59	14,751	903	6.12	14,299	153,311	10.39	59
60	13,848	889	6.42	13,404	139,012	10.04	60

TABLE E—concl.

Age x	Living at age x	Dying between ages x and x + 1	Mortality per cent	Living between ages x and x + 1	Living above age x	Mean after Lifetime at age x	Age x
1	2	3	4	5	6	7	8
61	12,959	836	6.45	12,541	125,608	9.69	61
62	12,123	829	6.84	11,708	113,067	9.33	62
63	11,294	825	7.30	10,882	101,359	8.97	63
64	10,469	775	7.40	10,081	90,477	8.64	64
65	9,694	738	7.61	9,325	80,396	8.29	65
66	8,956	708	7.90	8,602	71,071	7.94	66
67	8,248	717	8.69	7,890	62,469	7.57	67
68	7,531	676	8.98	7,193	54,579	7.25	68
69	6,855	642	9.37	6,534	47,386	6.91	69
70	6,213	620	9.98	5,903	40,852	6.58	70
71	5,593	590	10.55	5,298	34,949	6.25	71
72	5,003	560	11.19	4,723	29,651	5.93	72
73	4,443	528	11.88	4,179	24,928	5.61	73
74	3,915	494	12.62	3,668	20,749	5.30	74
75	3,421	456	13.32	3,193	17,081	4.99	75
76	2,965	426	14.37	2,752	13,888	4.68	76
77	2,539	387	15.24	2,345	11,136	4.39	77
78	2,152	356	16.54	1,974	8,791	4.09	78
79	1,796	322	17.93	1,635	6,817	3.80	79
80	1,474	288	19.54	1,330	5,182	3.52	80
81	1,186	254	21.42	1,059	3,852	3.25	81
82	932	218	23.39	823	2,793	3.00	82
83	714	184	25.77	622	1,970	2.76	83
84	530	150	28.30	455	1,348	2.54	84
85	380	119	31.32	320	893	2.35	85
86	261	83	31.80	219	573	2.20	86
87	178	62	34.83	147	354	1.99	87
88	116	43	37.07	95	207	1.78	88
89	73	33	45.21	56	112	1.53	89
90	40	20	50.33	30	56	1.41	90
91	20	11	54.78	15	26	1.29	91
92	9	5	57.99	6	11	1.24	92
93	4	2	61.77	3	5	1.18	93
94	2	1	66.01	2	2	1.09	94
95	1	1	71.03	..	..	..	..

## CHAPTER V

## SEX

## PART I

## GENERAL OBSERVATIONS

## § 1. ANALYSIS OF GENERAL FIGURES

**148. Scope of the Chapter**—Sex is a category with which almost all Tables are concerned. Except Imperial Table III which deals with towns and villages classified according to their population strength and Table XII which concerns itself exclusively with unemployment amongst educated males, every one of the Imperial Tables compiles results by sex. But this chapter is specially concerned with the sex ratio in different localities, religions and castes, the influences that operate in determining the variations and the extent to which these figures of sex may be utilised in gauging the accuracy of the enumeration. For the purpose of Part I of this chapter therefore the most important set of figures is that contained in Imperial Tables VII and VIII. Six Subsidiary Tables in the course of the discussion will be dealt with. There is another part to this chapter which will give the main results of the special enquiries made into the size and sex constitution of families and the question of comparative fertility.

**149. Accuracy of the Return**—Of all the questions contained in the schedule, sex admits of no possibility of doubt. Humourists were not wanting however at census meetings to enquire what should be done with eunuchs and hermaphrodites: although instructions issued were specific that such persons were to be entered as males. There was little trouble in the compilation of figures. Differentiation was begun from the very outset, as females were recorded on different coloured slips from males. There was no question therefore of any *omission* of entry of sex in the record, which needed rectification at the compilation stage. The compilation office does not also report a single instance of a person's sex being recorded wrongly. As to fears regarding the omission of females altogether from the record, these have been shown in previous Census Reports to be groundless. The difficulty of recording details regarding young women amongst castes and communities which observe the *purdah* was met by appointment of enumerators and supervisors from amongst these communities, who were available in this census in much larger numbers than before. The old prejudice against the census has died down; and wherever it has remained, it has taken the form, not of actual omission of young females from the returns but of falsifying perhaps of entries re: age and civil condition of girls of nubile ages.

**150. General Proportions of the Sexes by Natural Division**—The

DIVISION	Masculinity per 1,000 females	Femininity per 1,000 males
The State .. ..	1,061	942
The City .. ..	1,252	799
Baroda Prant.. ..	1,114	898
Amreli Prant .. ..	1,043	959
Mehsana Prant .. ..	1,030	971
Navsari Prant .. ..	1,010	990
Okhamandal .. ..	1,086	921

number of females in the State is on the whole less than that of males, *i.e.* by 72,627, or by 58 per 1,000 males. Males outnumber females by 252 per 1,000 females in the City. The sex comparisons of the other administrative divisions from the figures of the present census are indicated in the margin. As usual Navsari shows the closest approach to sex equality. Next to the City, the Baroda division shows the greatest

excess of males, followed by Okhamandal. The corresponding ratios for femininity are also shown side by side. The state of things in previous censuses since 1901 is shown in the following Table which also gives the sex ratios for the natural population, so far as it can be estimated from the defective data of birthplace returns :—

SUBSIDIARY TABLE I

## GENERAL PROPORTION OF THE SEXES BY NATURAL DIVISIONS

NATURAL DIVISION	NUMBER OF FEMALES TO 1,000 MALES							
	1931		1921		1911		1901	
	Actual population	Natural population	Actual population	Natural population	Actual population	Natural population	Actual population	Natural population
1	2	3	4	5	6	7	8	9
Baroda State .. ..	942	920	932	922	925	927	936	970
Baroda City .. ..	799	880	837	882	853	Not available	853	Not available
Central Gujarat excluding City.	898		886		872			
Kathiawad .. ..	953	861	934	868	940		939	
North Gujarat .. ..	971	943	953	942	947		956	
South Gujarat .. ..	990	976	990	987	982		992	

One significant feature of the above Table is that while the female ratio in the actual censused population has almost continuously risen since 1901, that for the estimated natural population in the whole State appears to have as significantly declined. The City female index (proportion of females per 1,000 males) has declined perceptibly since 1921, while everywhere else it has risen, so far as the actual population is concerned. The natural population figures for the separate administrative divisions are only available since 1921, but it is not possible in any case to isolate the City figures at all. Comparing however the available figures of natural population we find that the decline in the female index in the general population holds good in the different parts, except in North Gujarat, where it has remained almost stationary.

**151. Causes of Sex Variations**—Before the above variations can be properly understood, one must get a firm hold of the causes that generally affect the female index in different localities and amongst different classes of the population. Broadly the factors that govern are of two kinds from the point of view of the time element: permanent and temporary. The permanent factors are race, climatic and physical conditions and social customs, which latter modify the racial influence. The temporary factors are migration which affect the sex ratios vitally especially within a limited area like the State, and diseases and other causes which have a sex selection. Thus plague and influenza, it is notorious, select adversely against females. On the other hand, females used to have greater resisting power in the days when famines were wont to kill. The character of the racial factor is obscure, on account of the present state of knowledge of Indian caste origins. By it is meant however that the proportion of the sexes is a "character" of the line. As the late Mr. Sedgwick pointed out in the Bombay Census Report of 1921:

"The Indian endogamous caste with its exogamous divisions is a perfect method of preserving what is called in genetics the "pure line." The endogamy prevents external hybridisation, while the exogamy prevents the possibility of a fresh pure line arising within the old one by the isolation of any character not common to the whole line. With the preservation of the pure line the perpetuation of all characters common to it necessarily follows. And

there is no reason why sex-ratio should not be a transmissible character. An excess of either sex may in this view be caused either by (1) the birth of more of that sex than of the other or (2) the possession by the children of that sex of some character which tends to their preservation, probably greater resistance to certain diseases."

In order of importance, however, the factors of Race and Migration are of primary importance. To understand the first, one ought to have complete data of births and deaths and causes of deaths in different castes over a long term of years. To understand the incidence of the second, one should have accurate data of migration, so that we can isolate this factor and get at the true figures of natural population. In the birthplace returns, the figures of immigration are more complete and therefore more reliable. The influence of the regional factor is minor, as we find that even within a limited area, the sex ratios of different strata are widely varied, while even amongst castes of wide dispersions, the sex ratios in their natural population, where such can be estimated, tend to be the same wherever they are found, thus proving that the race is the dominant factor in this regard. But that climate and physical conditions do have a secondary effect was realised as early as 1891, when Sir Alexander Baines wrote in his Census Report of that year, that in coastal regions and hilly tracts the female index appeared to be higher, while in dry belts, it tended to be depressed. The late Mr. Sedgwick in his Bombay Report of 1921 stated that a low damp climate was more favourable to females and dry uplands to males. I concluded from a review of regional figures in 1921 \* that apart from disturbing circumstances like migration or social environment, it seemed true that propinquity to the sea and, to a less extent, the existence of hills and forests tended to lessen the proportion of males. The influence of social environment, and in particular, the operation of certain social customs like endogamy or enforced widowhood also had an important effect. Endogamy as pointed out just now, deepens the effect of race, while enforced widowhood, such as Hinduism enjoins on the higher castes, encourages longevity amongst females in the higher ages and this helps to raise the general female index. Social habits of diet imposed by religious or other influence on particular races or tribes tended after a long term of years to modify the female index.

**152. Influence of Locality on Sex Ratios**—Turning to the regional factor as being the most obvious and easily calculable, we see from the Subsidiary Table I that the female index (for the natural population only) in Central Gujarat is 880, in Kathiawad 861, in North Gujarat 943 and in South Gujarat 976. Everywhere of course this factor is dominated by the race factor and social environment. In Central Gujarat, for instance, the deficiency of females is largely due to race and social environment, the bulk of the population being of Rajput and Gujar strain with a selective predisposition towards males. In South Gujarat again, the basic population being Raniparaj, their aboriginal strain has a predominantly high female index, which is modified a little from time to time by the selective influence of epidemics. The City ratio is governed largely by immigration from non-contiguous areas (which has a predominance of males). South Gujarat, North Gujarat and Kathiawad ratios are influenced also by migration of the contiguous type (where females predominate). That is why the female index for the actual population is higher than for the natural. Taking the selected

NAME OF TRACT	Proportion of females to 1,000 males in	
	1931	1921
I. Sea Coast Areas .. .. .	1,013	999
II. Hilly and Forested Areas ..	930	931
III. Dry belts .. .. .	977	959
IV. All other are as without City	914	902
V. Natural population .. .	920	922

areas as in the margin we compare the respective female indices for the last two censuses. The Sea Coast areas include besides Okhamandal and Kodinar, Navsari and Gandevi talukas also. Class II consists of the Rani mahals, Mangrol, Dhari and Khambha. Class III includes the whole of Mehsana *prant* except Trans-Sabarmati and the parts of Kathiawad not comprised in the first two classes. The comparative

\* Baroda Census Report of 1921, para 229.

ratios confirm the conclusions that the female index is decidedly high in coastal regions: that hilly regions do weight the figures in favour of females, wherever the race factor can be eliminated. The dry belts however upset the generally believed theory that damp climates select adversely against males and dry climates do the reverse. The decade has been drier than the previous one, particularly in the areas selected, and yet the female index there has risen. In the greater part of Mehsana *prant*, the movement of population has been governed as pointed out in the opening chapter, by natural causes. Here the generally high female index has been helped by the absence of epidemics that select against females. That is why this index has actually risen by one point in the natural population of this *prant* although in other parts of the State it has declined.

**153. Influence of Race and Function—(a) Race**—Coming to the factors of Race and Function—closely allied from times immemorial in the organisation of Indian communities,—the most important question is whether cross-breeding has an effect in lowering the female index. Mr. S. de Jastrzebski, beginning with a caution against the danger of building conclusions on imperfect data hazarded his personal opinion\* that the effect of cross-breeding on the masculinity of the offspring depended probably on the nature of the cross. In 1921, the composition of the State population was analysed according to certain well-known types and the tentative conclusion was reached that the greater and more obvious was the cross the lower was the female index. In the margin the chief race groups according to the classification favoured in this Report are shown—for the details included in each, the reader must refer to the Chapter on Caste—and the female index is compared for the last two censuses.

RACE ELEMENT	Female index in—	
	1931	1921
<i>Hindu and Tribal—</i>		
1. Aboriginal .. .. .	965	963
2. Aryo Aboriginal .. .. .	918	909
3. Aryan		
(i) Typical Gujarati .. .. .	973	966
(ii) Rajput and Gujar strain ..	920	907
<i>Musalman—</i>		
1. Foreign Strain .. .. .	873	898
2. Local converts .. .. .	987	984
<i>Parsi</i> .. .. .	1,321	1,323

Part of the Muslims with foreign strain are influenced by the migration factor, as they are immigrants with a deficiency of females. The Rajput and Gujar ratio is small, because the cross-breeding is here conjoined to the factor of race, by which these ethnic strains are from the beginning presumably weighted against females. The higher elements amongst the Rajput and the Gujar have a pure line but hypergamy prevalent amongst them helps to increase this racial tendency towards masculinity. The local converts amongst Musalmans are largely traders, the bulk of whose adult males suffer depletion through emigration—that is one of the reasons why the female ratio is high. But apart from this, it is undoubted that these Neo-Muslims are isolated groups, more or less like Hindu castes and marrying amongst themselves. There is less race admixture therefore amongst them than amongst the foreign elements, who have freely intermarried with the indigenous population. The Parsis have kept the racial character intact, but the high female ratio in this State is due largely to the absence of their adult males away on business or other employment. Apart from these disturbing circumstances, the general proposition would seem to hold good that the purer the line, the higher the femininity, except where the original predisposing ethnic tendency is towards an excess of males at birth. Thus the aboriginals, native to the soil, and such of the Kolis as have a high admixture of the Bhil blood like the Talabda show a comparatively high ratio of females. Amongst the Raniparaj, the Dubla, Dhodia, Bhil, Nayakda and Chodhra may be classed in order of their purity of aboriginal blood. The female ratio is in direct correlation to this order. Brahmans and Vantias generally show a high female index also.

(b) *Function*—Function seems also to join with race in governing sex-variations. The typically artisan groups show a high ratio of females. Where it is depressed, as amongst the Sonis (933), there the race—*i.e.*, their Gujar strain—affects

\* M. S. de Jastrzebski, *Sex Ratio at Birth*.

FUNCTIONAL GROUPS	Female Index in	
	1931	1921
<i>I Land holding—</i>		
Lewa .. .. .	872	857
Anavala .. .. .	926	889
Kadwa .. .. .	977	957
Rajput .. .. .	909	906
<i>II Artisan Groups—</i>		
Darji .. .. .	1,087	1,064
Chamar .. .. .	1,038	979
Valand .. .. .	1,030	962
Vankar .. .. .	1,027	1,031
Luhar .. .. .	1,020	1,024
Kumbhar .. .. .	978	951
Bhavsar .. .. .	999	1,048
Ghanchi .. .. .	952	944
Sutar .. .. .	956	917
<i>III Labouring Groups—</i>		
Thakarda .. .. .	900	876
Vaghri .. .. .	906	884
<i>IV Trading Groups—</i>		
Vania .. .. .	954	961
Luhana .. .. .	955	990
Vohra .. .. .	1,062	1,045
Memon .. .. .	1,016	967
<i>V Professional and Learned—</i>		
Nagar .. .. .	1,015	1,039
Audich .. .. .	974	970
Saiyad .. .. .	937	965
Parsi .. .. .	1,321	1,323

the proportions. The land-holding groups, including the Anavalas, have a relatively low female ratio. So also have the typically labouring classes like the Thakarda and Vaghri women as they have to work as hard as their men for living and are necessarily short-lived. Finally the trading groups and the professional classes have a high proportion of women. But a study of sex variations can only be properly undertaken when each factor influencing can be isolated and its implications analysed in detail. The margin collects the principal figures of the female index from columns 1 and 2 of Subsidiary Table II given at the end of this part of the chapter and compares them to corresponding figures of 1921.

#### 154. Religion and Sex Ratios—

The religious distribution has only an indirect and remote influence on the female index. Where its spread has become really effective, the particular social observances of a religion may have an indirect effect on the figures: the case of enforced widowhood has been cited already. The special customs of Islam, with its insistence on seclusion of women, cousin marriages, non-vegetarian diet and other features, may have to some extent reacted adversely on the life of its women. Similarly Hinduism by absorbing tribes like the Raniparaj on the fringes of its dominion may react on their sex composition by imposing its will on their social observances, diet, habits of drink and so on. Again the fact that certain faiths are more urban in their composition than others has an indirect consequence on their masculinity. Some of these reactions may be studied from the figures collected for three censuses in Subsidiary Table II, and of the regional variations of the female index by age in Subsidiary Table III (both printed at the end of this part).

YEAR	Raniparaj female index	Tribal female index
1891 ..	963	968
1901 ..	968	971
1911 ..	965	961
1921 ..	958	955
1931 ..	959	978

The Raniparaj for example have become progressively Hinduised in the last four decades: and their female index has similarly declined as will appear from the inset. The 1931 figure shows an increase of only one per mille, but on the other hand the Tribal female index has jumped from 955 to 978. Thus amongst the residue of the tribes, which is really outside Hinduism there is now in evidence a higher

RELIGION	FEMALE INDEX			
	50-60		60 and over	
	1931	1921	1931	1921
Hindu .. .. .	891	870	978	1,080
Jain .. .. .	1,011	970	990	1,156
Muslim .. .. .	917	808	975	1,031
Tribal .. .. .	778	874	943	858

proportion of females than in 1921, when the Tribal total included a large number of persons who were influenced by Hindu social contacts. Taking the Raniparaj of Central Gujarat, who have been completely Hinduised in this census, their female ratio is only 943. Thus Hinduisation apart from the inevitable racial admixture which it brings with it, does lower femininity with these tribes. Again



taking the figures by age-periods, the relative longevity of Hindu and Jain women as compared with the females of other religions is evident from the inset, particularly Jain women, as widowhood amongst them is strictly enforced. The Tribal index is the lowest for these ages, as the Raniparaj are the least long-lived amongst the State population.

### 155. Variations in Sex Proportions in the Different Religions—

Subsidiary Table II gives the variations in the female index for the last three censuses. As figures of natural population distributed by religion are not available, these ratios are not calculated therefor, but in that respect, the sex ratios of the respective religions for all-India (provisional census figures) may be compared with those of our State. The all-India figures may be accepted as the natural female index for the respective religions. The only figures comparable are those of Tribal aborigines, as they are least affected by migration, and their female index is governed by race, social environment and religious influences. They are more Hinduised and probably with their Hinduisation, they have suffered more cross breeding than their congeners in other parts of the country. That Parsis and Jains of the State are affected more by emigration seriously differentiating against their males

RELIGION	FEMALE INDEX	
	Baroda	India
Hindu .. ..	940	951
Musalman .. ..	948	901
Tribal .. ..	978	1,008
Jain .. ..	970	951
Parsi .. ..	1,321	947

than by any other cause is also seen from comparison with the all-India figures. But racially, they are predisposed towards sexual parity. Amongst Hindus and Muslims, the range of ethnic differences covered under each of these communal designations is too wide to admit of any theorising on sex from the figures of variations in the female index from year to year: the Baroda Hindus have more masculinity, because perhaps their governing Rajput and Gujar strain favours such a tendency, while the Muslims of the State have less than in India generally because of the conjoint effects of racial admixture and emigration.

Name of Country	Female Index
India .. ..	940
Madras .. ..	1,021
Hyderabad .. ..	961
Mysore .. ..	955
Baroda State .. ..	942
Bengal .. ..	924
Bombay .. ..	908
British Gujarat .. ..	906
England and Wales (1921)	1,096
Italy (1921)	1,028
Germany (1925)	1,067
Portugal (1920)	1,112

### 156. Sex Ratio in the State compared to other States and Provinces—

It will be of interest to compare the general condition of sex differentiations obtaining in the State with the female index of other states and countries. The marginal figures show the comparative ratios for all-India, certain other Indian states and provinces and a few countries of western Europe. The female index here is higher than in British Gujarat and Bombay generally.

than in British Gujarat and Bombay generally.

## § 2. ANALYSIS BY AGE PERIODS

**157. Sex by Age Periods—(a) By Locality—**The general discussion on variations of the female index by age-periods may be now resumed. The margin gives the proportion of females in the age periods, 0-15 and 50 and over calculated on 1,000 males. It also shows comparative

DIVISION	FEMALE INDEX						
	0-15	15-50	50 and over	1931		1921	
				0-30	30-	0-30	30-
Baroda State ..	929	955	928	948	932	927	941
Baroda City ..	876	733	963	803	792	836	839
Central Gujarat ..	903	906	844	913	870	889	881
North Gujarat ..	935	1,002	966	963	986	930	994
South Gujarat ..	963	1,015	952	1,013	945	1,009	956
Kathiawad ..	934	956	1,019	949	961	931	939

comparative figures for 0-30 and 30 and over for two censuses. The average for the whole population is 942 females per 1,000 males. In the middle age-group, however, the sexes approach equality in North and South Gujarat so that an increase in birth rate may at first sight be presumed in the near future in those areas. Taking a middle line at 30 the female index above and below this age is instructive. Everywhere the index for below 30 has increased, and for above 30, has declined except in the City where both age-groups show a decline in the female index, indicating that the increase recorded there has been largely through male immigrants of young as well as of adult ages.

(b) *The Child Population*—The figures here are of great interest for many reasons. In the first place they serve to show how far masculinity at birth is operative in different communities; secondly they help to throw light on the truth or otherwise of the allegation that infanticide still prevails and serves as a potent cause for the smallness of the figures of female children. The proportions for the different religions are reckoned on quinary groups (Subsidiary Tables II and III), while those for different castes are based on septenary and ternary ages (0-6, 7-13, 14-16, 17-23, 24-43 and 44 and over). The female proportions

RELIGION	FEMALE INDEX IN			
	0-5		5-10	
	1921	1931	1921	1931
Hindu .. ..	1,007	977	895	897
Jain .. ..	1,004	946	933	925
Muslim .. ..	1,019	977	928	912
Tribal .. ..	1,040	1,085	898	969

in children under 10 in the four principal religions are compared in the margin for the last two censuses. For the two ages combined together, the female index may be compared to the proportion of female births to male in the last two decades. Thus in 1911-21, the female ratio of births was 890, while the female index for the average child population of the decade was 1,005, and the corresponding ratios for 1921-31

are 895 and 991, showing that if the census record of age was at all correct, and the margin of error in registration of births was the same for both these sexes, the masculinity at birth was relatively very high compared to the ratio of survival. But both these assumptions require large reservations. Female births, it is notorious, escape registration, more than male, while the proper age distribution of persons living at these ages below 10 would require correction of the heaping which occurs in the crude returns at 5 and 10 years. The Life Table (*vide* Tables D and E of Part II-Chapter IV) gives specific mortality rates for individual ages up to 10. The margin gives these rates and also the female index for age-periods, 0-1, 1-5 and 5-10 and 0-10 from smoothed frequencies in each sex as calculated in Table VI of the above-mentioned Life Table Report (*vide* para 130 *supra*).

AGE	Normal mortality Rate per cent for		Female Index
	Males	Females	
0-1	25.76	25.08	971
1-2	7.62	10.29	
2-3	3.98	6.49	
3-4	3.20	4.32	
4-5	2.13	3.07	
5-6	1.64	2.38	901
6-7	1.42	1.91	
7-8	1.28	1.63	
8-9	1.26	1.36	
9-10	1.19	1.12	
	Absolute figures of age distribution		945
0-1	42,791	41,553	
1-5	141,768	138,952	
5-10	161,164	145,162	
0-10	345,723	326,667	

These frequencies have been reduced to absolute figures and the female index calculated thereon. The specific mortality rates per cent of females, it will be seen, are higher than males for every year of these, except for the infant periods (0-1), when males are more exposed to risk of death than females. But this advantage with the female sex is only temporary as the specific mortality rate for that sex becomes greater in the succeeding years of life almost till the end of the period under consideration (*i.e.*, age-group 9-10) when the death rate for females becomes slightly lower than for males. With a lower mortality rate, the female index at 0-1 is 971, so that at birth the sex ratio must be presumed to be even more weighted against females than this. Applying

the distinctive death rates for each sex at 0-1 and calculating on the basis of the sex ratio of 971 we get the following equation for the Female Index at Birth :—

Female Index at Birth =  $\frac{971}{74.98} \times 74.24$  or 961.4. This ratio may be compared with 945, the female index for 0-10, i.e., for the survivors of the births in the decade. These proportions are important to remember, when we correlate sex ratios of the census with vitality returns. The second point of interest in connection with the child population concerns the allegation about infanticide. It was suggested recently by a writer in *The Times of India* that the practice of infanticide (*dudhpiti*) was still prevalent amongst certain castes, because otherwise the paucity of females amongst them could not be accounted for. In the marginal table the proportion of females per 1,000 aged 0-6 in the present census is compared to similar proportions for the age-period 0-5 in the Censuses of 1921 and 1911. It is to be seen that the female proportion in these ages is sensibly rising in the castes amongst whom infanticide is said to have been once rife. The Rajput proportions are almost the same as in any other caste,—whatever difference there is may be ascribable more to reasons of race, social conditions, the greater neglect of female life, the effect of early marriage, and the like than to infanticide. Amongst the Lewa Patidar, the almost universal prevalence of education in Charotar has extinguished the custom of infanticide. It is possible that a case or two may occur amongst the poorest and the most improvident sections of the community, but these are so rare that they do not affect the figures at all. But the deficiency of females in that caste is still serious and deserves a far more closer study than this Report can give.

CASTE	FEMALE INDEX		
	Aged 0-6 (1931)	Aged 0-5 (1921)	Aged 0-5 (1911)
Lewa Patidar ..	912	886	909
Rajput .. ..	925	928	904
Wagher .. ..	1,085	1,020	766

(c) *The Adolescent Age Groups*—Coming to age-periods 10-15 and 15-20 in the different religions and 7-13, 14-16 and 17-23 in the different castes, we find the female index rising amongst Hindus and Muslims since 1911. Jains show an increase in the latest census. The Tribals show a decline in 10-15 and increase in 15-20. It was the depression at this point that occasioned von Mayr's famous *tirade* against the Indian Census which he suspected of being vitiated by large omissions of females of nubile ages. But this depression is largely due to misstatements of age (more wilful than accidental) which result in deliberate heaping at the earlier age group in the case of unmarried and similar excess for the married at the next higher group. The marginal table, if compared with figures of 0-5 given above shows definite heaping at the younger age-group. The depression in the age-group 10-15 was more marked in the earlier censuses than in the later when it seems to have transferred itself to the higher age-group, i.e., 15-20, thus showing that the age of marriage is rising. The inflation at 5-10 seems to have declined a little also, possibly due to the fact that girls really aged 5-10 were returned in the next higher group in the fond hope of avoiding the penal provisions of the Infant Marriage Prevention Act. On the other hand, there is a smoother progression in the ages 0-30 in the last five censuses, showing that the female index is sensibly rising in those ages. But that there is still a marked deficiency which is real in some cases in the age-group 10-20 cannot be doubted and is illustrated in the figures of castes in age-groups 7-13, 14-16 and 17-23. The

YEAR	HINDU			MUSLIM		
	10-15	15-20	0-30	10-15	15-20	0-30
1891	778	822	920	790	870	938
1901	822	842	898	833	906	936
1911	802	839	904	844	881	936
1921	888	799	917	898	928	952
1931	897	963	945	910	988	955

CASTE	FEMALE INDEX			
	7-13	14-16	17-23	All ages
<i>Advanced</i> .. ..	838	892	941	920
Brahman .. ..	919	904	927	929
Lewa Patidar .. ..	854	858	893	872
Sutar .. ..	944	891	1,002	956
<i>Intermediate</i> .. ..	929	959	1,010	962
Baria .. ..	845	757	987	892
Kadwa Patidar .. ..	1,051	1,033	1,037	977
Chamar .. ..	917	1,052	1,060	1,038
Talabda .. ..	936	969	1,033	1,009
Vankar .. ..	919	994	1,086	1,027
<i>Illiterate</i> .. ..	874	889	1,032	935
Raniparaj .. ..	897	952	1,166	962
Thakarada .. ..	841	817	897	900
<i>Purdah Castes</i> .. ..				
Maratha .. ..	780	839	765	799
Rajput .. ..	847	996	865	909
Pathan .. ..	826	922	812	825
Shaikh .. ..	879	937	875	868

female index in these groups is compared in the margin with the general female index in these castes. The Advanced, Intermediate and Illiterate sections are separately compared with each other, typical castes under each being also shown. A separate group of typical *purdah* castes is also included. The 17-23 group is generally overstocked with females, while the lower ones show a depletion. In the general population, taking the smoothed returns by sex, the proportion of females is uniformly less than males from 12 onwards, until 17, when the female index is higher than that of

males right on till the 30th year (*vide* Table VI of the Life Table Report—Part II of Chapter IV). The specific mortality rate per cent for females in individual ages in the adolescent group is also uniformly less than that for males. That is why the general female index is higher as the age grows higher: this feature is seen in the caste groups collected above, except amongst the *purdah* castes. The Pathan and Maratha ratios are complicated by the migration factor and therefore

AGE PERIOD	Mortality Rate per mille amongst Females	
	1931	1921
12-13 ..	6.4	7.2
13-14 ..	5.2	7.3
14-15 ..	4.6	7.8
15-16 ..	4.8	8.6
16-17 ..	5.5	9.5
17-18 ..	6.1	10.5

cannot be considered. In the Rajput there is a heaping at 14-16 and also at 24-43 as a reference to Subsidiary Table IV will show. The Lewa index shows that there is a general deficiency in all groups, but the least so in the ages 7-13 and 14-16 than in any other. The greatest deficiency occurs in those castes (*i*) where *purdah* and early motherhood are practised and (*ii*) where the race factor selects adversely to females. Comparison with previous censuses in respect of castes is not possible as the age-groups now selected are different, but the marginal figures generally show that the mortality rates are less now in

the nubile ages than before (Table E of 1931 and Table D of 1921), proving that the age of effective marriage is getting more and more postponed.

(*d*) *Adult Ages*—We may now see in the adult age-periods how the proportion of women works out in the three censuses. The proportion of women below 30 has risen, as already shown, but the female index for ages 30 and over has declined from 945 in 1911 to 941 in 1921 and 932 in this census. In the age-group 30-40

AGE PERIODS	FEMALE INDEX		
	1911	1921	1931
20-25 .. ..	979	1,024	989
25-30 .. ..	944	934	968
30-40 .. ..	925	926	945
40-50 .. ..	922	957	918
50-60 .. ..	929	869	896
60 and over .. ..	1,132	1,067	978
Total 30 and over .. ..	945	941	932

alone, the proportion shows a rise, but in the other groups there are fluctuations. Amongst the aged, (60 and over) women preponderated until the latest year when they again fell below the number of males. The female index of 1931 however generally shows an improvement on the state of things in 1911 except among persons aged 50 and over. The rise in the female index below 50 is no doubt due at least in part to improvement in health conditions, the

greater facilities for medical relief to women generally and for maternity relief in

particular. The absence since 1919 of epidemics with a selective tendency against females has also helped to bring about this result. Coming to individual social groups, longevity amongst females is marked in castes that enforce widowhood on their women and it declines amongst the poorer and less educated sections, where through greater neglect of female life, the aged women do not get a reasonable chance to live. Thus the Vania, Luhana and Rajput show the highest female index amongst persons aged 44 and over. The Raniparaj, by nature a short-lived people, show that their women are even less long-lived than their men.

CASTE.	FEMALE INDEX	
	All ages	44 and over
<i>Advanced</i> .. ..	920	901
Brahman .. ..	929	911
Vania .. ..	954	959
Luhana .. ..	955	964
Sayiad .. ..	937	959
<i>Intermediate</i> .. ..	962	938
Shaikh .. ..	868	886
Rajput .. ..	909	940
<i>Illiterate</i> .. ..	935	829
Raniparaj .. ..	962	814
Bhangi .. ..	955	885

### § 3. CORRELATION WITH VITALITY RETURNS

**158. The Female Index at Birth**—It will be of interest now to compare the sex ratio in vital occurrences. First we shall consider long term figures for births. As they are not compiled here for religions and castes separately, the variations in the female index in different localities will alone be considered. Subsidiary Table V gives the absolute figures of registered births since 1901 and the variations in the female index of births in the different divisions in the last decade. In the margin a summary of the principal proportionate figures is given. As they are calculated on registration figures, their value has to be discounted in view of the known inaccuracy of registration. If births generally are omitted from registration, female births suffer much more from this defect than males. But as the improvement in registration may be assumed to be progressive from decade to decade, the rise in the female index indicated in the margin must be put down to greater accuracy of record. Similarly the City ratio, which would, as it stands, imply a lower masculinity at birth than in other parts of the State, is entirely the result of better record there. On an accurate basis of births, masculinity at birth should be highest in the City instead of being the lowest as the registration figures would have us believe. Rejecting therefore the birth records as valueless, we must give greater attention to the female index at birth calculated from the corrected returns of age in para 157 (b) above. The female index as reckoned there—961.4 is more correct than 895 obtained from recorded births. Broadly reviewing the figures of four censuses, Prof. Mukherji in his Life Table graduated the age returns so that in his opinion, 36,555 female, and 36,209 male infants living in age 0-1 would be required to keep alive a population of the strength of this State. This gives a female index of 1,010. On this proportion, the sex ratio at birth would give a femininity of 1,000.03 (or almost sex parity). Similar calculations from the Life Table Report of 1921 give a rather low female ratio of 938. This would give a female index at birth of 939 on the infant mortality rates for the different sexes calculated in that year. Thus the long term tendency in the sex ratio of births seems to be towards parity. From the comparison of the two Life Table Reports one would imagine that this movement towards parity was accelerated in the last 10 years. But some allowance must be made for the difference in the methods pursued on the two occasions. Prof. Vaidyanathan in 1921 took the average of female births to male, then drew a smooth curve as suggested by the female index at birth, and also at successive age-groups. This method of procedure was different from Prof. Mukherji's on the present occasion, who has distributed the graduated returns of quinary groups by independent investigation of the returns of females. If this was done for 1921, possibly the female index would have been a little higher at birth than above indicated. In any case the movement towards parity is a fact which is worth remembering at the next census. Beyond this circumstance

Decade and Natural Division	Female Index at Birth
<b>Decade</b>	
1901—10 ..	881
1911—20 ..	890
1921—30 ..	895
<b>Natural Division</b>	
Central Gujarat ..	877
City ..	912
North Gujarat ..	877
South Gujarat ..	947
Kathiawad ..	912

there is little from the birth returns, that goes to confirm Mr. S. de Jastrzebski's theories (i) that masculinity at birth is affected by race, and (ii) that it is greater in rural than in urban population. We shall see whether any further light is thrown on this subject in the next part by the facts disclosed by our special enquiry into comparative fertility.

**159. The Sex Ratio at Death**—The mortuary returns are relatively more accurate than the record of entrances to life. A study of long term figures of registered deaths does not however disclose any special features. The decade closed by the present census was not remarkable for the incidence of any epidemics that had a selective tendency against females. The small-pox deaths at the end of the decade indeed showed a slightly higher rate for females than for males. But the general female index for deaths in the year of the small-pox epidemic (1930) was only 894. The general index for the decade was only 875. The decade previous was marked by influenza and plague, both of which were fatal to women. The recorded death rates respectively from these causes for females were 36.3 and 14.5 per mille, while the male proportions were 34.3 and 12.6. These ratios however

AGE PERIOD	Female Index in average number of deaths	
	1931	1921
0—1 ..	861	869
1—5 ...	917	906
5—10 ..	914	942
10—15 ..	965	1,019
15—20 ..	1,110	992
20—30 ..	1,133	1,062
30—40 ..	905	1,010
40—50 ..	684	781
50—60 ..	646	767
60 and over ..	895	999
All ages	875	904

were by no means illustrative of the specially selective virulence of these visitations as the registration was defective in the matter of female deaths. The City registration is the most accurate in the State and in 1911-21 the female index was 987; in 1921-31, the female index was 917. Thus the lives of women seem to be proportionately less exposed to the risk of death now than in previous decades. Studying the figures by age-periods, for two censuses, this diminishing liability of women to death becomes more evident: while the general female index is reduced by 29 per 1,000 males in the last ten years, the lower female index in the ages 10-15 and the higher one in the next age-group in 1931 is clearly indicative of the postpone-

ment of the age of effective marriage from 10-15 to 15-20. Beyond this general conclusion, the figures in the margin cannot be pressed to yield more definite results.

**160. Variations in the Female Index in Normal Mortality Rates since 1921**—But if the registered returns of death are riddled with defects which

AGE PERIOD	Normal Mortality Rates per cent			
	1931		1921	
	Male	Female	Male	Female
0—1 ..	25.76	25.08	29.66	29.59
1—5 ..	4.35	6.28	6.11	6.02
5—15 ..	1.05	1.20	1.31	1.16
15—50 ..	2.09	1.93	2.54	2.53
50 and over ..	7.23	7.06	7.71	7.43
All Ages ..	3.62	3.81	4.46	4.37
Female Index at death ..	989		913	

preclude them from becoming useful, it will be of interest to turn to the variation in the mortality rates calculated in the Life Table Reports of 1921 and 1931. In the margin are collected rates of mortality as normalised through a long term of years and calculated for the two censuses. In 1931, the advantage of the relatively healthy conditions is seen in the distinct improvement

in mortality rates at all periods particularly at the beginning and end of life. That this benefit has accrued more largely to women than to men is seen in the great improvement in the female index.

ADDITIONAL SUBSIDIARY TABLES

SUBSIDIARY TABLE II

NUMBER OF FEMALES PER 1,000 MALES AT DIFFERENT AGE PERIODS BY RELIGION AT EACH OF THE LAST THREE CENSUSES

Age	ALL RELIGIONS			HINDU		
	1931	1921	1911	1931	1921	1911
1	2	3	4	5	6	7
0-1 .. .. .	975	1,001	977	978	1,000	978
1-2 .. .. .	992	1,035	1,025	991	1,030	1,033
2-3 .. .. .	1,024	1,074	1,003	1,022	1,068	1,000
3-4 .. .. .	985	1,064	1,077	983	1,077	1,079
4-5 .. .. .	918	910	936	912	893	924
<b>Total 0-5</b> .. .. .	<b>978</b>	<b>1,018</b>	<b>1,000</b>	<b>977</b>	<b>1,007</b>	<b>999</b>
5-10 .. .. .	901	899	846	897	895	835
10-15 .. .. .	900	889	817	897	888	802
15-20 .. .. .	968	827	854	963	799	839
20-25 .. .. .	989	1,024	979	985	982	962
25-30 .. .. .	968	934	944	969	929	939
<b>Total 0-30</b> .. .. .	<b>948</b>	<b>927</b>	<b>914</b>	<b>945</b>	<b>917</b>	<b>904</b>
30-40 .. .. .	945	926	925	946	925	920
40-50 .. .. .	918	957	922	915	962	928
50-60 .. .. .	896	869	929	891	870	932
60 and over .. .. .	978	1,067	1,132	978	1,080	1,031
<b>Total 30 and over</b> .. .. .	<b>932</b>	<b>941</b>	<b>945</b>	<b>930</b>	<b>943</b>	<b>945</b>
<b>Total all ages (Actual Population)</b> .. .. .	<b>942</b>	<b>932</b>	<b>925</b>	<b>940</b>	<b>927</b>	<b>919</b>
<b>Total all ages (Natural Population)</b> .. .. .	<b>920</b>	<b>922</b>	<b>927</b>	Not available		

AGE	MUSLIM			TRIBAL			JAIN		
	1931	1921	1911	1931	1921	1911	1931	1921	1911
1	8	9	10	11	12	13	14	15	16
0-1 .. .. .	945	1,005	960	1,019	1,011	999	925	933	954
1-2 .. .. .	983	1,019	983	1,111	1,110	969	937	1,105	1,136
2-3 .. .. .	1,013	1,078	1,034	1,180	1,144	1,041	981	1,033	970
3-4 .. .. .	991	1,044	1,048	1,095	993	1,085	962	1,008	1,080
4-5 .. .. .	959	959	985	1,033	1,009	1,004	914	1,014	1,005
<b>Total 0-5</b> .. .. .	<b>977</b>	<b>1,019</b>	<b>1,002</b>	<b>1,085</b>	<b>1,040</b>	<b>1,023</b>	<b>946</b>	<b>1,004</b>	<b>1,009</b>
5-10 .. .. .	912	928	884	969	898	909	925	933	878
10-15 .. .. .	910	898	844	942	895	955	915	876	899
15-20 .. .. .	988	928	881	1,161	1,030	1,083	953	894	852
20-25 .. .. .	1,008	1,027	1,007	1,167	1,338	1,221	993	1,059	1,059
25-30 .. .. .	946	927	966	967	965	947	1,008	976	988
<b>Total 0-30</b> .. .. .	<b>955</b>	<b>952</b>	<b>936</b>	<b>1,040</b>	<b>996</b>	<b>1,007</b>	<b>952</b>	<b>949</b>	<b>948</b>
30-40 .. .. .	938	953	966	889	889	896	1,005	1,028	1,009
40-50 .. .. .	923	947	876	807	864	812	995	1,032	1,033
50-60 .. .. .	917	808	900	778	874	809	1,011	970	993
60 and over .. .. .	975	1,031	1,116	943	858	1,028	990	1,156	1,316
<b>Total 30 and over</b> .. .. .	<b>935</b>	<b>934</b>	<b>944</b>	<b>848</b>	<b>876</b>	<b>870</b>	<b>1,001</b>	<b>1,035</b>	<b>1,048</b>
<b>Total all ages (Actual Population)</b> .. .. .	<b>948</b>	<b>945</b>	<b>939</b>	<b>978</b>	<b>955</b>	<b>961</b>	<b>970</b>	<b>984</b>	<b>987</b>
<b>Total all ages (Natural Population)</b> .. .. .	Not available			Not available			Not available		

## SUBSIDIARY TABLE III

NUMBER OF FEMALES PER 1,000 MALES AT DIFFERENT AGE PERIODS BY  
RELIGIONS AND NATURAL DIVISIONS

AGE	CENTRAL GUJARAT					BARODA CITY					NORTH GUJARAT	
	All Religions	Hindu	Muslim	Jain	Christian	All Religions	Hindu	Muslim	Jain	Christian	All Religions	Hindu
1	2	3	4	5	6	7	8	9	10	11	12	13
0-1 .. ..	956	964	882	839	921	995	926	978	1,130	900	976	979
1-2 .. ..	970	972	945	986	959	974	968	1,004	1,143	833	992	994
2-3 .. ..	1,012	1,009	1,045	984	1,184	952	969	867	1,036	866	1,022	1,023
3-4 .. ..	963	958	1,039	884	1,000	924	949	835	882	750	985	985
4-5 .. ..	887	880	972	840	918	877	890	864	812	470	913	911
TOTAL 0-5 .. ..	957	957	969	902	979	949	958	912	1,006	767	977	978
5-10 .. ..	874	869	887	901	1,222	847	853	809	1,085	568	905	905
10-15 .. ..	868	865	861	889	1,302	822	826	825	852	441	915	913
15-20 .. ..	924	924	916	856	1,053	767	773	821	702	471	985	977
20-25 .. ..	942	942	945	922	948	735	745	752	728	600	1,019	1,010
25-30 .. ..	914	914	915	912	952	696	712	620	896	1,000	1,027	931
TOTAL 0-30 .. ..	913	912	917	897	1,082	803	812	790	860	604	963	949
30-40 .. ..	897	894	916	897	1,021	703	730	589	793	679	1,014	1,009
40-50 .. ..	865	863	882	898	873	770	800	686	684	439	974	969
50-60 .. ..	820	817	841	911	786	885	905	834	796	516	936	929
60 and over .. ..	881	882	895	835	597	1,094	1,111	1,007	1,266	818	1,014	1,014
Total 30 and over .. ..	870	868	889	892	893	792	817	698	799	585	986	982
Total all ages (Actual population) .. ..	897	896	907	895	1,022	800	814	756	838	598	971	967
Total all ages (Natural population) .. ..	880	..	..	..	..	..	..	..	..	..	943	..

AGE	NORTH GUJARAT		SOUTH GUJARAT					KATHIAWAD			
	Muslim	Jain	All Religions	Hindu	Muslim	Jain	Zoroastrian	Tribal	All Religions	Hindu	Muslim
1	14	15	16	17	18	19	20	21	22	23	24
0-1 .. ..	958	915	989	982	1,015	1,324	855	1,018	993	996	984
1-2 .. ..	997	887	1,029	1,026	1,003	1,322	792	1,111	1,001	998	1,006
2-3 .. ..	1,034	951	1,070	1,062	1,011	1,131	910	1,180	997	997	1,000
3-4 .. ..	979	1,006	1,039	1,036	1,008	902	972	1,094	964	960	1,000
4-5 .. ..	933	945	974	964	1,014	805	895	1,033	942	933	1,000
TOTAL 0-5 .. ..	978	936	1,020	1,013	1,010	1,079	896	1,084	984	978	977
5-10 .. ..	918	913	939	931	969	858	979	969	913	908	940
10-15 .. ..	947	921	939	934	970	946	1,048	942	896	893	914
15-20 .. ..	1,084	1,047	1,096	1,089	1,069	766	1,424	1,161	950	945	991
20-25 .. ..	1,122	1,085	1,113	1,105	1,105	727	1,735	1,166	992	984	1,057
25-30 .. ..	1,044	1,087	1,028	1,029	1,069	788	1,793	966	982	973	1,077
TOTAL 0-30 .. ..	1,002	985	1,013	1,007	1,024	880	1,217	1,040	949	944	985
30-40 .. ..	1,054	1,088	956	953	1,043	772	1,746	888	952	944	1,011
40-50 .. ..	982	1,101	920	910	1,072	667	1,788	806	911	904	962
50-60 .. ..	956	1,092	917	907	1,036	922	1,695	778	975	977	976
60 and over .. ..	989	1,059	1,004	992	1,066	842	1,290	942	1,079	1,091	1,022
Total 30 and over .. ..	1,005	1,089	945	939	1,053	767	1,618	848	961	957	992
Total all ages (Actual population) .. ..	1,003	1,024	990	984	1,034	839	1,379	978	953	948	987
Total all ages (Natural population) .. ..	..	..	976	..	..	..	..	..	861	..	..



## SUBSIDIARY TABLE IV

## NUMBER OF FEMALES PER 1,000 MALES FOR CERTAIN SELECTED CASTES

CASTE	NUMBER OF FEMALES PER 1,000 MALES						
	All Ages	0-6	7-13	14-16	17-23	24-43	44 and over
1	2	3	4	5	6	7	8
Advanced	920	941	888	892	941	938	901
Bhavsar	999	1,091	802	976	818	1,144	1,077
<i>Brahman</i>	929	957	919	904	927	940	911
Anavala	926	994	894	775	938	996	861
Audich	974	936	924	951	1,032	997	982
Deshastha	868	1,012	1,002	759	705	892	808
Mewada	882	1,003	829	878	757	921	875
Nagar	1,015	946	966	957	1,029	1,155	965
Tapodhan	998	964	878	957	1,085	1,016	1,087
Ghanchi	952	910	915	853	995	971	1,015
Lewa Patidar	872	912	854	858	893	887	827
Luhana	955	923	888	770	978	1,072	964
Maratha Kshatriya	799	859	780	839	765	705	993
Prabhu	981	1,085	1,043	1,188	804	1,020	802
Soni	933	901	901	992	978	906	989
Sutar	956	927	944	891	1,002	998	927
<i>Vania</i>	954	982	927	868	1,120	973	959
Disawal	955	855	870	916	1,034	1,036	955
Khadayata	899	1,117	942	934	828	845	819
Lad	897	924	916	892	793	897	944
Shrimali	1,018	1,048	958	938	1,042	1,048	1,015
<i>Muslim</i>	1,023	991	907	1,051	1,152	1,087	988
Memon	1,016	1,090	898	953	1,119	1,078	927
Saiyad	937	964	875	991	1,001	898	959
Vohra	1,062	981	930	1,136	1,229	1,167	1,010
Parsi	1,321	899	996	1,115	1,542	1,652	1,443
<i>Intermediate</i>	962	948	929	959	1,010	985	938
Anjana Chaudhari	954	1,005	927	970	885	913	1,052
Baria	892	934	845	757	987	949	807
Chamar	1,038	985	917	1,052	1,060	1,213	959
Kadwa Patidar	977	891	1,051	1,033	1,037	980	925
Kumbhar	978	975	925	933	984	1,039	963
Luhar	1,020	934	866	964	1,064	1,114	1,137
<i>Primitive and Forest Tribes (Hindu and Tribal)</i>	952	1,034	896	928	1,122	931	824
Chodhra	944	1,024	906	963	1,125	914	802
Dhodia	970	1,060	876	863	1,119	968	874
Rajput	909	925	847	996	865	916	940
Talabda	1,009	983	936	969	1,033	980	1,152
Valand	1,030	1,040	922	1,019	1,024	1,131	990
Vankar (Dhed)	1,027	976	919	994	1,086	1,158	987
<i>Muslim</i>	911	944	886	955	1,024	848	900
Molesalam	905	861	799	905	922	987	915
Pathan	825	954	826	922	812	753	812
Shaikh	868	919	879	937	875	810	886
Indian Christian	891	890	1,171	826	936	675	1,038
<i>Illiterate</i>	935	992	874	889	1,032	965	829
Bhangi	955	916	839	931	1,064	1,067	885
Bharwad	943	896	950	936	992	936	961
<i>Primitive and Forest Tribes (Hindu and Tribal)</i>	962	1,038	897	952	1,166	944	814
Bhil	963	1,113	910	1,007	1,094	920	778
Dubla	1,000	1,009	953	920	887	1,107	959
Nayakda	950	987	860	843	1,312	908	866
Talavia	967	960	869	1,006	1,151	1,089	765
Thakarda	900	988	841	817	897	974	784
Vagher	937	1,085	888	756	959	948	858
Vaghri	906	955	858	796	1,011	965	770

## SUBSIDIARY TABLE V

ACTUAL NUMBER OF BIRTHS AND DEATHS REPORTED FOR EACH SEX DURING  
THE DECADES 1901-1910, 1911-1920 AND 1921-1930

YEARS	NUMBER OF BIRTHS			NUMBER OF DEATHS			Difference between columns 2 and 3. Excess of latter over former (+) Defect (-)	Difference between columns 5 and 6. Excess of latter over former (+) Defect (-)	Difference between columns 4 and 7. Excess of latter over former (+) Defect (-)	Number of female births per 1,000 male births	Number of female deaths per 1,000 male deaths
	Male	Female	Total	Male	Female	Total					
1	2	3	4	5	6	7	8	9	10	11	12
1901	7,330	6,091	13,421	65,231	50,976	116,337	- 1,239	- 14,385	- 102,916	831	780
1902	22,422	19,598	42,020	30,684	27,214	57,898	- 2,824	- 3,470	- 15,878	874	887
1903	19,219	16,876	36,095	31,556	30,162	61,718	- 2,343	- 1,394	- 25,623	878	956
1904	20,994	16,736	37,730	33,262	31,630	64,892	- 2,258	- 1,632	- 25,162	892	951
1905	22,967	20,617	43,584	24,724	23,503	48,227	- 2,350	- 1,221	- 4,643	898	951
1906	22,782	20,101	42,883	24,352	21,869	46,221	- 2,681	- 2,483	- 3,398	882	898
1907	22,434	19,766	42,200	33,013	31,099	64,112	- 2,663	- 1,914	- 21,912	881	942
1908	24,986	22,347	47,333	25,455	22,275	47,730	- 2,639	- 3,180	- 3,997	894	875
1909	25,937	22,666	48,603	22,666	20,037	42,703	- 3,271	- 2,620	+ 5,900	874	884
1910	25,860	22,648	48,508	23,742	20,794	44,536	- 3,212	- 2,948	+ 3,972	876	876
<b>Total 1901-1910</b>	<b>214,931</b>	<b>189,446</b>	<b>404,377</b>	<b>314,815</b>	<b>279,559</b>	<b>594,374</b>	<b>- 25,485</b>	<b>- 35,256</b>	<b>- 189,997</b>	<b>881</b>	<b>888</b>
1911	28,349	25,275	53,624	26,565	23,960	50,581	- 3,474	- 2,599	+ 3,093	892	902
1912	30,926	27,179	58,105	24,506	21,344	45,850	- 3,207	- 3,162	+ 12,795	896	871
1913	28,321	25,180	53,501	27,759	24,901	52,660	- 3,141	- 2,858	+ 841	889	897
1914	33,179	29,789	62,968	26,948	23,604	50,552	- 3,390	- 3,344	+ 12,416	898	876
1915	32,951	29,328	62,279	24,664	21,663	46,317	- 3,623	- 2,991	+ 15,962	890	879
1916	38,911	29,959	68,870	25,363	22,219	47,582	- 3,952	- 3,144	+ 16,288	883	876
1917	33,801	29,477	63,278	28,839	25,366	54,205	- 3,824	- 3,473	+ 8,573	885	880
1918	32,866	28,495	61,361	41,143	40,045	81,188	- 3,871	- 1,098	- 20,327	880	973
1919	24,803	22,195	46,998	66,508	62,624	129,132	- 2,608	- 3,684	+ 82,134	895	941
1920	29,057	25,809	54,866	29,176	24,862	54,038	- 3,248	- 4,314	+ 828	888	852
<b>Total 1911-1920</b>	<b>307,164</b>	<b>273,226</b>	<b>580,390</b>	<b>321,461</b>	<b>290,594</b>	<b>612,055</b>	<b>- 33,938</b>	<b>- 30,867</b>	<b>+ 31,665</b>	<b>890</b>	<b>904</b>
1921	28,412	25,318	53,730	22,671	19,324	41,995	- 3,094	- 3,347	+ 11,735	891	852
1922	28,282	25,403	53,685	20,447	17,436	37,883	- 2,879	- 3,011	+ 15,802	898	853
1923	29,848	26,335	56,183	25,965	22,541	48,506	- 3,513	- 3,424	+ 7,677	882	868
1924	31,688	28,535	60,223	22,807	19,597	42,404	- 3,153	- 3,210	+ 17,819	894	859
1925	29,787	26,448	56,235	23,795	20,633	44,428	- 3,339	- 3,162	+ 11,807	888	867
1926	31,999	28,365	60,364	22,485	19,953	42,438	- 3,634	- 2,532	+ 17,926	886	887
1927	27,550	24,588	52,138	21,826	19,875	41,701	- 2,962	- 1,951	+ 10,437	891	911
1928	31,202	28,165	59,367	24,494	21,422	45,916	- 3,037	- 3,072	+ 13,451	903	875
1929	30,229	27,407	57,636	25,794	22,602	48,396	- 2,822	- 3,192	+ 9,240	907	876
1930	33,760	30,339	64,099	29,148	26,040	55,194	- 3,421	- 3,102	+ 8,905	899	894
<b>Total 1921-1930</b>	<b>302,757</b>	<b>270,903</b>	<b>573,660</b>	<b>239,432</b>	<b>209,429</b>	<b>448,861</b>	<b>- 31,854</b>	<b>- 30,003</b>	<b>+ 124,799</b>	<b>895</b>	<b>875</b>
<b>NATURAL DIVISION</b>											
Central Gujarat	90,114	79,033	169,147	73,774	64,421	138,195	- 11,081	- 9,353	+ 30,952	877	873
Baroda City	16,972	15,471	32,443	15,999	14,667	30,666	- 1,501	- 1,332	+ 1,777	912	917
North Gujarat	111,346	97,649	208,995	91,231	77,087	168,318	- 13,697	- 14,144	+ 40,677	877	845
South Gujarat	53,114	50,274	103,388	36,392	34,037	70,429	- 2,840	- 2,355	+ 32,959	947	935
Kathlawad	31,211	28,476	59,687	22,036	19,217	41,253	- 2,735	- 2,819	+ 18,434	912	872

NOTE.—This table includes only the registered deaths up to 1st August 1930. The official year is between 31st July to 1st August. In Subsidiary Table XI of Chapter I, the figure of births and deaths given there is from March 1st, 1921, till the end of February 1931.

## SUBSIDIARY TABLE VI

NUMBER OF DEATHS OF EACH SEX AT DIFFERENT AGES

AGE-PERIOD	1921-22		1923-24		1927-28		1928-29		1929-30		Total		Average number of female deaths per 1,000 male deaths
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
0-1	4,351	3,574	5,013	4,239	4,738	3,987	4,022	4,327	6,551	5,886	25,575	22,013	861
1-5	3,817	3,028	4,467	3,935	4,720	4,313	5,345	4,835	7,101	6,767	24,950	22,878	917
5-10	901	803	1,007	887	1,196	1,151	1,277	1,165	1,959	1,780	6,340	5,705	914
10-15	588	497	595	563	690	646	636	678	750	762	3,250	3,146	905
15-20	520	542	585	607	608	790	664	709	718	790	3,095	3,438	1,110
20-30	1,592	1,606	1,550	1,660	1,521	1,904	1,506	1,887	1,580	1,821	7,839	8,878	1,133
30-40	1,875	1,712	1,890	1,653	1,850	1,749	1,888	1,705	1,846	1,645	9,349	8,464	905
40-50	2,038	1,892	2,019	1,412	2,226	1,485	2,276	1,571	2,214	1,506	10,773	7,366	684
50-60	2,275	1,523	2,310	1,510	2,573	1,590	2,820	1,735	2,379	1,624	12,357	7,982	646
60 and over	2,990	2,759	3,371	3,131	4,372	3,807	4,370	3,990	4,050	3,456	19,153	17,143	805

## CHAPTER V—SEX

## PART II

## THE SIZE AND SEX CONSTITUTION OF FAMILIES

## § 1. GENERAL

**161. Reference to Data**—In this part are dealt with the results of two enquiries, one of which details the variations in the Size of the Normal Household, and the second relates to the allied question of the Size and Sex Constitution of Families in the State. The first enquiry was undertaken at the time of the preliminary count, when the last column of house register had to show the number of persons comprised in the normally resident households. The totals in the different parts of the State have been already utilised in the first chapter as indicative of the normally resident or *de jure* population. In this section, we shall deal with the results in so far as they throw any light on the variations in the size of household in the last two censuses. The second enquiry was conducted distinct from the general census and concerned itself mainly with the various aspects of the problem of comparative fertility and in that respect, the size of families was correlated with (i) the sex constitution of children, (ii) the ages of parents, (iii) the duration of marriage and lastly (iv) with the ratio of survival. Begun tentatively in 1921, with a limited questionnaire, the scope of the enquiry was extended in this census to all parts of the State, and in particular an attempt was made to determine the prevalence of birth control, through the frequency of births correlated with the caste and occupation of individual families. Altogether 352,020 slips were served out and *parwanas* were issued to 4,897 persons selected with special reference to their influence and tact—experienced school teachers, talatis and tajvidars of good standing, sub-assistant surgeons, members of municipalities and other local and caste leaders of status, and as many women teachers and nurses as we could train specially for the purpose. We had altogether 429 women enquirers. The majority of responses received from town areas—roughly about 50,000—were collected by these women workers. In the town of Pātan—second in the State—a whole band of volunteer women workers—mostly non-official—was organised by the woman medical officer of the place. In the City of Baroda, over 100 women workers were engaged for this purpose. The work was spread over six months, and by the first week of July, the compilation of tables was begun.

**162. Accuracy of the Data received : Their Relative Value**—Altogether 205,628 slips were accepted for compilation after final scrutiny. Wherever the least doubt was entertained as to the genuineness of the responses, the slips were freely rejected. As the enquiry was conducted for the second time in the State, there was less popular objection to the queries. Besides, as the greater part of the enquiry in town areas was left to women-workers, there was less objection to the procedure. But little difficulty was experienced from the people themselves. The enquiry was entirely optional in its character : the responses were to be recorded entirely with the consent of the people. Wherever heads of families were inclined to show objection, persuasion was first to be used, the beneficent objects behind the investigation were to be explained, and where even such efforts were fruitless, the queries were not to be pressed. People however were quite willing to give replies. The vernacular school mistresses were remarkably successful almost everywhere ; but the City was an exception as the responses there were not so numerous. This was due not so much to the lack of workers, as to the indifference of the local municipality which thought that its duty ended with the general census and did not extend to this operation. Little help was given to the women teachers when they went out in the *mohollas* : no inspection by the municipal staff was undertaken ; the return of books was seriously delayed and in other respects the City's outturn of work was poor. Most of the women-workers were very painstaking and assiduous in their duties, except some of the women teachers in the Girls' High School in the City who were very stupid and seemed to be terrified

at the idea of undertaking social investigations of this kind. The data received are more accurate than at the pioneer enquiry of 1921 for the following reasons :—

- (i) there was greater popular appreciation of the nature and results of this enquiry ;
- (ii) in 1921, only about 50 women were employed over this work. In 1931, we had over 400 women workers, and they were responsible for over 43,000 cases out of 206,000 ;
- (iii) in the villages, there was the least difficulty, as the village school master and talati knew local conditions well ; and
- (iv) with more experience, the slips were filled in far more accurately than in 1921. My inspections convinced me of this fact. The inspecting staff specially appointed for this census also scrutinised these slips. As the organisation for this enquiry was started at the same time as the census, the instruction meetings from the very first included this item. In 1921, the time for giving instructions was much shorter, and the local staff did not all quite realise what was expected of them. Some of them were frightened even at the very idea of the enquiry and predicted dire consequences. The enquiry was however completed in 1921 with moderate success and without any untoward results. The 1931 enquiry was far happier in this respect and the success achieved was much more complete as evidenced in the much smaller proportion of rejected slips than ten years ago.

**163. Nature of the Slips received**—The enquiry started with the married woman in each household. The responses were to be received direct from the woman herself, if possible, but otherwise the details were filled in from enquiry from the husband or other grown-up male member of the family. The questionnaire for 1931 contained an item about the number of the house, from which each response could be traced and tested by the inspecting officers. The women workers of course approached the married female direct of each family visited. The enquiry limited itself to three kinds of women. Normally only the woman who was continuously married to one husband and was not widowed at the time of the enquiry was the type of cases most frequently taken up, as the data concerning her were the most useful for casting results in comparative fertility. But the case of a woman who had become a widow before attaining maturity, *i.e.*, before 13 years, but had remarried and was continuously married since, was an important exception and had to be taken up. So also is the other case of a woman who, being continuously married, had become a widow after she had attained 45 years of age, *i.e.*, after her child bearing period was over. Single women of course did not form part of the enquiry and divorced females living single were also excluded ; as to females married to more than one husband, the particulars of duration of marriage, number of children born, etc., were to be entered only for her last marriage. Husbands with two wives living had to fill in particulars for each wife singly. If they were successively married to more than one wife, the particulars of the last marriage alone were to be entered. The utmost tact in the conduct of the enquiry was specially enjoined ; only carefully selected persons were employed for this purpose and the police were specifically excluded from this work. The following table shows the number of responses received. From the total number of slips, obvious mistakes were rejected, and of the remainder two heaps were made, one consisting of slips in respect of married women who had completed 45 years of age, and the second concerning married women below that age. The first were called “ completed fertility slips ” and the second, “ continuing fertility slips.”

Division	Number of married women of whom slips were received after deducting rejected slips	Number of married women aged 15 and over according to Imperial Table VII	Continuing fertility slips	Number of married women over 45 according to Table VII	Completed fertility slips*
1	2	3	4	5	6
Baroda State .. .. .	205,238	533,919	165,470	63,737	39,768
Baroda City .. .. .	7,223	22,294	6,175	1,853	1,048
Baroda Division .. .. .	63,272	160,316	51,677	20,072	11,595
Mehsana Division .. .. .	77,620	218,130	62,279	24,870	15,341
Navsari Division .. .. .	37,524	90,704	29,574	11,926	7,950
Kathiawad .. .. .	19,599	42,475	15,765	5,016	3,834

**164. Distribution of Slips by Caste**—From the above table it is apparent that the net was widely cast. In 1921, only 131,235 responses were tabulated. Over 38 per cent of the married women of the State in this census responded to our appeal: and in regard to completed fertility cases, the responses were over 60 per cent. As the marginal table shows, the completed fertility slips were representative of all sections of the community. As the town slips represented a goodly proportion of the total, (and women workers naturally limited themselves mostly to the higher sections of the community), the "Advanced" slips came to nearly 40 per cent of the total, but the "Intermediate" and "Illiterate" slips are also fairly representative, there being 2,969 slips from the Depressed Classes and 4,512 slips from the Primitive and Forest Tribes. Muslims of all sections contributed 2,494 cases, while Koli and allied castes had 4,421.

SECTION OF SOCIETY	Completed Fertility slips compiled	Proportion per mille
All Grades .. .. .	39,768	1,000
<i>Advanced</i>		
Hindu .. .. .	15,661	394
Muslim .. .. .	702	18
Parsi .. .. .	338	8
<i>Intermediate</i>		
Hindu .. .. .	10,381	261
Muslim .. .. .	779	18
Indian Christian .. .. .	45	1
<i>Illiterate</i>		
(Hindu and Tribal) .. .. .	9,190	231
<i>Rest</i>		
Hindu .. .. .	1,659	42
Muslim .. .. .	1,013	27

**165. Nature of the Sex Tables compiled**—This enormous body of material was dissected into 11 Sex Tables printed at the end of this chapter. From their nature some of the Sex Tables could only be prepared from the completed fertility slips, and the others were prepared from both kinds of the data received. Thus the Size of Family could only be gathered from families of completed fertility, as continuing cases did not help to give a final idea about it. The Sex of the First Born has, as we shall see presently, an interesting reaction on the sex constitution of the completed

SEX TABLES		
Number	Name of Table	Prepared from
I	Sex of the First Born .. .. .	Completed Fertility slips only
II-A	Size of Families by Division .. .. .	" "
II-B	Size and Sex Constitution of Families .. .. .	" "
III	Size of Families by Occupation of Husband .. .. .	" "
IV	Size of Families by Caste or Religion of Family.	" "
V	Variation in Size of Family by Age of Mother at Marriage.	" "
VI	Correlation of Ages of Parents .. .. .	" "
VII	Size of Family by Duration of Marriage in different castes.	Both kinds
VIII-A	Proportion of Fertile and Childless Marriages (all cases).	" "
VIII-B	" " " Continuing Fertility only .. .. .	" "
VIII-C	" " " Completed Fertility only .. .. .	" "
IX	Age of Mother at First Birth .. .. .	" "
X	Frequency of Births .. .. .	" "
XI	Duration of childless period .. .. .	Completed Fertility slips only

\* These included 3,133 slips from married women who were widowed after they attained to 45 years of age.

family and it was necessary therefore to limit the compilation to completed fertility cases only. Only Tables VII-X were compiled from both heaps. The object of the last table is to find out further evidence of birth control showing the lapse of time since the last born child and as only such families as had completed their reproductive period and could be expected to have no more children, could furnish such data, the table was limited to completed cases only. Lastly, Tables IX-XI were limited to such cases only in which the children born *were all alive at the time of enquiry*. It will be seen from the margin that compared to 1921, we have now three more tables and we have divided Tables II into two and VIII into three parts. In Table II, we have added details by division, as the size and masculinity at birth are questions on which locality may be expected to have some influence. In Table VIII we have specially published details separately for two kinds of cases.

**166. Varying Accuracy of the Record**—The general accuracy of the sex enquiry has been already appraised. The Tables themselves vary in respect of their statistical value. The details about size and sex of families are the most accurate. There was no motive to falsify, most parents knew the number of their children accurately but probably infants dying in child birth were often omitted. The returns of the age of husband and wife are vague, like all age-returns generally, but the duration of marriage we have found to be far more accurately recorded. The age at marriage is not directly asked in the questionnaire, but is inferred from the present age and the duration of marriage—both only rough approximations. The age of the mother at birth—which is very important as affording a clue to the beginning of effective marriage—was itself reckoned at the time of compilation from *the age of the eldest born son*. These two data are unsatisfactory in their nature and can only be accepted as broadly true. Lastly as to choice of samples, the 1921 Report noted the relatively small proportion of childless families recorded and put this fact down to the reason that the enumerators may not have bothered much about these, thinking presumably that the enquiry did not concern itself about families without children. This time, the point was pressed at instruction meetings, and it was emphasised that it was just as important to know facts about childless families as about others. The proportion of families without children to the total examined is now however 6.4 as against 7 in 1921, so that either our lectures were unavailing or the assumption made in 1921 was not correct.

## § 2. GENERAL RESULTS SUMMARISED

**167. The Size of the Normal Household**—Reverting to the first of the two enquiries to which reference was made in the opening paragraph of this section, we will here invite the reader's attention to State Table XI in which statistics are compiled from entries made in the Block List of the number of persons normally

SIZE OF HOUSEHOLD	1931		1921	
	Number	Proportion	Number	Proportion
One Person .. ..	69,807	12.4	63,604	13
Two Persons .. ..	79,341	14.1	79,022	16
Three Persons .. ..	86,182	15.3	83,729	17
Four Persons .. ..	89,197	15.8	84,078	17
Five Persons .. ..	79,134	14.1	72,578	14
Six Persons .. ..	61,601	10.9	51,932	10
Seven Persons .. ..	41,240	7.3	31,587	6
Eight Persons .. ..	24,479	4.4	7,031	3
Nine Persons .. ..	13,148	2.3	8,755	2
Ten Persons and over.	18,598	3.4	11,516	2

residing at the time of the preliminary enumeration, excluding guests and non-resident servants. Comparative figures of the last two censuses are given in the margin. Like 1921, the *mode* in size of households consists of four persons. This figure is true not only for the State generally, but also for all the divisions except the City. The average size is 4.3. In 1921, the average was 4.1. The proportion of smaller sized households is less now than in 1921, while the largest

proportionate increase has occurred in households of seven and eight persons; which at once point to two causes—the large increase of semi-permanent immigrants, and the return of Baroda-born emigrants to their homes. The above proportions may be compared lastly with the distribution of households in the City in the two censuses. Here again, as in 1921, the mode is the one person household—the typical immigrant family. But the proportion of large sized households (six persons and over) has distinctly increased in this census again pointing to the phenomenon of the returned emigrant and also to lack of house room.

SIZE OF HOUSEHOLDS	Proportion in	
	1931	1921
One Person .. ..	21	23
Two Persons .. ..	20	21
Three Persons .. ..	16	16
Four Persons .. ..	13	13
Five Persons .. ..	10	10.5
Six Persons and over..	20	16.5

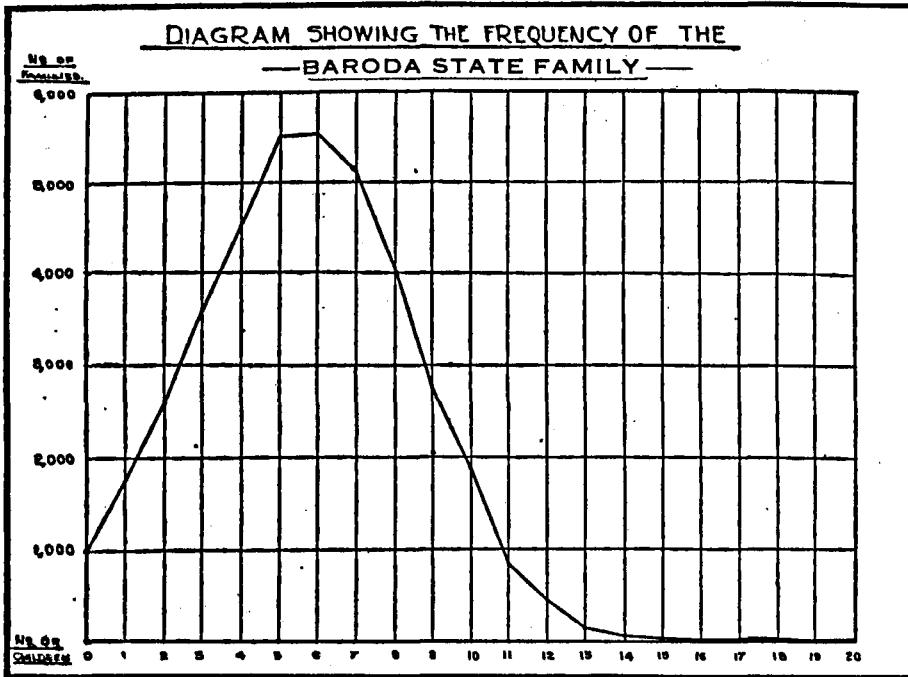
**168. The Size of the State Family: General Results**—We will now give the general results of the second enquiry. Sex Tables relating to the variation in the size of families are of necessity, as mentioned already, prepared from cases of completed fertility. The following Table prepared from Sex Table II-A shows the average size of family (*i.e.*, the number of total children born per married woman in the completed family) in the City and each division :—

DIVISION	Number of families	No. of Children born			Size of families	Proportion of female children per 1,000 male	Size of survived family	Ratio of survival per thousand children born
		Total	Male	Female				
Baroda State .. ..	39,768	226,456	121,719	104,737	5.69	860	3.43	604
Baroda City .. ..	1,048	6,236	3,429	2,807	5.95	819	2.94	494
Baroda Division .. ..	11,595	64,474	35,071	29,403	5.56	838	3.23	581
Mehsana Division .. ..	15,341	86,660	46,412	40,248	5.65	867	3.57	632
Navsari Division .. ..	7,950	44,680	23,990	20,690	5.62	862	3.60	648
Kathiawad .. ..	3,834	24,406	12,817	11,589	6.37	904	3.62	560

The size of family is largest in Kathiawad where the female ratio amongst children born is also the highest. Femininity is lowest in the City, adding one more evidence to the theory that in urban areas more male children are born than elsewhere. In the whole State, 569 children are born to a hundred completed families: of these 343 survive showing a survival ratio of over 6 out of 10. The survival rate is lowest in the City and highest in Kathiawad which is the healthiest portion of the State.

**169. Size of Family by Number of Children**—Having found what the number of children is per family in the different parts of the State, we shall see what the curve of the State family is like. Sex Table II-B gives the frequency of families of different sizes. The marginal table as well as the diagram show that the most favoured size or the *Mode* is of six children, which forms 13.9 per cent of the total number of completed families. The average (5.69) is near the *Mode*; while the *Median* is also in that neighbourhood. The Table also compares the distribution of the different sizes in the two censuses. The 1921 enquiry brought out more or less the same results, in respect of the sex-ratio in larger-sized families. The average size in 1921 was 5.28, the *Mode* was of 5 children, while the *Median* (11 children) was remote. The average size of families seems to have risen a

SIZE OF FAMILY	Number of families	Percentage of such families to total	
		1921	1931
Childless .. ..	974	3.1	2.2
One child .. ..	1,749	5.1	4.4
Two children .. ..	2,550	7.8	6.4
Three children .. ..	3,591	10.3	9.3
Four children .. ..	4,541	13.8	11.2
Five children .. ..	5,498	14.9	13.8
Six children .. ..	5,518	13.5	13.9
Seven children .. ..	5,097	11.4	13.0
Eight children .. ..	4,066	8.3	10.2
Nine children .. ..	2,773	5.6	7.0
Ten and over .. ..	3,411	6.2	8.6



little, possibly due to a larger number of births in the last ten years and partly perhaps because the 1931 enquiry dealt with a larger number of families and perhaps gave a complete result.

**170. Size of the State Family compared with that of Normal Household**

We will now try and correlate the above figures of the size of families with the size of the normal household. A normal household should consist of the husband, wife and children so that with two resident children the size of the household should be *four persons*. The one or two person-households should correspond

SIZE OF HOUSEHOLD	Proportion	Size of completed family	Proportion
One and two Persons.	26.5	Childless ..	2.2
Three Persons ..	15.3	One child ..	4.4
Four Persons ..	15.8	Two children..	6.4
Five Persons.. ..	14.1	Three children.	9.3
Six and over Persons.	28.3	Four and over.	77.7

except in case of the semi-permanent immigrants to the childless families. On this basis the marginal table may be of interest to the reader. The smallest size households include those of adult bachelors and widowers and widows who live separate from the parent family. Apart from this circumstance, the childless element in the

State is much larger than the sample of completed families would indicate. The largest sized households are only a little more than a fourth of the total, while the largest sized families are more than three-fourths of the families examined. Thus this want of correspondence would point to one of two things, or both:—

(i) either that the samples were wholly weighted in favour of large sized families and therefore were not representative of all classes of families ; or

(ii) that in the large sized families, as soon as the children become adult, the tendency is for them to live separately or to emigrate outside for business.

SIZE	Female Index	
	1931	1921
Childless .. ..	..	..
One child .. ..	631	657
Two children .. ..	743	800
Three children .. ..	747	770
Four children .. ..	822	805
Five children .. ..	812	852
Six children .. ..	862	903
Seven children .. ..	870	900
Eight children .. ..	900	891
Nine children .. ..	902	950
Ten children .. ..	912	889
All Sizes .. ..	860	872

**171. Sex Constitution of Families—**  
The accompanying table and diagram illustrate the varying female indices in different sized families. The female index at birth of children to all completed families is 860 in 1931, as against 872 in 1921, but as in the latest enquiry the samples taken were much larger, this variation does not point to anything in particular : on the general results of the two enquiries, the following conclusions may however be hazarded :—

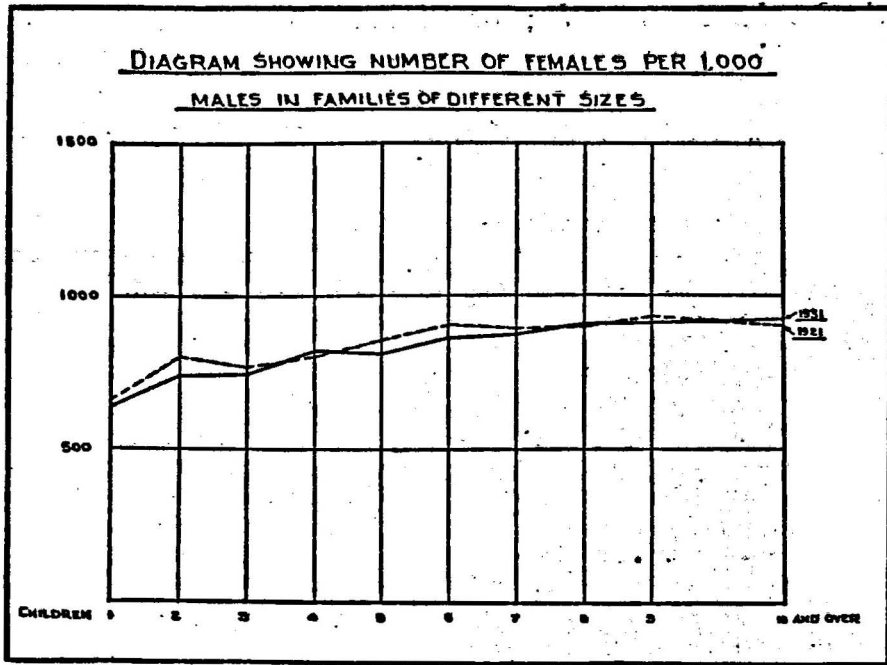
(i) The female index in one child



families is much lower than the mean for all families, and relatively to other sizes, it is decidedly the lowest;

(ii) The tendency to femaleness increases until about the ninth child and for a while there is a kind of alternation up to fourteenth or fifteenth child: masculinity

thereafter rises in the families of next higher sizes—i.e., sixteen or seventeen children. It falls again rather sharply in the families of the largest sizes, nineteen, twenty or twenty-one children.

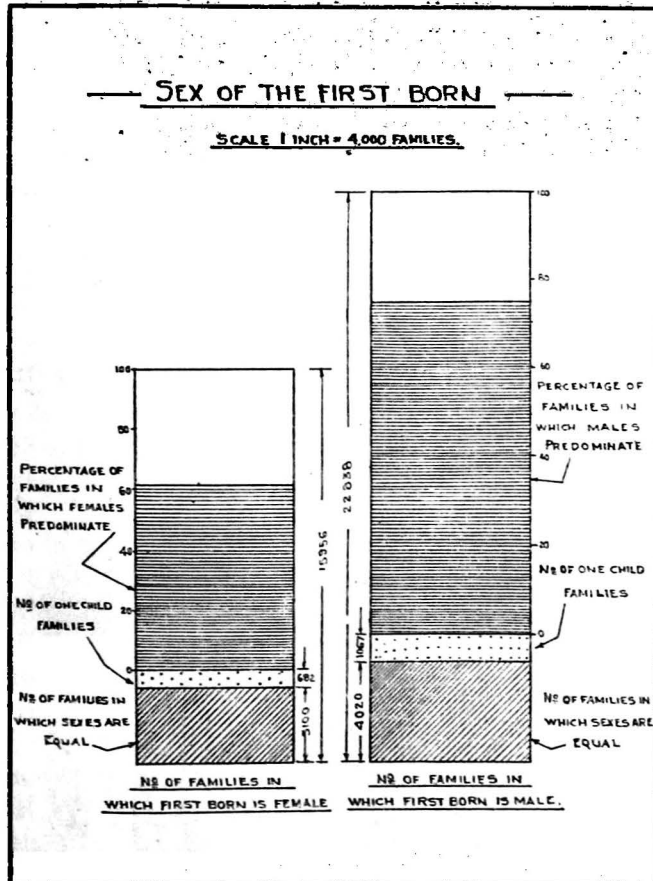


**172. The Sex of the First Born**—Connected with the above question of the female index in families is the sex of the first born, of which the results are compiled in Sex Table I and II-B. It has been long believed that the sex of the first born child is the governing factor in certain social phenomena of interest. In 1921, it was found that

(i) the first births in families showed a decided preference for males, there being only 718 female first born to 1,000 males first born as against the general average of 872 girls to every 1,000 boys born;

(ii) in one child families, masculinity was even more noticeable, there being only 657 female children to 1,000 male in such families; and lastly

(iii) the sex of the first born child, especially if it was a male, largely determined the sex of the rest of the family. The above propositions have been definitely established by the results of this census also. The total number of families examined (of completed fertility) was, as we know, 39,768. Out of these 974 were childless families. From the remainder, the one-child families have also to be deducted. Thus we get 12,174 families in the State, where the first born was a girl. In these families, no less than 7,477 (or 61 per cent) show a predominance of females. Similarly, by a parity of calculation, there are 17,751 families in which



the first born was a male ; out of these, no less than 13,356 (or 75 per cent) show a predominance of males. That the masculinity of one-child families is even more pronounced than in the first births is proved in this census also, by the fact that the female index of the families of the smallest size is only 632 and is much lower than for first births (which is 699).

**173. Sex Determination**—The above phenomena raise the question why it is that a particular individual embryo becomes a male or a female. This Report is a plain and unvarnished record of facts and I have no wish therefore to cumber it with weird and fantastic theories. But briefly it may be stated that there are two groups of solutions offered as answers to the question. The first group supposes that external conditions determine the result ; and the other group would go back for a solution to the differences in the sexual cells themselves. We have concern only with the first group. Popular belief associates the sex of the child with that of the more vigorous parent. Several untrained observers have also interpreted the events of sex-causation in the sense that the more vigorous parent reproduces his or her own sex. Nutrition it has also been suggested is of importance as a sex determinant. Here is a factor which is not necessarily connected with "prepotency" or the comparative vigour of respective parents. A high degree of correlation has been found, by materialists like Young, Maupas and others, to exist between abundant nutrition and an excess of production of females. The influence of climate is also to an extent operative. But these different factors are so inextricably mingled in their conjoint influence that the importance of any one of them cannot be properly gauged except by isolating and analysing each factor through reliable data. But the fact that prepotency does have an important bearing is shown by the high masculinity in one-child families in the sex of the first born. There is no doubt that the higher female index in larger families is due to the waning operation of this prepotency in later years of life. Thus it was pointed out shortly after the war, that the return of a large body of young men hardened by war conditions to civil life resulted in a predominance of male births. In this connection Dr. Jivanji Jamshedji Modi in a recent letter to the Press (dated 15th September 1931 last) refers to this theory of prepotency in determination of sex at birth as being supported by old Iranian belief. The Pehlevi Bundehesh supports the belief that "there are greater chances of the children being born male," if the father is stronger than the mother at the time of conception. This factor of strength reinforced by the constantly reiterated wish of Indian parents (of either sex) for male children, weights the births and certainly the first (and early births) in favour of the male. This tendency hardens into a race character, the process being analogous to natural selection, "by which an inherited tendency to produce female or male offspring is adjusted to the needs of the species. Such adjustments may be brought about in countless ways wherein all these factors may each or conjointly operate. Over these factors, operating, sometimes weakly, is the element of human will, as the outcome of which sex becomes a system of alternate rhythms such as Patrick Geddes and J. A. Thompson speak of, 'of anabolism and katabolism to be observed throughout the living world,' the female principle being specially associated with the anabolic or constructive processes, and the male the outcome of katabolic or destructive processes."\*

**174. Size of Family by Caste or Religion of Husband**—Before we leave the general question of the size of families, it will be of interest to know how far comparative fertility varies in the different social groups in the State. Here

GROUP	Proportion of male children aged 0-6 to 1,000 males	Ratio of survival in size of family	Average size of completed family
Advanced .. ..	165	599	5.81
Intermediate .. ..	187	606	5.52
Illiterate .. ..	207	617	5.67

as we have seen, we have fairly representative data from all sections of the people. The question of comparative fertility is always of interest. In the Chapter on Age, we have seen how fertility (as disclosed in the proportion of children) varied in the different grades of society and that population is being gradually restocked by the hardier but less intellectual strata as is evidenced by the lower propor-

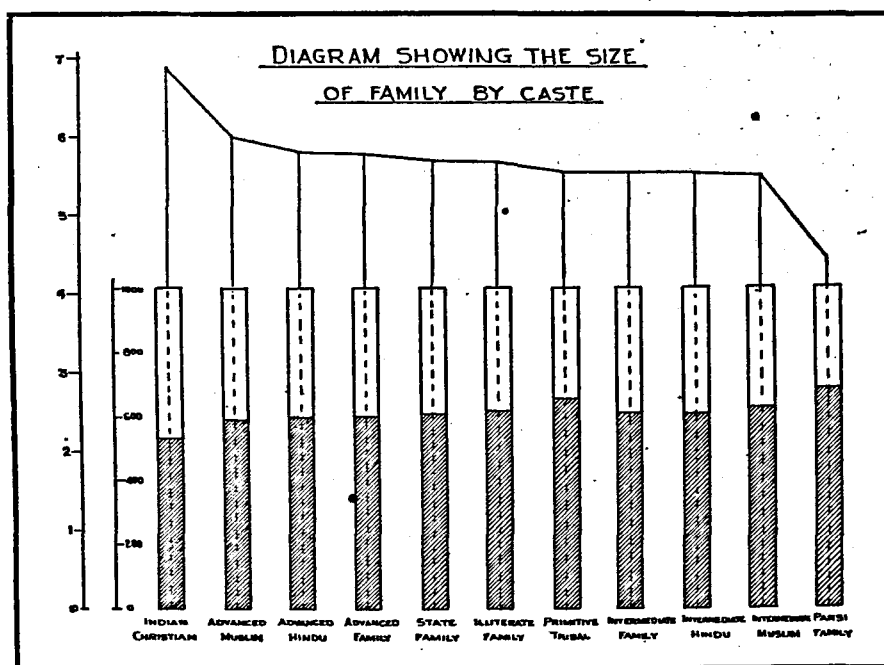
tion of the living amongst the children of the Advanced sections. These proportions are compared with the different ratios of survival in the three groups. There is therefore a correspondence : and the melancholy fact seems true that the more advanced educationally is a caste or a group of castes, the less chance is there for its children to survive into adult ages. The size of the family does not show great

\* Baroda Census Report, 1921, page 214.

correspondence, presumably therefore the educational equipment of the different castes has little to do with it. In 1921, the typically advanced groups also showed a smaller rate of survival than the Intermediate and Illiterate sections. The average size of a Brahman family was 5.26, lower than the State average. The Raniparaj family ranged from 5.44 to 7.01. The ratio of survival also then indicated, as now that the lower classes were helping the growth of the population much more than the higher.

**175. Inverse Correlation between Size and Ratio of Survival—**But there is an interesting point about survival in relation to size which deserves to be noted. An almost exactly inverse correlation seems to exist between the size of family and the proportion of survival as the marginal table will show. The Parsis with the lowest number of children have the highest proportion of survival. The size of the Indian Christian family as indicated therein is not representative as the number of Christian slips was only 45, and did not adequately represent that community. Most of their number belong to the so-called Depressed Classes, the size of whose family is 5.72. The Primitive and Forest Tribes marry late and have usually large families. The size of their family is 5.77 and the proportion of survival is 648, which is also high, not because the size is large, but presumably because they have adult marriages. A diagram is attached herewith to show the variations in the size of families in the different castes. It illustrates graphically also the inverse correlation between size and survival, which is almost exact except for the Raniparaj for the reason just mentioned.

NAME OF CASTE OR RACE	Order according to size	Order according to survival
Indian Christian .. ..	1	7
Muslim Advanced .. ..	2	6
Hindu Advanced .. ..	3	5
Illiterate .. ..	4	3
Hindu Intermediate .. ..	5	4
Muslim Intermediate .. ..	6	2
Parsi .. ..	7	1



Note.—Each column represents 1000 children born—the shaded portion showing the number of survivors out of total born. The two sets of data are shown to illustrate the inverse correlation.

**176. Size of Family by Occupation—**Coming to occupations, let us see if these have any bearing on comparative fertility. The marginal table has been prepared from the compilation registers of Sex Table III. Nowhere in the State is the occupational distribution more varied than in the City. It will be of interest, therefore, to compare the size of family and rate of survival amongst the City families with the corresponding figures for the whole State. The marginal table gives the details. The City has, as a whole, a much lower rate of survival, compared to the State average of 604. The largest size of families in the State is seen in the liberal arts and professions, where affluence or at least relatively easy conditions of existence

would seem to encourage large families. Independent means would ordinarily have on this basis large families, but persons in this category have not the same

KIND OF OCCUPATION	In State		In City	
	Size of family	Ratio of survival	Size of family	Ratio of survival
Agriculture .. .. .	5.65 (6)	626 ( 1)	5.46 (10)	483 ( 8)
Industry .. .. .	5.79 (4)	579 ( 6)	5.58 ( 9)	546 ( 2)
Trade .. .. .	5.99 (3)	544 ( 8)	5.97 ( 5)	515 ( 4)
Public Force, etc. .. .	5.65 (6)	615 ( 2)	6.57 ( 1)	457 ( 9)
Public Administration ..	6.03 (2)	509 (10)	6.02 ( 4)	446 (10)
Liberal Arts and Professions	6.10 (1)	551 ( 7)	6.27 ( 3)	495 ( 6)
Independent means ..	5.59 (7)	542 ( 9)	5.69 ( 7)	514 ( 5)
Domestic Service .. .. .	4.70 (9)	600 ( 4)	6.44 ( 2)	520 ( 3)
Others .. .. .	5.49 (8)	590 ( 5)	5.60 ( 8)	576 ( 1)
All Occupations ..	5.69 (5)	604 ( 3)	5.95 ( 6)	494 ( 7)

settled outlook as professions or public administration. Besides "independent means" is merely an euphemism as we shall learn in the Chapter on Occupation to cover a miscellaneous group of earners who for want of a more definite designation are lumped there for convenience. Agriculture would seem to rule a relatively low sized family but with a high ratio of survival; general and agrestic labour shows on the other

hand, as in other parts of the world, a high average of children. Religion encourages—and here we see a world-wide tendency—a high fertility, with a high rate of survival due doubtless to its sheltered ease and lack of toil. The Scottish fertility census of 1911 on the other hand showed that professional and other skilled occupations ruled a low rate of fertility, while agriculture, mining and labour were among groups of high fertility. The Punjab census in 1921 collected data of occupation fertilities which showed that artisans had the highest gross fertility and clerics the lowest. Beyond these general facts, occupational data correlated with size of families do not give much illumination. But the general fact of inverse correlation between the size of family and the proportion that survives appears to be fairly true here also. In the marginal table above, the brackets against each proportionate figure give the respective order of each grade of occupation according to size and the rate of survival.

### § 3. FERTILITY BY AGE OF PARENTS AND DURATION OF MARRIAGE

**177. The Age Return in the Fertility Enquiry**—We shall now attempt to correlate the facts of comparative fertility with the ages of parents, the duration of marriage and so on. We have already cautioned the reader that the data regarding the present age of the parents, the age of the mother at marriage, and her age at the birth of her first child together with such returns as the duration of marriage, the spacing of births and so on are not very accurate: the most inaccurate are the age returns and only in respect of Advanced castes can this record of age be accepted as at all reliable. The duration of marriage was not always accurately returned, but as mentioned already the record here is relatively more reliable. The age for Intermediate and Illiterate sections was in the bulk of instances guessed from the appearance of the women. As the staff employed were mostly experienced teachers and local revenue officials, their entries can be accepted as roughly true. With these caution the returns of the age at marriage in different castes may be considered. Sex Table IV (last columns) distributes the number of families according to the age at marriage of the mother. No conclusions can however be drawn from the marginal table prepared from Sex Table IV of the two years, as to whether the age of formal marriage has risen. This Table is prepared from completed marriages, so that persons dealt with in 1931 would give ages at marriage 20 to 30 years ago. As these last columns of Sex Table IV are not prepared from continuing fertility cases, it is not possible to determine how far modern influences are tending in the direction of postponement of marriage. The effect of certain legislation on the marriage age will be discussed in the next chapter. In the meantime it is sufficient to remember that the age of marriage here is merely the age of formal marriage: only as regards a woman married *before she was*

13 it was provided in the instructions that for the purpose of calculating the duration of marriage, the time was to be reckoned from her thirteenth year, the period of formal marriage before that age being neglected. This is a very important point. The duration of marriage was calculated from an age at which a girl could begin her period of effective marriage, i.e., after she had begun menstruating. But it did not mean that she began her effective marriage from that year. In the 1921 enquiry, we did not enquire at all when a woman actually began her effective married life. That could not even be inferred from the facts elicited: yet many readers of my Report of 1921 (including Miss Mayo) were led to suggest on the basis of my figures that the bulk of marriages dealt with in the enquiry were consummated or effectively begun on or about the married woman's thirteenth year. All that could be said from the last enquiry that 80 per cent of marriages examined in 1921 took place on or before the thirteenth year of age of the woman; from this age effective marriage was merely assumed to begin for purposes of the calculation of duration of marriage. In the present census, we are attempting to find out the actual age of effective marriage from the age of the eldest child, and we shall be able to see presently from the results compiled how far out of the real truth in this matter were Miss Mayo and other writers of her kind. Apart from these observations which seem necessary as a general caution to outside readers not to use the census material except with the utmost circumspection, there is very little to add by way of comment on Sex Table IV. The Parsi, the Vohra, the Raniparaj, the Memon—in order of mention—show the greatest addiction to adult marriage: while the Intermediate groups generally and the Brahman, Patidar and Vania amongst the Advanced have the greatest proportion of early marriage.

CASTE	Percentage of Families with wife married at					
	0-14		15-19		20 and over	
	1931	1921	1931	1921	1931	1921
<b>Advanced</b>						
Brahman.. ..	84	88	12	7	4	5
Patidar .. ..	85	86	10	9	5	5
Vania .. ..	84	87	13	10	3	3
Vohra .. ..	59	70	28	15	13	15
Memon .. ..	65	48	26	35	9	17
Parsi .. ..	52	29	22	34	26	37
<b>Intermediate</b>						
Rajput .. ..	85	76	11	18	4	6
Vankar .. ..	77	75	14	15	9	10
Momna .. ..	64	75	28	18	8	7
<b>Illiterate</b>						
Bhangi .. ..	82	80	12	12	6	8
Raniparaj .. ..	69	67	20	17	11	16
Thakarda (Koli)..	71	78	21	14	8	8
<b>All Castes</b> .. ..	<b>78</b>	<b>80</b>	<b>15</b>	<b>12</b>	<b>7</b>	<b>8</b>

the married woman's thirteenth year. All that could be said from the last enquiry that 80 per cent of marriages examined in 1921 took place on or before the thirteenth year of age of the woman; from this age effective marriage was merely assumed to begin for purposes of the calculation of duration of marriage. In the present census, we are attempting to find out the actual age of effective marriage from the age of the eldest child, and we shall be able to see presently from the results compiled how far out of the real truth in this matter were Miss Mayo and other writers of her kind. Apart from these observations which seem necessary as a general caution to outside readers not to use the census material except with the utmost circumspection, there is very little to add by way of comment on Sex Table IV. The Parsi, the Vohra, the Raniparaj, the Memon—in order of mention—show the greatest addiction to adult marriage: while the Intermediate groups generally and the Brahman, Patidar and Vania amongst the Advanced have the greatest proportion of early marriage.

**178. Size of Family correlated with the Age of Wife at Marriage—**With the caution noted already, we now discuss the important results arrived at by correlating the age of wife at marriage with the number of children born. The following Table is prepared from Sex Table V of 1921 and 1931 :—

AGE OF WIFE AT MARRIAGE	Proportion of families to total		Average size of family per 100 mothers		Size of survived family per 100 mothers		Ratio of survival	
	1931	1921	1931	1921	1931	1921	1931	1921
1	2	3	4	5	6	7	8	9
0-14 .. ..	78	80.1	574	524	346	308	602	589
15-19 .. ..	15	12.1	584	554	358	330	612	596
20-24 .. ..	5	6.0	535	540	330	329	617	609
25-29 .. ..	1	1.6	453	497	271	311	599	626
30 and over .. ..	1	0.2	351	372	189	223	540	600
<b>All Families</b> .. ..	<b>100</b>	<b>100</b>	<b>569</b>	<b>528</b>	<b>343</b>	<b>312</b>	<b>604</b>	<b>592</b>

**179. Conclusions from the above Table—**This table confirms the following conclusions arrived at tentatively in the pioneer enquiry of 1921 (*vide* paras 247 and 253 of the Census Report of 1921) :—

- (i) If the age at marriage is changed from 13 or 14 up to 20, the rate of fertility is substantially raised. In 1921, the figures showed that if the marriage was postponed on an average by four years, the rate of fertility, instead of diminishing, increased by about three children per ten families. In 1931, the size of the family rises by 10 children for 100 mothers. Further raising of the age, of course, reduces fertility because of the diminution in the period of effective reproduction.
- (ii) The raising of the age at marriage up to 20 also enhances the rate of survival from 7 to 10 per 1,000 born. The number of children surviving rises from 346 to 358 or 12 children per 100 marriages. In 1921, the data then received, gave the rate of 22 additional children (per 100 marriages) saved for the race by this means.
- (iii) By raising of the age at marriage to beyond 20, say 24, the size of the family diminishes slightly and the number of children surviving also declines correspondingly, but the ratio of survival is raised substantially. In 1921, the proportion rose from 592 to 609. In 1931, the respective ratios are 602 and 617.

**180. Size of Family correlated with Age of Parents**—So much for the age of the mother only. The age of the father correlated with that of the female parent has also some important bearings on the problem of fertility. In 1921, we found that the age of the parents had a distinct effect on fertility, and that disparate marriages lowered, as parity in ages of parents raised fertility (*vide* para 247, Census Report 1921). On the present occasion also the data compiled into Sex Table VI more or less confirms these conclusions. The following statement prepared from that Table gives the main results:—

AGE	AGE OF WIFE								
	13-20	Average of children		20-30	Average of children		30 and over	Average of children	
		Born	Surviving		Born	Surviving		Born	Surviving
13-20 .. ..	18,860	5.95	3.63	66	4.95	2.86	1	7	..
20-30 .. ..	12,237	5.78	3.51	1,181	5.40	3.51	23	3.04	1.70
30 and over ..	1,566	5.64	3.44	717	5.05	3.19	268	2.98	1.87

Thus we see the parity of ages of parents gives not only the highest fertility but also the greatest number of children surviving. This is particularly true of the age-group 13-20; in the next higher group, *i.e.* 20-30, husbands marrying women of the same age-period have indeed a slightly less average of children than if they married wives of the ages 13-20; but even then the number of survived children is the same in both cases, while the survival rate actually rises from 607 in the latter event to 650 in the case of parity. It is interesting to note also that husbands aged 30 and over marrying wives aged 20-30 have a higher fertility rate of 5.05 than young husbands (13-20) with wives (aged 20-30), who have only 4.95. It is also necessary to point out that the above figures disclose a very wide prevalence of the practice of disparate marriages. 42.3 per cent of wives married at 13-20 are mated to husbands who are on the average at least 10 years older than they are. Nearly 5 per cent of them have husbands who are older on an average by 20 years. 1,964 women amongst the cases sampled were married between 20 and 30. Of these 717 or 36.5 per cent had husbands much older than they were. Altogether 42 per cent of the cases examined belonged to the category of disparate marriages.

**181. Size of Family by Duration of Marriage**—Sex Table VII is the first table so far discussed in which the whole of the material—completed and continuing cases taken together—is compiled. The cases of continuing marriage

number 165,470 as against only 103,174 in 1921. Altogether 603,244 children were born up to the time of the enquiry to these continuing marriages giving an average of 36 children per ten mothers. In 1921 the average was the same. The following Table gives the proportionate figures for the principal castes :—

Duration of present marriage in years	Average number of children born alive per 100 mothers								
	Total	Brahman	Pati-dar	Rajput	Vankar	Other Hindu	Muslim	Parsi	Tribal
Below 10 .. .. .	149	140	149	149	133	144	153	165	170
10 years .. .. .	259	275	247	243	287	260	277	240	266
Over 10 and under 20 ..	372	367	378	350	383	372	381	386	365
Between 20 and 31 ..	548	556	548	530	559	554	539	471	555
32 years .. .. .	600	641	645	577	604	592	556	397	578
33 and over .. .. .	559	575	541	500	560	576	564	462	579

The above Table may yield some useful results if used with caution. The Parsi ratios are fairly representative, as 754 Parsi slips were filled in. A sufficiently large number of slips were also filled in for the castes above selected to make the results worth compiling. On the assumption that in the bulk of cases, the date of marriage is at thirteen, the number of children born for five years, on an average, after marriage, is 149 or 28 per year, to 100 mothers. At ten complete years of marriage, the annual average *addition* to the number of children is only 22. A subsequent addition of 5 years to the average duration of marriage yields an annual crop of 23 births. The greatest intensity of fertility or "force of issue" is between 20-31, when on an average 176 children are added. But in the last period before 32 years are completed the "force of issue" falls to only 52. Thereafter there is a drop, signifying exhaustion in fertility. This exhaustion is shared by all castes, except the Muslims whose physique is superior and the Raniparaj who usually marry later than other sections. In the first class, *i.e.*, of marriages of less than 10 years' duration, Brahmans and Vankars are below the mean average for the State, but Parsis, Muslims and Raniparaj show a higher figure for fertility, indicating that these latter, although they have a later age for marriage, usually begin cohabitation soon after, while with other cases, effective marriage is postponed to a more suitable age. Parsis also show an acceleration of fertility, till the 32nd year but the rate is slower and more gradual than in other castes or races. Thus we have in this table the first of our clues to the operation of economic motive in the restriction of births. Where parental control is fairly effective, there one would suppose that the consummation of marriages is deferred till after the attainment of physical maturity.

**182. Proportion of Childless and Fertile Marriages**—In Sex Table VIII, we make further researches into the problem of birth control. Taking completed cases first, where there is less evidence of modern influences than in marriages of more recent date, there are 39,673 cases of married women whose present marriage has lasted at least 15 years. Of these 948 or 2.4 per cent are childless. In completed families numbering 30,915, the age of the mother at marriage was 13-14 (or earlier). Here the proportion of childlessness is 2.3. In families numbering 5,708, where the wife married between 15 and 20, the sterile ratio is 1.8 pointing to higher fertility. But in families numbering 2,816 where the age of the wife at marriage was 20 and upwards, the childless constitute 4 per cent, pointing to the operation perhaps of economic motive in the limitation of families. When a husband is an earner and has married after he has started his livelihood, there the economic motive is a factor of some strength. But where he is not an earner, but living on his elders as a dependent, and yet being married is of an age

that fits him for producing children, there apparently he behaves more irresponsibly. The following Table prepared from Sex Table VIII-A is of interest. The table is comprehensive dealing with all the 205,238 cases.

Age of Wife at Marriage	Proportion of childless to 100 marriages lasting				
	Below 5 years	Between 5 and 10 years	Between 10 and 15 years	At least 15 years	All cases
All Cases .. .. .	51	12	3	2	6
13-14 .. .. .	62	12	3	2	7
15-19 .. .. .	47	8	3	1.6	6
20 and over .. .. .	29	9	6	4	7

The above table shows that childlessness is greatest when the duration of marriage is the least: particularly so if the mother was aged 13-14 at the time of her marriage. This childlessness diminishes progressively as the age at marriage of the mother increases. The bulk of the cases examined were of mothers married at 13-14. But those married at 15-19 number 25,093 and thus form a substantial sample (12.2 per cent of the slips compiled). The adult marriages (20 and over) under review are only a few, being 6,760 in number, but in the general population, the proportion of such marriages is also very small, and the above ratios in respect of adult fertility can be accepted also as representative. Sex Table VIII is fairly accurate and reliable, as both the data of duration and childlessness are relatively more accurate than the rest of the material.

**183. Age of Mother at First Birth**—There are other ways of gauging the extent of modern influences on the limitation of families, but the main figures regarding the age of the mother at birth (Sex Table IX) will be of the greatest interest as throwing light on how far parental control or other salutary influences are operative, in spite of the prevalence of early marriage, to postpone the date of motherhood. The following Table is prepared from amongst completed families to show the ages of the mother in different ranks of society at the birth of her first child. Only such families, in which all the children born were surviving at the time of the enquiry, have been compiled. There are altogether 70,765 such families dealt with, of which 9,403 are completed cases and the remainder continuing:—

CASTE OR RACE	Age of mother at first birth (distribution of 1,000 cases in each class)					Total cases examined
	Below 13	13	14-15	16-20	21 and over	
<i>Advanced</i> .. .. .	....	24	143	531	302	22,576
Brahman .. .. .	....	20	166	595	219	4,100
Patidar .. .. .	....	24	128	509	339	15,254
Vania .. .. .	....	35	183	582	200	2,028
Jain .. .. .	....	19	161	573	247	846
Parsi .. .. .	....	3	61	352	580	348
<i>Intermediate</i> .. .. .	....	24	148	498	330	27,337
Rajput .. .. .	....	20	143	485	352	2,765
Indian Christian .. .. .	....	31	141	469	359	64
Vankar .. .. .	....	21	126	460	393	2,914
Other Hindu .. .. .	....	26	149	506	319	16,855
Muslim .. .. .	....	21	162	500	317	4,739
<i>Illiterate</i> .. .. .	....	22	116	485	382	20,852
Koli and allied castes .. .. .	....	20	117	494	369	12,539
Primitive and Forest Tribes .. .. .	....	25	112	472	391	8,313
<b>Total</b> .. .. .	....	<b>23</b>	<b>136</b>	<b>505</b>	<b>336</b>	<b>70,765</b>



**184. Consideration of the above Table**—As it deals with more than a third of the total number of slips, the proportions set out may be taken as roughly representative of the present day situation in the State regarding the age of effective marriage. As in families of continuing fertility the age of the eldest son is more likely to be correctly returned than in completed ones, the figures have been separately calculated also for the two kinds of cases. Such as they are, the figures can be safely accepted in one respect. No cases of motherhood below 13 came to light. Pains were taken to find out through local officers and census committees whether any such cases of premature consummation came to their knowledge. But no such occurrence was reported. As the figures show, only 1,637 cases of married girls becoming mothers at 13 have been compiled. These form 23 per mille of the total of 70,765 cases examined. To these child mothers, the Advanced Hindu and Jain groups contribute nearly a third, although they themselves are only a fifth of the population. The child mothers of the Intermediate groups form another third, while the remainder are Muslims and Tribal aborigines. The contribution of the Raniparaj is open to suspicion, as few of them even marry at that age; possibly the ages returned of their eldest children were more unreliable than of the others. The figures of continuing fertility on the whole give more trustworthy results which are therefore summarised in the inset table. The ratios are slightly smaller than for all cases (continuing and completed taken together). But the Illiterate shows the greatest evidence of adult consummation and the Intermediate the least. On a broad view of the figures the general conclusion seems to be that although most women are married either at 13 or thereabouts, 8 out of 10 who are so married do not bear children until they are at least 16 and over. Three out of 10 married women defer the cares of maternity till they are 21 and over. It is curious that the Advanced groups are more inclined for earlier motherhood (*i.e.* between 16-21) than the Intermediate or the Illiterate; the highest proportion of adult motherhood (21 and over) obtains amongst the Parsis with whom 6 out of 10 wives become mothers after 21. After the Parsis, come the Raniparaj, although they are the lowest in the educational scale. The Brahmans and Vantias however show the least inclination to defer motherhood so late as 21. Six out of ten mothers amongst them would rather bear children between 16 and 21. These two castes show the highest incidence of motherhood in that age group in the whole State. This may be contrasted with the state of things in the Intermediate groups where parental control is more effective, although their formal age of marriage is actually much lower than in the Advanced castes, in deferring motherhood amongst their married daughters to a later and more suitable age. Generally parental control, economic motive as well as lack of fertility operate cumulatively in the bulk of cases. In the Advanced group, the second and third causes are mainly in evidence—perhaps as the age of marriage rises amongst them, the intervening period before motherhood tends to diminish. In the Intermediate group, parental control still largely obtains. In the Illiterate section, specially amongst primitive tribes, with whom adult marriages are the rule, consummation is not long deferred.

Continuing Cases	
GROUP	Proportion of cases where the mother was aged 16 and over at first birth
Total ..	829
Advanced .. ..	824
Intermediate .. ..	815
Illiterate .. ..	853

**185. The Spacing of Births**—This brings us to the definite question of birth control. Sex Tables X and XI make a direct attempt to find out how far prudential checks are operative. This is best seen in two ways: (*i*) from the period intervening between the different births, first and second, second and third and so on; and (*ii*) from the time of the childless period after the birth of the youngest child. Sex Table X is concerned with the first of these ways, and pursues the spacing of births up to the coming of the fourth child. Only 9,403 cases of completed fertility have been taken up for this purpose; these are cases where all the children born had survived at the time of the enquiry. Of these 1,275 were one-child families, 1,477 had two children only and 1,621 had three children. Therefore, in finding out the spacing between the first and second child the number

of one-child families had to be excluded ; similarly the two-children group should

GROUP	Proportion of longest interval (4 years and over) to total number of intervals		
	Between 1st and 2nd child	Between 2nd and 3rd child	Between 3rd and 4th child
Hindu and Allied ..	574	497	412
Advanced .. ..	567	473	414
Intermediate .. ..	557	473	415
Illiterate .. ..	598	551	408
Muslim .. ..	549	409	407
Parsi .. ..	416	484	415

be omitted while considering the interval between the second and the third child and so on. On this basis the marginal table prepared from Sex Table X should be considered. The Parsi slips in this table numbered only 135, and therefore they are too few to judge. The Illiterate figures are again suspect, as the age-returns are based largely on guess work. With these exceptions two propositions can be hazarded :—

(i) the Advanced groups show more evidence of long

spaced births than others generally ;

(ii) the spacing is longer in the early births than in the later : the proportion of longest intervals (4 years and over) being the largest for the first and second births (570), that for the second and third births (490) coming between this and the ratio for the third and fourth births (412). This diminishing series persists in all grades and amongst all the castes and religions dealt with. This points somewhat convincingly to the waning of the economic motive with the increase in the size of the family.

**186. Duration of Childless Period**—Lastly there remains Sex Table XI and the marginal table prepared therefrom shows the proportions of families,

CASTE	Total Families	Proportion of families where the childless period after birth of youngest child is	
		Between 1 and 4 years	5 years and over
<b>Hindu, Jain and Tribal</b>			
Advanced .. ..	2,360	48	952
Intermediate .. ..	2,343	91	909
Illiterate .. ..	2,475	90	910
Other Hindu .. ..	410	61	939
Muslim .. ..	675	82	918
Parsi .. ..	135	7	993
Indian Christian ..	5	..	1,000
<b>Total ..</b>	<b>9,403</b>	<b>72</b>	<b>928</b>

where the childless period is (1) between 1-4 years and (2) 5 years and over in the different sections. The Parsis show the greatest proportion of childlessness. The few cases of Indian Christians may be neglected. The Advanced Hindus come next. Other Hindus, Muslims, Illiterate and Intermediate Hindus follow in order. The Parsi ratio confirms what is generally reported that there is amongst them wide prevalence of birth control methods. In the Advanced group, the sections most influenced by English education, are beginning to practise contraception or at least abstinence ; but the childless ratio amongst them, as in other groups, is governed largely by other considerations,—lack of physique, unnatural conditions of living and the increasing vogue,—so it is alleged by medical authorities consulted—of venereal diseases.

ations,—lack of physique, unnatural conditions of living and the increasing vogue,—so it is alleged by medical authorities consulted—of venereal diseases.



**SEX TABLE II—B**  
**SIZE AND SEX CONSTITUTION OF FAMILIES**

Size of family (Number of children born to a marriage)	Number of families	Number of males first born	Number of females first born	NUMBER OF CHILDREN BORN			Number of female children per 1000 males	Percent- age of families to total
				Total	Males	Females		
1	2	3	4	5	6	7	8	9
<b>Total</b> .. .. .	<b>39,768</b>	<b>22,838</b>	<b>15,956</b>	<b>226,456</b>	<b>121,719</b>	<b>104,737</b>	<b>860</b>	<b>100</b>
No children .. .. .	974	..	..	..	..	..	..	2.2
One child .. .. .	1,749	1,067	682	1,749	1,067	682	631	4.4
Two children .. .. .	2,550	1,598	954	5,100	2,926	2,174	743	6.4
Three children .. .. .	3,591	2,189	1,402	10,773	6,168	4,605	747	9.3
Four children .. .. .	4,541	2,769	1,772	18,164	9,971	8,193	822	11.2
Five children .. .. .	5,498	3,268	2,230	27,490	15,171	12,319	812	13.8
Six children .. .. .	5,518	3,209	2,309	33,108	17,783	15,325	862	13.9
Seven children .. .. .	5,097	2,969	2,128	35,679	19,081	16,598	870	13.0
Eight children .. .. .	4,066	2,291	1,775	32,528	17,121	15,407	900	10.2
Nine children .. .. .	2,773	1,595	1,178	24,957	13,124	11,833	902	7.2
Ten children .. .. .	1,847	1,002	845	18,470	9,570	8,900	930	4.7
Eleven children .. .. .	827	461	366	9,097	4,824	4,273	886	2.0
Twelve children .. .. .	448	266	182	5,376	2,832	2,544	898	1.13
Thirteen children .. .. .	174	88	86	2,262	1,169	1,093	935	.43
Fourteen children .. .. .	60	33	27	840	444	396	892	.2
Fifteen children .. .. .	33	18	15	495	273	222	813	.08
Sixteen children .. .. .	15	10	6	240	130	110	846	.042
Seventeen children .. .. .	2	2	..	34	23	11	478	.005
Eighteen children .. .. .	3	3	..	54	21	33	1,571	.008
Nineteen children .. .. .	..	..	..	..	..	..	..	..
Twenty children .. .. .	2	2	..	40	21	19	905	.005

**SEX TABLE III**

**SIZE OF FAMILIES BY OCCUPATION OF HUSBAND**

Serial No.	OCCUPATION OF HUSBAND	Number of families examined	Total number of chil- dren born	Average per family	Total number of children surviving	Proportion of surviv- ing to total thou- sand born
1	2	3	4	5	6	7
	<b>Total</b> .. .. .	<b>39,768</b>	<b>226,456</b>	<b>5.69</b>	<b>136,795</b>	<b>604</b>
<b>I</b>	<i>Exploitation of animals and vegetation</i> .. .. .	<b>24,391</b>	<b>137,864</b>	<b>5.65</b>	<b>86,333</b>	<b>626</b>
1	Income from rent of land .. .. .	159	859	5.40	471	548
2	Cultivators of all kinds .. .. .	22,145	124,821	5.64	78,619	630
3	Agents, managers of landed estates, rent collectors, etc. .. .. .	2	11	5.50	1	91
4	Field labourers and wood-cutters, etc. .. .. .	1,399	8,223	5.88	5,014	610
5	Raisers of livestock, milkmen and herdsmen.	836	3,950	5.76	2,228	564
<b>III</b>	<i>Industry</i> .. .. .	<b>4,823</b>	<b>27,912</b>	<b>5.79</b>	<b>16,150</b>	<b>579</b>
1	Artisans and other workmen .. .. .	4,602	26,666	5.79	15,453	580
2	Sweepers and scavengers .. .. .	221	1,246	5.64	697	559
<b>IV</b>	<i>Transport</i> .. .. .	<b>184</b>	<b>1,108</b>	<b>6.02</b>	<b>679</b>	<b>613</b>
1	Sailors .. .. .	97	614	6.33	391	637
2	Palkhi bearers, etc. .. .. .	87	494	5.68	288	583
<b>V</b>	<i>Trade</i> .. .. .	<b>3,272</b>	<b>19,609</b>	<b>5.99</b>	<b>10,678</b>	<b>544</b>
<b>VI</b>	<i>Public force and others</i> .. .. .	<b>320</b>	<b>1,809</b>	<b>5.65</b>	<b>1,112</b>	<b>615</b>
<b>VIII</b>	<i>Public Administration</i> .. .. .	<b>913</b>	<b>5,509</b>	<b>6.03</b>	<b>2,806</b>	<b>509</b>
1	Religions .. .. .	1,048	6,376	6.08	3,495	642
2	Lawyers, Doctors, Teachers .. .. .	151	937	6.21	547	584
3	Others .. .. .	35	213	6.09	102	479
<b>IX</b>	<i>Persons living on their income</i> .. .. .	<b>239</b>	<b>1,337</b>	<b>5.59</b>	<b>724</b>	<b>542</b>
<b>X</b>	<i>Domestic Service</i> .. .. .	<b>178</b>	<b>836</b>	<b>4.70</b>	<b>502</b>	<b>600</b>
<b>XI</b>	<i>Insufficiently described occupations</i> .. .. .	<b>4,115</b>	<b>22,366</b>	<b>5.41</b>	<b>13,341</b>	<b>596</b>
1	Contractors, clerks, cashiers, etc., otherwise unspecified .. .. .	466	2,507	5.38	1,462	583
2	Labourers unspecified .. .. .	3,649	19,859	5.44	11,879	598
<b>XII</b>	<i>Unproductive</i> .. .. .	<b>99</b>	<b>580</b>	<b>5.89</b>	<b>326</b>	<b>562</b>
1	Beggars, prostitutes, criminals, inmates of jails and asylums .. .. .	90	517	5.74	288	557
2	Occupation unspecified .. .. .	9	63	7.00	38	603

## SEX TABLE IV

## SIZE OF FAMILIES BY CASTE OR RELIGION OF FAMILY

Serial No.	CASTE OR RELIGION	Number of families examined	Total number of children born	Average per family	Number of children surviving	Proportion of surviving to thousand born	Number of families with wife married at			
							13-14	15-19	20-29	30 and over
1	2	3	4	5	6	7	8	9	10	11
	<b>Total</b> .. ..	<b>39,768</b>	<b>226,456</b>	<b>5.69</b>	<b>136,795</b>	<b>604</b>	<b>30,915</b>	<b>5,819</b>	<b>2,586</b>	<b>448</b>
	<i>Advanced</i> .. ..	<i>16,701</i>	<i>97,148</i>	<i>5.81</i>	<i>58,197</i>	<i>599</i>	<i>13,787</i>	<i>1,939</i>	<i>832</i>	<i>143</i>
	<i>Hindu</i> .. ..	<i>15,661</i>	<i>91,329</i>	<i>5.83</i>	<i>54,597</i>	<i>598</i>	<i>13,188</i>	<i>1,683</i>	<i>679</i>	<i>111</i>
1	Bhavsar .. ..	129	688	5.33	322	468	112	13	2	2
2	Brahman .. ..	2,520	14,923	5.92	8,011	537	2,125	239	96	10
3	Brahmabhatt .. ..	219	1,297	5.92	703	542	184	21	13	1
4	Ghanchi .. ..	400	2,350	5.87	1,276	543	325	42	31	2
5	Kachhia .. ..	106	580	5.47	308	531	92	9	4	1
6	Luhana .. ..	317	2,072	6.53	1,229	593	247	46	20	1
7	Maratha .. ..	150	805	5.36	416	517	130	9	11	..
8	Patidar .. ..	9,172	52,241	5.69	33,515	642	7,768	926	399	79
9	Prabhu .. ..	61	530	8.68	317	598	53	7	1	..
10	Soni .. ..	231	1,533	6.63	791	516	198	21	11	1
11	Suthar .. ..	535	3,141	5.87	1,705	543	426	64	41	4
12	Vania .. ..	1,821	11,169	6.13	6,004	538	1,528	236	50	7
	<i>Muslim</i> .. ..	<i>702</i>	<i>4,333</i>	<i>6.02</i>	<i>2,572</i>	<i>594</i>	<i>423</i>	<i>182</i>	<i>81</i>	<i>16</i>
13	Khoja .. ..	40	314	7.85	179	570	16	15	7	2
14	Memon .. ..	102	735	7.20	433	589	66	26	7	3
15	Pinjara .. ..	68	361	5.31	204	565	51	7	9	1
16	Saiyad .. ..	67	391	5.84	246	629	40	15	12	..
17	Vohra .. ..	425	2,532	5.96	1,510	596	250	119	48	10
18	<i>Parsi</i> .. ..	<i>338</i>	<i>1,486</i>	<i>4.40</i>	<i>1,028</i>	<i>692</i>	<i>176</i>	<i>74</i>	<i>72</i>	<i>16</i>
	<i>Intermediate</i> .. ..	<i>11,205</i>	<i>61,862</i>	<i>5.52</i>	<i>37,508</i>	<i>606</i>	<i>8,661</i>	<i>1,646</i>	<i>788</i>	<i>110</i>
	<i>Hindu and Tribal</i> .. ..	<i>10,381</i>	<i>57,284</i>	<i>5.51</i>	<i>34,655</i>	<i>605</i>	<i>8,073</i>	<i>1,478</i>	<i>728</i>	<i>102</i>
19	Baria .. ..	1,361	7,041	5.17	4,522	642	1,182	137	38	4
20	Bava .. ..	226	1,261	5.57	712	565	171	33	20	2
21	Chamar .. ..	479	2,745	5.73	1,570	572	387	64	26	2
22	Darji .. ..	357	2,081	5.82	1,106	531	282	39	31	5
23	Garoda .. ..	116	729	6.28	391	536	85	14	15	2
24	Gola .. ..	109	565	5.18	316	559	101	7	1	..
25	Karadia .. ..	122	674	5.52	460	682	73	31	14	4
26	Kumbhar .. ..	962	5,388	5.60	3,226	599	759	128	68	7
27	Luhar .. ..	373	2,066	5.53	1,108	536	290	61	19	3
28	Mochi .. ..	191	1,092	5.71	633	580	159	19	9	4
29	Patanwadia .. ..	321	1,707	5.31	1,074	629	283	25	12	1
	<i>Primitive and Forest Tribes :-</i>									
30	Chodhra .. ..	899	4,939	5.49	2,992	606	431	289	165	14
31	Dhanka .. ..	44	227	5.16	133	586	27	13	3	1
32	Dhodia .. ..	152	916	6.02	632	690	79	42	26	5
33	Rajput .. ..	1,400	7,323	5.23	4,476	611	1,187	151	56	6
34	Sathawara .. ..	84	445	5.29	255	573	82	2	..	..
35	Talabda .. ..	653	3,570	5.46	2,254	631	556	51	40	6
36	Targala .. ..	135	864	6.41	475	550	78	34	22	1
37	Valand .. ..	493	2,791	5.66	1,558	558	389	67	32	5
38	Vankar (Dhed) .. ..	1,904	10,860	5.70	6,762	623	1,472	271	131	30
	<i>Muslim</i> .. ..	<i>779</i>	<i>4,267</i>	<i>5.48</i>	<i>2,689</i>	<i>630</i>	<i>548</i>	<i>167</i>	<i>56</i>	<i>8</i>
39	Fakir .. ..	62	322	5.19	204	630	44	13	5	..
40	Ghanchi .. ..	38	203	5.34	128	631	26	9	3	..
41	Malek .. ..	67	318	4.76	222	698	48	16	3	..
42	Molesalam .. ..	128	728	5.68	468	643	112	11	4	1
43	Momna .. ..	219	1,244	5.68	852	685	139	62	17	1
44	Pathan .. ..	97	536	5.53	322	601	65	25	4	3
45	Shaikh .. ..	106	573	5.41	262	457	75	15	14	2
46	Sindhi .. ..	35	185	5.28	130	703	21	9	4	1
47	Tai .. ..	27	158	5.85	101	624	18	7	2	..

**SEX TABLE IV**  
**SIZE OF FAMILIES BY CASTE OR RELIGION OF FAMILY—concl'd.**

Serial No.	CASTE OR RELIGION	Number of families examined	Total number of children born	Average per family	Number of children surviving	Proportion of surviving to thousand born	Number of families with wife married at			
							13—14	15—19	20—29	30 and over
1	2	3	4	5	6	7	8	9	10	11
48	Indian Christian ..	45	311	6.91	164	527	40	1	4	..
	Illiterate (Hindu and Tribal) .. ..	9,190	52,165	5.67	32,205	617	6,530	1,787	737	136
49	Bhangi .. ..	357	2,026	5.67	1,234	609	294	42	18	3
50	Bharwad .. ..	957	5,400	5.64	3,183	589	694	177	76	10
51	Chunvalia .. ..	47	279	5.93	157	563	25	14	6	2
	<i>Primitive and Forest Tribes :—</i>									
52	Bhil .. ..	765	4,533	5.93	2,983	658	566	141	50	8
53	Dubla .. ..	974	5,661	5.81	3,658	646	779	103	67	25
54	Gamit .. ..	873	5,138	5.89	3,366	655	382	327	150	14
55	Nayakda .. ..	93	583	6.27	385	660	66	18	8	1
56	Tadvi .. ..	287	1,660	5.78	1,096	660	239	37	10	1
57	Talavia .. ..	166	895	5.39	604	676	127	23	13	3
58	Vasava .. ..	259	1,496	5.77	1,040	697	212	25	19	3
59	Ravalia .. ..	426	2,241	5.26	1,377	614	311	64	34	17
60	Shenva .. ..	113	609	5.38	328	546	78	16	14	5
61	Thakarda-Koli ..	3,400	18,720	5.50	10,952	585	2,404	724	232	40
62	Vagher .. ..	81	515	6.35	336	652	34	34	10	3
63	Vaghri .. ..	392	2,409	6.14	1,506	625	319	42	30	1
	<i>Others .. ..</i>	<i>2,672</i>	<i>15,281</i>	<i>5.71</i>	<i>8,885</i>	<i>579</i>	<i>1,937</i>	<i>447</i>	<i>229</i>	<i>59</i>
64	Hindu others ..	1,659	9,941	5.99	5,700	573	1,193	283	151	32
65	Muslim others ..	1,013	5,340	5.27	3,185	596	744	164	78	27

**SEX TABLE V**  
**VARIATIONS IN SIZE OF FAMILY BY AGE OF MOTHER AT MARRIAGE**

Age of wife at Marriage	Number of families	Number of children born	Average observed	Number of children surviving	Average observed
1	2	3	4	5	6
<b>Total</b>	<b>39,786</b>	<b>226,456</b>	<b>5.69</b>	<b>136,795</b>	<b>3.43</b>
13—14 ..	30,915	179,369	5.74	106,887	3.46
15—19 ..	5,819	33,982	5.83	20,807	3.58
20—24 ..	2,082	11,145	5.35	6,881	3.30
25—29 ..	504	2,284	4.53	1,369	2.71
30 and over ..	448	1,576	3.51	851	1.89

**SEX TABLE VI**  
**CORRELATION OF AGES OF PARENTS**

Age of wife at last marriage		AGE OF HUSBAND AT LAST MARRIAGE															
		13—19		20—29		30—49		50 and over		Dead							
Age periods	Number of wives	Number of husbands		No. of children		Number of husbands		No. of children		Number of husbands		No. of children		Number of husbands		No. of children	
		Born	Surviving	Born	Surviving	Born	Surviving	Born	Surviving	Born	Surviving	Born	Surviving	Born	Surviving		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
13	29,718	17,232	102,103	62,182	8,306	47,418	28,627	1,040	5,709	3,455	7	49	25	3,133	15,010	8,264	
14	1,197	549	3,367	2,137	457	2,685	1,619	41	259	161	1	12	8	149	767	409	
15—19	5,819	1,079	6,710	4,194	3,474	20,626	12,099	473	2,690	1,734	4	21	8	789	3,095	2,172	
20—24	2,082	55	272	187	1,089	5,941	3,846	472	2,552	1,610	11	56	40	455	2,324	1,218	
25—29	504	11	55	22	92	441	303	229	991	630	5	20	8	167	777	406	
30 and over	448	1	7	..	23	70	39	233	736	458	35	64	42	156	699	312	
<b>Total</b>	<b>39,768</b>	<b>18,927</b>	<b>112,514</b>	<b>68,702</b>	<b>13,441</b>	<b>77,181</b>	<b>47,133</b>	<b>2,488</b>	<b>13,027</b>	<b>8,942</b>	<b>63</b>	<b>222</b>	<b>131</b>	<b>4,849</b>	<b>23,512</b>	<b>12,781</b>	

## SEX TABLE VII

## SIZE OF FAMILY BY DURATION OF MARRIAGE IN DIFFERENT CASTES

Serial No.	CASTE OR RELIGION OF HUSBAND	DURATION OF MARRIAGE WITH THE PRESENT WIFE					
		BELOW 10		10		11—19	
		Number of families	Number of children	Number of families	Number of children	Number of families	Number of children
1	2	3	4	5	6	7	8
	<b>Total</b> .. .. .	<b>43,535</b>	<b>64,952</b>	<b>6,035</b>	<b>15,627</b>	<b>63,656</b>	<b>236,943</b>
1	Brahman .. .. .	3,322	4,637	360	989	3,888	14,286
2	Koli and allied castes .. .. .	5,960	9,047	828	2,098	10,055	36,516
3	Patidar .. .. .	8,898	13,264	1,271	3,139	14,703	55,528
4	Rajput .. .. .	1,603	2,386	227	551	2,574	9,030
5	Vania .. .. .	1,716	2,566	187	523	1,997	7,990
6	Vankar .. .. .	1,789	2,383	244	601	2,941	11,250
7	Other Hindu .. .. .	11,833	17,039	1,531	3,988	15,261	56,843
8	Jain .. .. .	625	687	92	248	797	3,096
9	Muslim .. .. .	2,975	4,560	438	1,213	3,752	14,299
10	Parsi .. .. .	79	130	20	48	182	702
11	Primitive and Forest Tribes .. .. .	4,681	7,977	832	2,214	7,428	27,087
12	Indian Christian .. .. .	54	96	5	15	78	316

Serial No.	CASTE OR RELIGION OF HUSBAND	DURATION OF MARRIAGE WITH THE PRESENT WIFE					
		20—31		32		33 and over	
		Number of families	Number of children	Number of families	Number of children	Number of families	Number of children
1	2	9	10	11	12	13	14
	<b>Total</b> .. .. .	<b>56,764</b>	<b>311,147</b>	<b>9,497</b>	<b>56,971</b>	<b>25,751</b>	<b>144,060</b>
1	Brahman .. .. .	3,272	18,191	578	3,707	1,790	10,300
2	Koli and allied castes .. .. .	8,888	46,727	1,486	8,229	3,577	19,356
3	Patidar .. .. .	13,280	72,804	2,360	15,219	6,109	33,053
4	Rajput .. .. .	2,036	10,801	414	2,389	976	4,877
5	Vania .. .. .	1,662	7,790	252	1,575	881	5,461
6	Vankar .. .. .	2,824	15,780	513	3,097	1,165	6,519
7	Other Hindu .. .. .	13,916	77,074	2,377	14,062	6,516	37,503
8	Jain .. .. .	763	4,465	133	852	434	2,546
9	Muslim .. .. .	3,445	18,552	494	2,747	1,591	8,970
10	Parsi .. .. .	204	960	38	151	231	1,068
11	Primitive and Forest Tribes .. .. .	6,401	35,552	840	4,859	2,452	14,207
12	Indian Christian .. .. .	73	452	12	84	29	200

## SEX TABLE VIII

## PROPORTION OF FERTILE AND CHILDLESS MARRIAGES

## A—All Cases Examined

AGE OF WIFE AT MARRIAGE	DURATION OF MARRIAGE YEARS							
	0—4		5—9		10—14		15 and over	
	Fertile	Childless	Fertile	Childless	Fertile	Childless	Fertile	Childless
1	2	3	4	5	6	7	8	9
<b>Total</b> .. .. .	<b>3,983</b>	<b>5,379</b>	<b>30,163</b>	<b>4,010</b>	<b>33,346</b>	<b>1,157</b>	<b>124,721</b>	<b>2,479</b>
13—14 .. .. .	2,668	4,382	25,854	3,645	28,294	977	105,512	2,053
15—19 .. .. .	968	854	3,519	286	4,065	114	15,026	261
20—24 .. .. .	232	90	588	46	722	31	3,290	90
25—29 .. .. .	73	22	130	10	168	14	587	28
30 and over .. .. .	42	31	72	23	97	21	306	47

**SEX TABLE VIII**  
**PROPORTION OF FERTILE AND CHILDLESS MARRIAGES**  
*B—Cases of continuing fertility only*

AGE OF WIFE AT MARRIAGE	DURATION OF MARRIAGE YEARS							
	0—4		5—9		10—14		15 and over	
	Fertile	Childless	Fertile	Childless	Fertile	Childless	Fertile	Childless
1	2	3	4	5	6	7	8	9
<b>Total</b> .. ..	<b>3,979</b>	<b>5,376</b>	<b>30,151</b>	<b>4,001</b>	<b>33,293</b>	<b>1,143</b>	<b>85,996</b>	<b>1,531</b>
13 .. ..	2,217	3,915	23,952	3,448	26,592	930	71,682	1,271
14 .. ..	451	467	1,902	197	1,702	47	3,629	68
15—19 .. ..	968	854	3,519	286	4,065	114	9,318	150
20—24 .. ..	232	90	588	46	722	31	1,258	40
25—29 .. ..	73	22	130	10	168	14	109	2
30 and over .. ..	38	28	60	14	44	7	..	..

**SEX TABLE VIII**  
**PROPORTION OF FERTILE AND CHILDLESS MARRIAGES**  
*C—Cases of completed fertility only*

AGE OF WIFE AT MARRIAGE	DURATION OF MARRIAGE YEARS							
	0—4		5—9		10—14		15 and over	
	Fertile	Childless	Fertile	Childless	Fertile	Childless	Fertile	Childless
1	2	3	4	5	6	7	8	9
<b>Total</b> .. ..	<b>4</b>	<b>3</b>	<b>12</b>	<b>9</b>	<b>53</b>	<b>14</b>	<b>38,725</b>	<b>948</b>
13 .. ..	..	..	..	..	..	..	29,033	685
14 .. ..	..	..	..	..	..	..	1,168	29
15—19 .. ..	..	..	..	..	..	..	5,708	111
20—24 .. ..	..	..	..	..	..	..	2,032	50
25—29 .. ..	..	..	..	..	..	..	478	26
30 and over .. ..	4	3	12	9	53	14	306	47

**SEX TABLE IX**  
**AGE OF MOTHER AT FIRST BIRTH**

CASTE OR RACE	AGE OF MOTHER AT FIRST BIRTH						Total number of cases
	Below 13	13	14	15	16—20	21 and over	
<i>Part A—All cases dealt with</i>							
<i>Advanced</i> .. ..	..	538	949	2,219	11,990	6,880	22,576
Brahman .. ..	..	80	192	489	2,441	898	4,100
Patidar .. ..	..	372	600	1,358	7,759	5,165	15,254
Vania .. ..	..	69	119	253	1,181	406	2,028
Jain .. ..	..	16	34	102	485	209	846
Parsi .. ..	..	1	4	17	124	202	348
<i>Intermediate</i> .. ..	..	649	1,190	2,850	13,615	9,033	27,337
Rajput .. ..	..	54	114	281	1,342	974	2,765
Indian Christian .. ..	..	2	3	6	30	23	64
Vankar .. ..	..	60	115	255	1,339	1,145	2,914
Other Hindu .. ..	..	435	731	1,770	8,535	5,384	16,855
Muslim .. ..	..	98	227	538	2,369	1,507	4,739
<i>Illiterate</i> .. ..	..	450	694	1,723	10,111	7,874	20,852
Koli and allied castes .. ..	..	246	407	1,070	6,190	4,626	12,539
Primitive and Forest Tribes .. ..	..	204	287	653	3,921	3,248	8,313
<b>Total</b> .. ..	..	<b>1,637</b>	<b>2,833</b>	<b>6,792</b>	<b>35,716</b>	<b>23,787</b>	<b>70,765</b>



## SEX TABLE IX

## AGE OF MOTHER AT FIRST BIRTH—concl'd.

CASTE OR RACE	AGE OF MOTHER AT FIRST BIRTH					Total Number of cases
	Below 13	13	14	15	16 and over	
1	2	3	4	5	6	7
<i>Part B—Cases of continuing fertility only</i>						
<i>Advanced</i> .. .. .		524	921	1,982	16,082	19,509
Brahman .. .. .		76	184	448	2,910	3,618
Patidar .. .. .		365	587	1,214	10,958	13,124
Vania .. .. .		67	116	227	1,410	1,820
Jain .. .. .		15	32	88	599	734
Parsi .. .. .		1	2	5	205	213
<i>Intermediate</i> .. .. .		627	1,168	2,600	19,367	23,762
Rajput .. .. .		52	109	260	1,951	2,372
Indian Christian .. .. .		2	3	6	48	59
Vankar .. .. .		58	112	224	2,129	2,523
Other Hindu .. .. .		419	720	1,627	11,978	14,744
Muslim .. .. .		96	224	483	3,261	4,064
<i>Illiterate</i> .. .. .		434	671	1,561	15,425	18,091
Koli and allied castes .. .. .		240	394	957	9,310	10,901
Primitive and Forest Tribes .. .. .		194	277	604	6,115	7,190
<b>Total</b> .. .. .		1,585	2,760	6,143	50,874	61,362
<i>Part C—Cases of completed fertility only</i>						
<i>Advanced</i> .. .. .		14	28	237	2,788	3,067
Brahman .. .. .		4	8	41	429	482
Patidar .. .. .		7	13	144	1,966	2,130
Vania .. .. .		2	3	26	177	208
Jain .. .. .		1	2	14	95	112
Parsi .. .. .		..	2	12	121	135
<i>Intermediate</i> .. .. .		22	22	250	3,281	3,575
Rajput .. .. .		2	5	21	365	393
Indian Christian .. .. .		..	..	..	5	5
Vankar .. .. .		2	3	31	355	391
Other Hindu .. .. .		16	11	143	1,941	2,111
Muslim .. .. .		2	3	55	615	675
<i>Illiterate</i> .. .. .		16	23	162	2,560	2,761
Koli and allied castes .. .. .		6	13	113	1,506	1,638
Primitive and Forest Tribes .. .. .		10	10	49	1,054	1,123
<b>Total</b> .. .. .		52	73	649	8,629	9,403

## SEX TABLE X

## THE FREQUENCY OF BIRTHS

CASTE OR RELIGION	DIFFERENCE (IN YEARS) BETWEEN THE BIRTHS OF									NUMBER OF FAMILIES WITH			
	1st and 2nd child			2nd and 3rd child			3rd and 4th child			Total	One child only	Two children	Three children only
	1-2	3	4 and over	1-2	3	4 and over	Total	One child only	Two children				
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Total</b>	1,762	1,732	4,634	1,947	1,542	3,262	1,661	1,297	2,072	9,403	1,275	1,477	1,621
<b>HINDU JAIN AND TRIBAL</b>													
<i>Advanced</i> .. .. .	589	670	1,654	645	615	1,134	578	464	737	3,360	447	519	615
<i>Intermediate</i> .. .. .	451	425	1,112	470	358	762	399	300	513	2,343	355	398	378
<i>Illiterate</i> .. .. .	450	435	1,327	480	371	1,018	469	380	585	2,475	283	363	415
Other Hindu .. .. .	85	69	184	100	53	118	79	44	71	410	72	67	77
Muslim .. .. .	133	114	307	143	121	183	108	95	139	675	116	112	105
Parsi .. .. .	47	19	47	25	24	46	26	12	27	135	22	18	30
Indian Christian .. .. .	2	..	3	4	..	1	2	2	..	5	..	..	1

## SEX TABLE XI

## DURATION OF CHILDLESS PERIOD

Serial Number	CASTE OR RELIGION	Duration (in years) of the childless period after the birth of the youngest child		
		1—2	3—4	5 and over
1	2	3	4	5
	<b>Total</b> ..	<b>306</b>	<b>370</b>	<b>8,727</b>
1	Hindu Jain and Tribal Advanced .. .. .	74	86	3,200
	Intermediate .. .. .	103	100	2,130
	Illiterate .. .. .	93	129	2,253
	Other Hindu .. .. .	10	15	385
2	Muslim .. .. .	25	30	620
3	Parsi .. .. .	1	..	134
4	Indian Christian .. .. .	..	..	5

## CHAPTER VI

### CIVIL CONDITION

#### § I. GENERAL ANALYSIS OF FIGURES

**187. Reference to Statistics**—The Imperial and State Tables utilised for the use of Chapters IV and V are again the basis for the figures of marriage and widowhood, with which this chapter is concerned. At the end of this chapter will be found the following five Subsidiary Tables which are prepared from the above Tables giving the requisite proportionate figures:—

SUBSIDIARY TABLE	I—	Distribution by Civil Condition of 1,000 of each sex, religion, and main age-period at each of the last five censuses.
„	„	II—Distribution by Civil Condition of 1,000 of each sex at certain ages in each Religion and Natural division.
„	„	III—Distribution by main Age-periods and Civil Condition of 10,000 of each Sex and Religion.
„	„	IV—Proportion of the Sexes by Civil Condition at certain ages for Religions and Natural divisions.
„	„	V—Distribution by Civil Condition of 1,000 of each sex at certain ages for selected castes.

**188. Scope of the Chapter**—On this occasion, as in 1921, the scope of this chapter will be severely limited to the statistics of marriage, together with such aspects of social reference which are connected with the figures as influences explanatory of the variations. As the question of fertility has been dealt with separately, the figures of marriage and widowhood as two aspects of civil condition will now be analysed. The large amount of descriptive matter regarding social customs connected with marriage, widowhood and divorce which used to figure in Census Reports prior to 1921, will be again omitted on general grounds that they are not strictly relevant to a statistical report. There is little need for such matter of sociological interest in a Census Report, particularly as there are gazetteers and other literature extant, in which all this is embodied. Recently Rao Bahadur Govindbhai Desai, under orders of the Huzur, has prepared a handy manual entitled “Hindu Families in Gujarat” in which a great deal of information, popularly dressed up, is compiled for the general reader. Certain special statistics, regarding the prevalence of divorce in the different castes, will be dealt with in an appendix to Chapter XII.

**189. Accuracy of the Record**—The instructions regarding the entry of details of civil condition were precise and elaborate. The civil condition of every person, whether infant, child or grown up was to be entered. Only three kinds of civil condition were recognised: *single*, *married* or *widowed*. The question was what was to be the test of marriage. As before, the full formal ceremony such as social custom recognised as the binding form of marriage was taken as the test. Included under marriage were the Musalman’s *nikah*, the widow’s remarriage under the *natra* form and the levirate or *diyar vatu* (marriage of the widow with the deceased husband’s younger brother). But mere betrothal or *vagdan*, *sagai* or *vivah* was not considered adequate for the civil condition of marriage. Presumably marriages of brides below eight years of age declared invalid recently under the Infant Marriage Prevention Act of the State would not be entered as such. Prostitutes and hermaphrodites were to be shown as unmarried. Un-

married women, even though with children, should be treated as if they were single. Similarly the previous civil condition of kept women and concubines was to be entered. Divorced persons were to be entered as widowed. Finally there was a special provision in this State about *khandhadiyas* among the Raniparaj. These are probationer *fiancés* who are adopted into the household pending approval by the prospective father-in-law and even of the bride herself. A *khandhadiyo*, during probation, may live with his chosen bride-to-be and even propagate before the formal ceremony of marriage takes place. Such cases were treated as *single*. These instructions were clearly understood. As the details on the present occasion were to be filled in by ticks and crosses in books of slips, instead of the Enumeration Schedules of other censuses, it is possible that a few inefficient enumerators may have been confused and put a cross where an affirmative sign was necessary. But these mistakes were mostly corrected during inspections. A few were detected at the sorting stage and local enquiries supplemented the record. Occasionally some enumerators did not know the implication of the formal ceremony of marriage, supplementary instructions giving details of mock marriage, as when a girl is first married to a bunch of flowers and then remarried as a "widow" or a bachelor, to enable him to marry a widow, is first "married" to a *Shami* tree and so on. The ceremony of *saptapadi* or *mangalphero* was considered necessary for a valid marriage of a virgin, while the *natra* form was specifically included under marriage in the instructions. But apart from unintentional errors due to inexperience or doubt about instructions, we had also to contend with the factor of wilful misstatement. The census is still looked upon as a mysterious agency with the magic property of turning a person's caste, civil condition, age or even sex. Not only this, but the deliberate falsifier supplies a false return in the fond hope that the census record may be utilised at some future date for an ulterior purpose to his benefit. He does not realise however that the census slips after being compiled into tables which have no individual interest, are sold as rubbish or destroyed. We noticed in the chapters on Age and Sex how heaping in certain ages is due to the operation of certain laws like the Infant Marriage Prevention Act. In the chapter on Literacy, we shall also notice the reactions in this respect of the provisions of compulsory education in this State. In this way a certain proportion of the errors are of an intentional character. Thus prostitutes and kept women may have deliberately called themselves married. Leper women and such like, who are unmarried on account of their infirmities, may have wished to call themselves married or at least widowed. Adult spinsters, who have become unsaleable through their want of good looks, may have similarly passed off as widowed. I do not think however that the Infant Marriage Prevention Act had any special influence in encouraging *falsification* of the civil condition return. As pointed out in the 1921 Report, it was hardly likely that married girls below 12 would be shown as unmarried, for if any falsification was necessary they could resort to the readier expedient of entering a wrong age. Errors were therefore very few indeed, and next to the return of sex, the civil condition statistics are the most accurate details of the census figures.

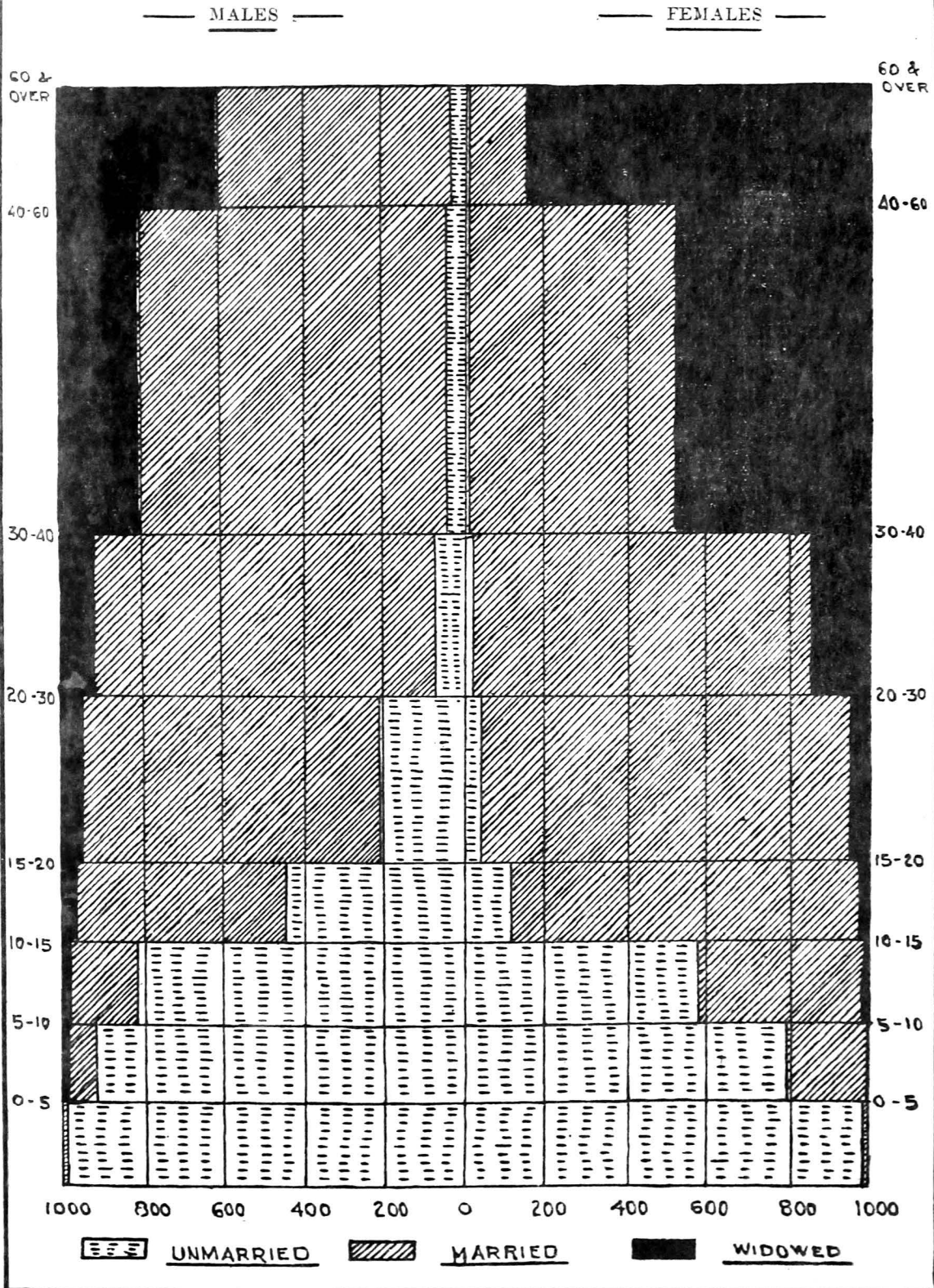
**190. Main Features of the Return**—Of the total population of 2,443,007 persons, 1,222,750 or nearly 50 per cent are married and 259,258 or 10.6 per

AGE	MALE			FEMALE		
	Un-married	Married	Widowed	Un-married	Married	Widowed
All Ages ..	454	479	67	329	524	147
0—5 ..	996	4	..	989	10	1
5—10 ..	916	79	5	798	197	5
10—15 ..	810	182	8	580	412	8
15—20 ..	443	540	17	108	872	20
20—40 ..	143	804	53	12	885	103
40—60 ..	42	708	190	2	528	472
60 and over ..	32	576	392	2	169	829

cent are widowed. The marginal table summarised from Subsidiary Table I gives the main proportionate figures of civil condition for each sex in the main age-groups. These figures at once point to certain main features, which mark off the State civil condition return in common with all-India figures, from the cor-

responding statistics of European countries.

DIAGRAM SHOWING THE PROPORTION PER MILLE  
WHO ARE MARRIED AT EACH AGE PERIOD



(a) *Universality of Marriage*—The previous Census Reports have laid emphasis first and foremost, on the universality of marriage in India. Hinduism through its religious sanctions still exerts a paramount influence in favour of the married state. Jainism, although in essence it is a monastic system founded on the ideal of celibacy cannot escape the all pervasive influence of Hinduism in this regard as in other respects. The Tribal faiths are fast giving place to these ideas. Islam through its Neo-Muslims and other local converts is affected by these ideas, so much so that recent converts from Hinduism still retain their old attitude towards caste and social practices like prohibition of remarriage of widows. The Indian Christian convert is still a victim to the characteristic social attitude of his

Civil Condition	Per 100 in	
	1931	1921
Unmarried ..	39	40
Married ..	50	48
Widowed ..	11	12

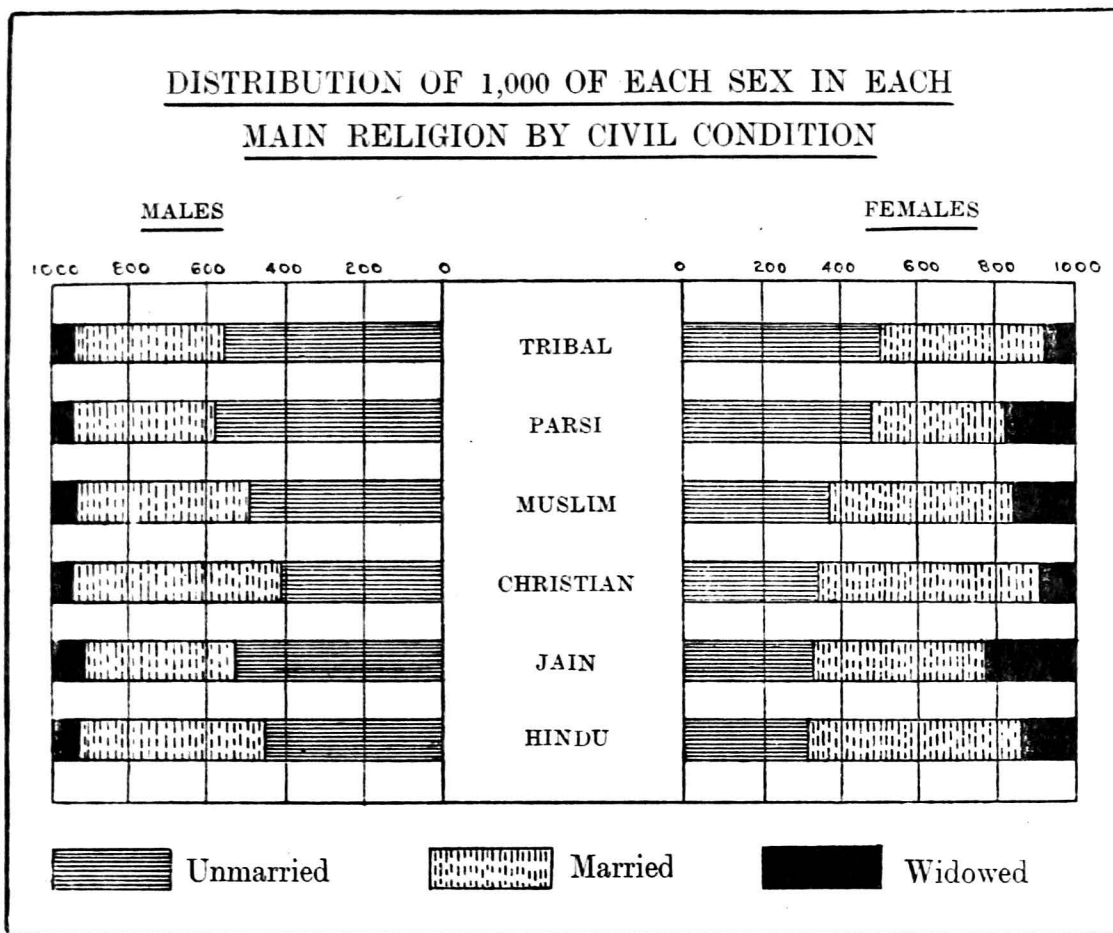
Hindu caste fellows. The Parsis are now coming out of these influences, although marriage remains still a most important feature of their social organisation. That education and economic necessity are still powerless in affecting the proportions is shown in the inset in which it is seen that the unmarried ratio has actually decreased as that of the married has increased since 1921.

(b) *Early Marriage*—The early age of marriage still persists as a feature of the returns not only in this State, but also in India. In this State, one male in six below 20, and every alternate female below that age limit were returned as married in 1931. According to M. Sundbärg's figures quoted in the Indian Census Report of 1911, only one male in 2,147 and one female in 142, below 20 years of age, were married in the countries of Western Europe. Italy and Russia may be supposed to approach somewhat Indian conditions in the prevalence of early marriage, but even there the corresponding proportions show a much higher age at marriage than in India. In Italy (as shown in the India Census Report of 1921) only one in a thousand males, and a little more than one in a hundred females, are married before 20. Here in this State, early marriage is very widely prevalent in all classes, while the formal marriage of children below 5 is still a feature of the returns.

(c) *The Large Number of Widows*—The third feature of the returns is the high proportion of the widows. The proportion of widowers is only about 7 per cent and does not differ greatly from other countries. The proportion of widows is however 15 per cent, while the average in European countries is only about 9. In England and Wales in 1911, it was only 7. But the proportion of young widows particularly amongst Hindus and Jains is very high. Amongst women of child bearing ages, one in ten Hindus, and one in five Jains, are widows. Compared to this ratio, the proportion in England amongst women aged 20-40 is hardly one in 200. The large widowed element amongst the women in the State is due mainly to the Hindu prohibition of remarriage of widows and also in part as a result of disparate marriages.

**191. Civil condition by Religion**—The distribution of the population by religion is an important index to the varied influences of social practices enjoined by the different faiths on their followers. In the accompanying diagram, the statistics of civil condition for the main religions are plotted to illustrate the special factors. The largest proportion of bachelors is amongst the Parsis, while the Tribal aborigines are credited with the highest proportion of spinsters. The widows are no less than 23 per cent of Jain women. The low proportion of the Parsi males who are married is also due to the fact that a large number of able-bodied Parsi men emigrate to places outside the State. The Tribals marry later than Muslims, and have therefore more unmarried and fewer widowed, the difference being specially marked amongst their women. The Indian Christians have a very high proportion of the married, much higher than the Hindus from whom they are recruited, but as they freely allow widow remarriage, their proportion of the widowed is much less than in other religions, except the Tribal. The Muslims and Parsis, although allowing widow remarriage, have a higher proportion of widowed females than

Hindus. That is because the proportion of Hindu widow has fallen considerably in this census, owing to the absorption of the bulk of the Raniparaj, who had previously been returned as Animist or Tribal. In reality the Muslim ratio of the widowed females was 171 in 1921, so that the strength of Muslim widows has greatly declined. The high average of the unmarried amongst the Tribal, it must be

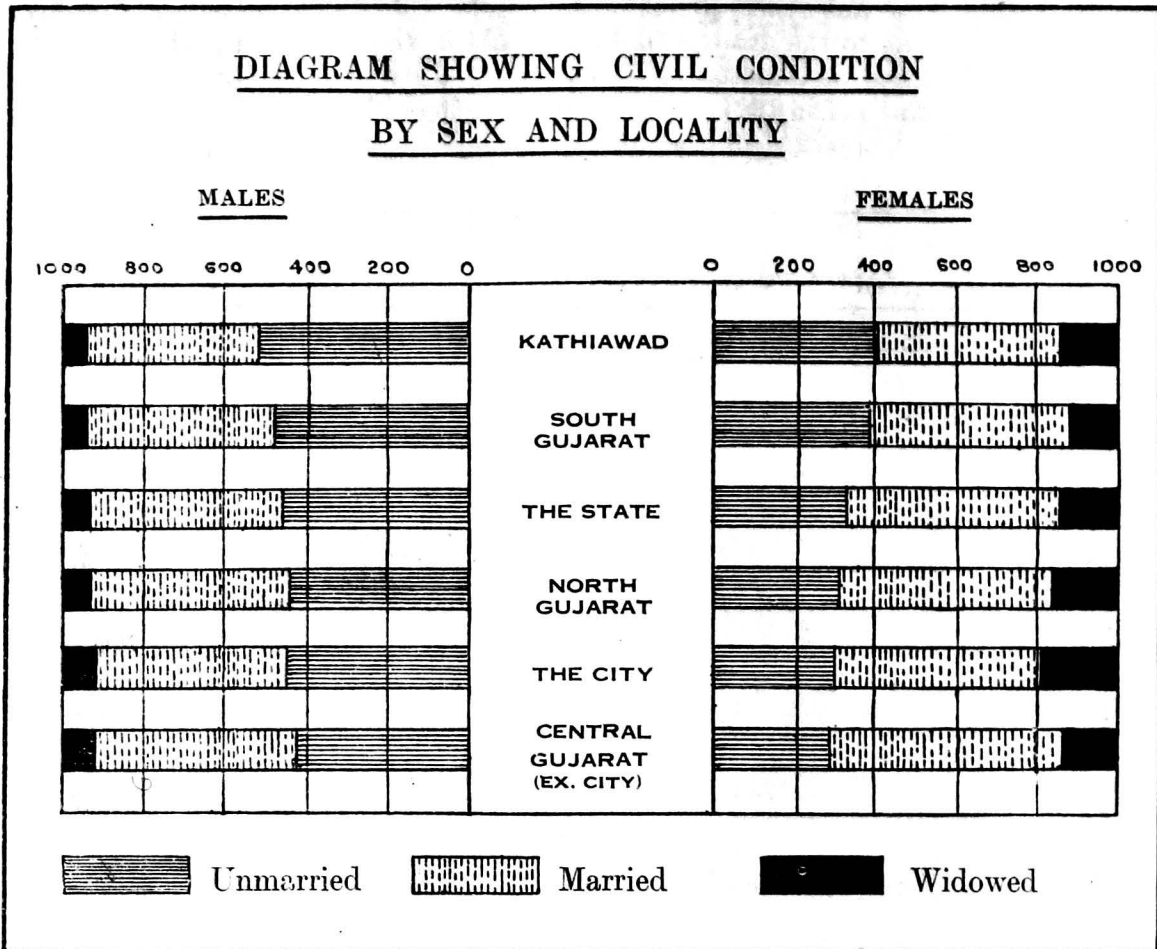


remembered, is not merely ascribable to its practice of adult marriage, but also to the very high proportion of its child population, which gives it a low mean age (*vide* Chapter IV—Part I). The relatively high proportion of widows amongst the Parsis in the State is remarkable showing that emigration in that community affects a large number of married Parsi women who are away with their husbands.

**192. Civil condition by Locality**—The marginal table and diagram give the main facts regarding civil condition in the different divisions. The City shows the largest proportion of widows, because the composition of its inhabitants has a preponderance of advanced Hindu groups which sternly set their face against

NATURAL DIVISION	Ratios by Locality					
	Male			Female		
	Un-married	Married	Widowed	Un-married	Married	Widowed
<b>Baroda State</b> ..	<b>45</b>	<b>48</b>	<b>7</b>	<b>33</b>	<b>52</b>	<b>15</b>
The City ..	45	48	7	31	50	19
Central Gujarat ..	43	50	7	29.4	56.2	14.4
Kathiawad ..	53	41	6	40	46	14
North Gujarat ..	45	48	7	31	53	16
South Gujarat ..	49	45	6	39.4	49.3	11.3

the remarriage of widows. South Gujarat on account of its Raniparaj shows the least relative strength of widows. North Gujarat next to Central Gujarat has the highest proportion of married females, because it is in this locality that early marriage is most rife. The preponderance of the married amongst Central Gujarat women is chiefly due to contiguous migration with females predominating, the balance in which has largely increased in favour of this division in the last 10 years.



The very high proportion of the unmarried in both sexes in Kathiawad is due to its age-constitution in which children below 15 bulk far more than in other areas, but it is the result also of the high proportion of widows that are not allowed to remarry. The variations in the different localities are therefore the cumulative result in each of the effect of the age constitution and the influence of social practices prevailing in the different religious groups.

## § 2. ANALYSIS BY AGE PERIODS

**193. Civil condition by Sex and Age: The Proportion of the Unmarried**—The variations by religion are better understood if figures are presented in broad age groups by sex. Subsidiary Tables I and II give proportions in the different religions of persons who are unmarried, married or widowed per mille of each sex at each age period. The age-periods selected for this purpose in these Tables are 0-5, 5-10, 10-15, 15-40 and 40 and over. It is not necessary here to carry the analysis by religion to the different localities, as the variations by age and religion in the divisions are too minute to justify any deductions of far reaching character. It will be best to confine ourselves to the State as a whole. In that connection it will be more convenient to study this statistical material in so far as they relate to certain special features. First let us see how the variations in the proportions of the unmarried work out in the main religions. The following Table collects the principal figures from Subsidiary Table II:—

RELIGION	Proportion of the Unmarried per mille									
	Male aged					Female aged				
	0-5	5-10	10-15	15-40	40 and over	0-5	5-10	10-15	15-40	40 and over
ALL RELIGIONS ..	996	916	810	217	40	989	798	580	36	2
Hindu .. ..	996	909	795	203	40	988	781	551	28	2
Tribal .. ..	1,000	996	987	319	18	1,000	991	941	166	8
Muslim .. ..	997	962	913	294	38	987	903	760	67	4



In the above table the Hindus generally show a lower rate of the unmarried than other religions, but amongst females, the Hindu rate in the higher age-groups is even much lower than amongst the Muslim and the Tribal. Nearly one in five of adult females amongst the Raniparaj is a spinster, while hardly 3 per mille of Hindu females of these ages are unmarried. The Jain figures are omitted from the above table as they are very like the Hindu proportions, except that they show a much higher proportion of aged bachelors (aged 40 and over).

**194. Early marriage**—The problem of married children requires a more detailed analysis. The results of this census conclusively prove that the spectre of early marriage dies hard and still remains an ugly feature of the returns. But the proportion of children below 5, who are married is getting happily smaller year after year. In 1891, no less than 41 per mille of the boys, and 92 per mille of girls under 5, were married. The margin sets out the variations since then. The proportionate increase all round in 1911 was due to the abnormal conditions prevailing in the child population as a result of the

YEAR	Proportion of Married Children per mille of total children aged					
	0-5		5-10		10-15	
	Boys	Girls	Boys	Girls	Boys	Girls
1901 ..	24	36	94	154	245	485
1911 ..	39	83	111	188	236	515
1921 ..	8	15	50	112	185	441
1931 ..	4	10	79	197	182	412

great famine of 1900, which discouraged marriages, accounting for the lowness of the ratios for 1901. The later years caused a rebound and the children were married as fast as their parents could, as if to make up for lost time. In 1921, there was a very satisfactory decrease owing to the stricter operation in the previous decade of the Infant Marriage Prevention Act, which had come into force in 1904. In the first seven years of its existence, it was very lightly worked, presumably because it had to encounter the sullen opposition of the people. Popular opinion in the later years veered to its side and the provisions were thereupon more strictly enforced. These circumstances were reflected in the census returns of 1921. Since that date, enlightened opinion had crystallised definitely in the direction of further stiffening of the provisions of the Act. A committee was appointed by His Highness's Government in 1926, which reported in favour of raising the age limits and making the penal provisions more stringent. Concurrently with these contemplated changes in this Act, the age of consent was raised in 1928 to fourteen within, and 18 outside, the marital relationship. The Infant Marriage Prevention Act, as amended three years ago, declares that (i) marriages of parties wherever the age of one or both of the parties is below 8 years are void; (ii) raises the maximum limit of fines from Rs. 50 to Rs. 200; and (iii) punishes parties abetting in the bringing about of unions of persons below 8 years with imprisonment and fine. The date of the coming into operation of these new changes was widely advertised, so that castes which are addicted to early marriage took advantage of that fact and married off their children in hot haste before the law could declare their marriages illegal. Thus the marriages below the minimum ages according to the old law jumped up from 3,877 to 5,024 before the new official year began on the 1st August 1929, on which date the new amendments came into force. As a result the Census of 1931 showed a large increase of married children aged 5-10 from 23,390 in 1921 to 41,174 in 1931 or by 76 per cent. The marginal table above shows that there is a fall in the age-groups 0-5 and 10-15, but a steep rise significantly in the age-group 5-10. This is evidently due to the circumstances above related. That such marriages in the age-group 5-10 were mostly confined to the Hindu and Jain sections and did not extend to Muslims and others is shown by the fact that while the Muslim and Tribal ratios of the unmarried in the age period 5-10 have only been slightly modified since 1921, the Hindu proportion for females has decreased from 872 to 781.

**195. The Operation of the Infant Marriage Prevention Act**—The results of the Act deserve a little closer analysis. It has now existed for 28 years

and yet the annual average of offences, judging from the inset table increased till

Annual Average		
Year	Offences	Convictions
1904-11 ..	Not available	3,341
1911-20 ..	4,880	4,051
1921-30 ..	7,753	6,487
		(Estimated)
1931 .. ..	2,520	2,122
		(Estimated)

1930 almost to the extent of proving that the provisions of the law had almost ceased to have any effect in changing the social conduct of the people. The peak of the offence curve was attained in 1923 when no less than 15,801 offences were recorded. Since then the decline in offences though slow has been continuous. The new changes came into force from the 1st of August 1929. The number of offences for the previous year under the old provisions was 6,622. Under the first year of the new Act, the number of offences declined to 5,517. The latest figure for 1931 shows that this number has further declined to only 2,520. A larger amount in fines was realised, but only 3 persons were sentenced to imprisonment in 1930. In 1931, the amount in fines decreased considerably because of the smaller number of offences, but Brahmans and Kshatriyas claimed more of the fines than in any previous year. Apart from offences the actual number of child marriages has also declined. In the last two years, under the operation of the new Act, this decrease is happily large and satisfactory. Whether this decline is the result of the more stringent provisions of the Act and will eventually lead to the eradication of this evil, it is too early yet to say. Much depends upon the local magistracy and how they enforce the provisions.

YEAR	NUMBER OF REGISTERED MARRIAGES		
	Marriages above age-limit	Marriages below age-limit	Proportion of marriages below age to total
1916-20 (Annual average)	6,773	3,365	33.2
1921 .. ..	10,398	4,319	29.3
1922 .. ..	8,484	3,181	27.2
1923 .. ..	12,742	6,713	34.0
1924 .. ..	12,489	6,487	34.0
1925 .. ..	12,737	6,415	33.4
1926 .. ..	10,304	5,463	34.7
1927 .. ..	10,098	5,462	31.1
1928 .. ..	11,663	6,577	36.1
1929 .. ..	10,034	5,029	33.5
1930 .. ..	11,315	3,877	25.5
1931 .. ..	11,590	2,510	17.8

It cannot however be doubted that before the new Act was amended, the penal provisions were wholly ineffective. Magistrates were careless and indifferent, and the people looked upon the light fines imposed as only an added item to their marriage budget. But apart from the indifference of the magistracy the chief difficulty has been so far the fact that our territory is interlaced with British India and other States, and unless the whole area takes up the provisions in restraint of child-marriage, this State cannot hope for much success in the working of its own law. The Sarda Act in British India only came into force from the 1st April 1930 and has encountered opposition, not only from the ranks of Hindu orthodoxy which was expected, but also from the Muslims which indeed was entirely unexpected. The State Act has been worked amongst the Musalmans here without any opposition for nearly a whole generation ; in view of this circumstance and also of the fact that with them marriage is usually adult, it is surprising to find even enlightened Muslim opinion in British India ranging itself in opposition. At all events, the Sarda Act does not appear to have a very hopeful prospect for its future working. In the meantime steps are already under weigh in this State to bring our provisions in line with the limits set by the British Indian Act. So far the amendments in the State Law have led to the following results :—

(i) they have wiped off the figures of “ mock marriages ” of infants and other children below 3, which used to give to this State an evil pre-eminence in the eyes of India ;

(ii) they have certainly led to a marked decline both in offences and in the number and proportion of child marriages in the State ; and lastly

(iii) the number of child marriages in the age-period 5-10 has indeed increased as a kind of short period effect of the changing of the law. But as a set off against this fact it may be mentioned that the proportion of the married has declined in the age-period 10-15 since 1891 almost continuously, showing that the age of marriage has risen in the last forty years.

YEAR	Proportion of the married amongst females aged 10-15
1891	542
1901	485
1911	515
1921	441
1931	412

**196. Early marriage by Caste**—It is interesting to compare the varying incidence of early marriage in the different castes and to see therefrom how far modern influences through education are operative in raising the age of marriage. In the following Table are collected certain typical castes which are notorious for their addiction to this evil:—

CASTE	Literacy per mille (5 and over)			Proportion of married and widowed aged			Proportion of married and widowed per 100 women who are aged		
				0-5		0-6	0-12		0-13
	1911	1921	1931	1911	1921	1931	1911	1921	1931
Anjana .. .. .	81	74	144	44	28	71	133	148	303
Ghanchi .. .. .	261	308	406	6	10	19	121	127	204
Kadwa .. .. .	87	122	217	634	62	9	765	149	315
Lewa .. .. .	214	259	395	31	18	25	114	123	161
Soni .. .. .	371	412	517	16	7	6	88	58	82
Rajput .. .. .	92	130	193	25	10	12	102	102	118
Sutar .. .. .	170	215	343	16	12	74	122	135	228
Vankar .. .. .	26	45	125	39	54	34	172	195	225

The literacy ratios of these castes for three censuses show a progressive, and even in some cases a phenomenal, growth since 1911. In each of these castes the proportion of married and widowed females aged 0-13 in the present census is compared to corresponding ratios in 1911 and 1921 among women aged 0-12. The difference in choice of age-periods does vitiate the comparison to some extent as the ages returned in this census are those nearest next birthday while the age returns of other censuses referred to last birthday, so that for 1931, the proportions had to include the marriages of girls at 12, while those for the previous two censuses did not do so. As is well known, the bulk of marriages in all castes take place at 12 or 13, so that the ratios of 1931 cannot be profitably compared to previous years. But the all round rise in the proportions is due no doubt also to a real increase in early marriages on account of the change in the State legislation; if we take the earlier period 0-6 for 1931 and compare with the proportions for 0-5 in the previous two censuses, we see also little improvement, except that the force of education aided by State effort has helped indefinitely breaking down the unnatural *en masse* marriage custom amongst the Kadwas (*vide* Caste Glossary). The very large increase of literacy amongst the Patidars has not been followed by any rise in the formal age of marriage, while artisan groups like Sutar and Ghanchi show that they are still as much addicted—even more so—to child marriage than before.

**197. Early marriage and English education**—Generally vernacular education has had little effect in these matters. But where English education is really effective, as in the "upper ten" of the Advanced groups, there we see a definite advance in the direction of adult marriage. Only those groups have been selected for the inset as show a high ratio of literacy in English amongst females. It is only where the women are highly educated that modern influences are said to have penetrated the home. The

CASTE OR GROUP	Order according to Female literacy in English	Unmarried males per males aged 24-43	Percentage of unmarried females aged		Females per 1,000 males aged 14-16
			14-16	17-23	
Parsi .. .. .	1	277 (15-45)	84 (15-20)	68 (20-25)	1,381 (15-20)
Prabhu .. .. .	2	245	87	30	1,188
Konkanstha .. .. .	3	225	66	6	681
Deshastha .. .. .	4	216	52	3	759
Nagar .. .. .	5	232	43	6	957
Maratha .. .. .	6	103	35	5	839
Anavala .. .. .	7	206	32	1	775
<b>STATE AVERAGE</b>					
Advanced .. .. .	1	143	25	2	892
Intermediate .. .. .	2	67	19	4	959
Illiterate .. .. .	3	64	33	5	889

marginal table is of great interest, particularly when the state of things in these castes is contrasted with the State averages for Advanced, Intermediate and Illiterate sections. The Parsis are marked off from the rest by their high proportion of the unmarried adult males and their late age of formal marriage. This disinclination for the responsibilities of marriage is all the more remarkable, when we

notice that there is no paucity of females of marriageable age (15-20) amongst them. The Prabhus alone among the Hindu castes share this attitude with the Parsis. But there is a fairly general correspondence between the progress attained in female literacy in English and the high proportion of the unmarried. This proportion is lowered in some castes in respect of girls aged 17-23, where there is a general deficiency of women in the caste itself, as amongst the Anavalas.

Proportion of widows per 1,000 males			
Age Period	Baroda 1931	India 1921	England and Wales 1911
<b>All ages</b>	<b>147</b>	<b>175</b>	<b>73.2</b>
0-5	1	0.7	..
5-10	5	4.5	..
10-15	8	16.8	..
15-20	20	41.4	..
20-25	30	71.5	1.5
25-35	95	146.9	13.1
35-45	270	325.2	50.1
45-65	595	619.4	193.3
65 and over	829	834	566

corresponding figures for India (1921) and England and Wales (1911). The proportion of widows is less in the State than in India generally, particularly in the younger ages. But there are in this State seven times as many widows to the total female population in the age period 25-35 as in England and Wales. The proportion of Hindu castes that allow remarriage of widows in this State is more than 80 per cent, and this proportion is higher, I believe, than in the rest of India.

CASTE	Proportion of widows among females aged	
	17-23	24-43
<b>I Castes disallowing remarriage</b>		
Brahman .. .. .	70	303
Maratha .. .. .	55	277
Rajput .. .. .	42	201
Vania .. .. .	48	284
Prabhu .. .. .	27	234
<b>II Castes allowing remarriage</b>		
<i>Patidar.</i>		
Lewa .. .. .	28	161
Kadwa .. .. .	28	174
Sutar .. .. .	17	165
Luhar .. .. .	19	184
<b>III Castes and Tribes in which Brahmanic influence is practically nil</b>		
Bhangi .. .. .	20	132
Vankar .. .. .	15	122
Thakarda .. .. .	11	113
Raniparaj (Illiterate section) .. .. .	13	91

### 198. Statistics regarding the Widowed—

The frequency of widowed females is as already pointed out one of the three marked features of the returns, which distinguish this State from western countries. The margin compares the Baroda ratios of widows in 1931 by age-periods with corresponding figures for India (1921) and England and Wales (1911). The proportion of widows is less in the State than in India generally, particularly in the younger ages. But there are in this State seven times as many widows to the total female population in the age period 25-35 as in England and Wales. The proportion of Hindu castes that allow remarriage of widows in this State is more than 80 per cent, and this proportion is higher, I believe, than in the rest of India.

### 199. Widows in the Child-bearing Period—

Of more immediate interest to the future progress of the different communities is the varying proportion of widowhood amongst adult females (aged 15-40). Nothing illustrates the truth of the statement that the growth of the population is more indebted to the intellectually less efficient classes than the state of things disclosed by the marginal figures. The castes selected are divided into three groups: (i) castes that prohibit, and (ii) those that allow, the remarriage of widows, and (iii) such tribes on the fringes of Hinduism, in which Brahmanic influence is practically non-existent. In the second

amongst whom Brahmanic influence is practically non-existent. In the second

group is included the Lewa Patidar, although the bulk of Central Gujerat Patidars, fancying themselves to be *kulins* have followed the Brahmanical practice in this regard. Maratha Kshatriyas and the *kulin* sections of certain artisan castes like Sonis now prohibit widow remarriage as stringently as any Brahman group.

#### 200. Chief influences operative in regard to Remarriage of Widows—

The chief influences that operate against a general return to the practice of remarriage of widows are:—

(i) the snobbish instinct that leads the socially affluent sections within the intermediate and artisan groups to ape the distinctive customs of the advanced classes. The more educated the caste becomes, the more is its desire to conform to the “better Hinduism” of Brahmans and Varnias;

(ii) secondly the rise of *kulinism* within castes, a socially superior section which is hypergamous to the rest is a powerful factor against the general marriage of widows. A competition for husbands would result from this action of hypergamy. Widows would most certainly get left out (at least in India) in the hunt for matrimony, as in their case, the interests of the individual families would militate against their remarriage. Having paid a substantial “bride-groom price” for their daughters and sisters, they would certainly refuse to pay the same or even a higher price to get her married again. At the same time, *kulinism* would also require for its own selfish interest that the circle of marriageable women among itself should be kept as small and select as possible in order that the few bridegrooms left over without a bridegroom price may be provided for. The young widow therefore is condemned to remain without a second partner;

(iii) thirdly the anxiety of the early Hindu law-givers to restrict the women’s rights to property has combined with the selfish interests of the family to keep the widow down and tended to forbid her to marry another so that her own circumscribed share in her late husband’s property may not be alienated by this second husband from the first family. To this end marriage was surrounded with all the holy sanctions of religion, necessitating a solemn religious act of transfer of the ownership over the body of the woman from the father to the husband: and when the husband died, there being no body to give her,—the Hindu marriage being a form of religious gift, marriage became impossible for her;

(iv) against those influences is the growing consciousness of the fact that remarriage is becoming a social necessity in Gujarat. The 1911 Report mentioned a number of petitions from Sinor, Savli, Baroda and other places in which the Government of the State was actually requested to make remarriage of widows compulsory: the disgruntled bachelors recounted their woes in these petitions owing to the fewness of virgin brides in their castes. The local Arya Samaj in recent years has attempted to popularise the idea of remarriage of widows amongst higher castes. A permissive Act for the remarriage of widows has been in existence for many years and yet very few persons amongst the higher castes have so far taken advantage of it. Census Committees report very little change in the general attitude of the higher castes. The Porwads in South Gujarat however are understood to have given a general permit to the widows to remarry.

**201. Volume of Remarriage of Widows estimated—**All marriages are registered in the State, but the *natras* practised amongst lower castes are not separately noted; it is not possible therefore to determine how many of these marriages are remarriages of widows. But assuming that prohibition of remarriage is confined only to Advanced group of Hindus and that the other two sections of Intermediate and Illiterate favour remarriage we find that 19.6 per cent of females in the Advanced group and 13 per cent in the Intermediate and Illiterate sections are widowed. If the widows were not allowed to remarry in these latter sections, at least 6.6 per cent of their women should have continued as widows instead of being remarried. Making allowances for different rates of mortality, we calculate that 48,073 women in castes and groups allowing remarriage must have been once widows and had remarried since. Distributing these in the age groups we give below the estimate of the extent to which the remarriage of widows has taken place among Hindu castes that permit such a custom. The proportions are necessarily rough approximations but they may be of interest:—

AGE PERIOD	Number per 1,000 females in each age period who are widowed		Number per 1,000 Intermediate and Illiterate females in each age period who are living as wives of second husbands
	Advanced Hindu and Jain	Intermediate and Illiterate	
All Ages	196	130	60.0
0-6	1	1	.25
7-13	5	7	1.0
14-16	13	13	4.0
17-23	43	19	13.0
24-43	214	127	67.0
44 and over	660	578	251.0

### § 3. CERTAIN OTHER FEATURES CONSIDERED

**202. Distribution by Main Age Periods**—Hitherto the proportionate figures which have been discussed are those reckoned on each age period, but if we distribute the absolute figures of the three classes of civil condition by age periods and proportion them to the total strength of each sex, we shall get some interesting data, correlating the age-constitution with the civil condition figures. Subsidiary Table III gives the main proportions per 10,000 of each sex and the accompanying diagram plots the distribution for the four main religions. Only four broad age periods are chosen for this purpose—children (0-10), adolescents (10-15), adults (15-40) and aged (40 and over). Widowhood hardly exists in the first two periods, there being only 16 females per 10,000 of that sex who are widowed and below the age of 15. Over 76 per cent of widows in all religions are “aged”. Amongst the Jains, 17 per cent of their women are widows above 40. Twice as many Jain women of the child-bearing age (adult group) are widows as there are in the general population. The high rate of natural increase amongst Muslims and Hindus is apparent from the very large proportion of married adult females amongst them. Adolescent married females amongst Hindus form nearly one-tenth of

RELIGION	Married women aged 10-40 per 10,000 females
Indian Christian ..	4,366
Hindu .. ..	4,122
Muslim .. ..	3,761
Jain .. ..	3,383
Tribal .. ..	3,272
Parsi .. ..	1,935

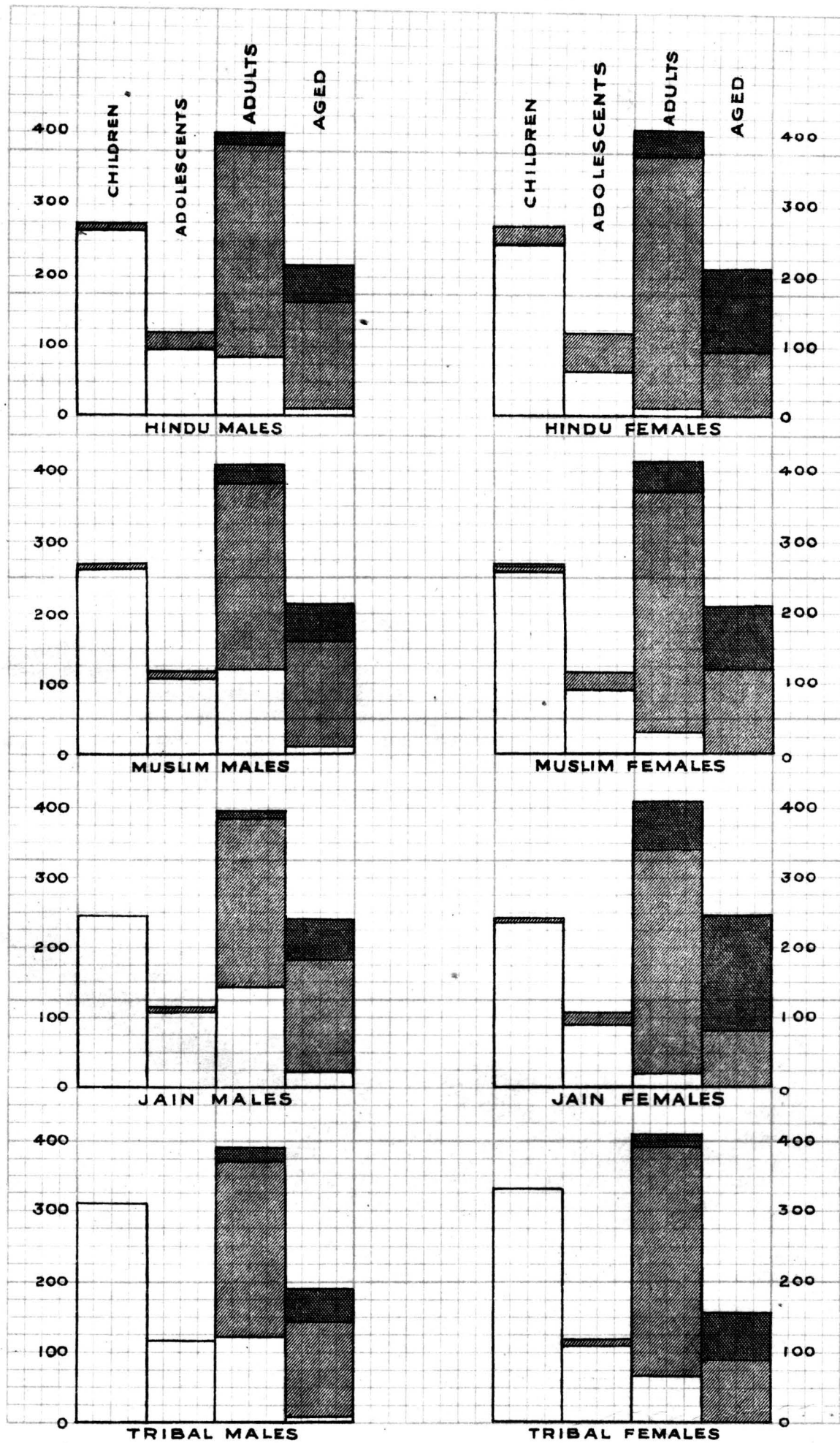
their married women, while amongst Muslims they are only one in forty-three. The Christians show one-eighth of their married women in the adolescent ages. This high proportion of juvenile marriages amongst them need not astonish readers as the Indian Christians are mostly converts from low castes which are the greatest culprits in this respect. Taking the adolescent and adult groups together we see the highest proportion of marriage amongst Indian Christians. The trend of births in the coming decade will follow perhaps in the order of arrangement indicated in the margin.

**203. Proportion of the Sexes at Certain Ages**—Subsidiary Table IV works out the female index by civil condition. At all ages there are twice as many widows as there are widowers; there are 7 spinsters to 10 bachelors, while amongst the married, the sexes approach equality, there being 1,031 married women to 1,000 married men. The higher female index amongst the married in the general population is due to the conjoint influence of emigration which selects against males and of contiguous immigration which is weighted in favour of females. The proportions vary in the different religions. Amongst the Parsis the widows outnumber their male counterparts by 4 to 1. Amongst the Jains the female index amongst the widowed is also nearly as high being 283 to 100 males. The Parsi wives outnumber the husbands by 13 to 10. As they are a monogamous community, this is entirely due to emigration of their able-bodied males. In the age period 15-40, one woman to six men is unmarried and nearly two to one are widowed. Amongst the widowed Jains of this age, the female index is 403 to 100 males. The Table goes on pursuing its researches in detail in the different divisions, but we need not follow its example.

**204. Some Miscellaneous Items**—Before this chapter ends some miscellaneous points may be noted:—

(a) *Evidence of Polygamy*—As a rule both Gujarat Hindus and Muslims are monogamous by strict practice. Some castes like the Nagar (particularly the Vadnagara section of it) specifically prohibit polygamy. Some Brahman castes (like Audich, Anavala, Tapodhan, etc.) and Vania groups (notably the

## DISTRIBUTION OF 1,000 OF EACH SEX IN EACH MAIN RELI- GION BY (1) FOUR AGE PERIODS AND (2) CIVIL CONDITION, BARODA STATE-1931



UNMARRIED  
 MARRIED  
 WIDOWED

The Four age periods are

0-10: Children,	10-15: Adolescents,
15-40: Adults,	40 and over: Aged.

Dishavals) allow polygamy. In all other castes polygamy is allowed and practiced to some extent. The *kulin sections* of Rajputs, Patidars, Anavils, etc., used to make a living out of the dowry received with the second or third wife. As a general rule, polygamy is not resorted to, except where the first wife is barren or afflicted with some incurable disease. Some castes insist on formal permission being obtained from their *panchayats* for a second marriage. But these practices are falling into desuetude and monogamy is more the rule now than before. But the inset table would seem to indicate a contrary tendency. Figures here are no guide, and the greater female index in 1931 is no doubt due to gain in contiguous migration which has a preponderance of females. Parsis and Nagars are strict monogamists and yet their female index of the married is 1,301 and 1,097. This is most certainly due to emigration of their males on business.

Year	Female index of married
1911	1,007
1921	1,028
1931	1,031

(b) *Disparate Marriages*—The preponderance of widows amongst old women may be contrasted with the low proportion of old men above 60 who are widowed. The presumption is inevitable that widowers try to marry as fast as they can with women much younger than them in age. Nearly 42 per cent of wives, we have found from the sex enquiry, are married to husbands with disparate ages. Imperial Table VII tells us that there are only 368,673 married men between the ages of 15 and 40 but the married women of these ages number 424,404. Neglecting for the moment the incidence of polygamy which is a very small factor and the equally small detail of wives who may have been counted without their husbands there are over 50,000 wives with an average age of 25 years (or one out of seven adult married women) who must have been married to husbands who are at least 40 and over.

(c) *Adult Spinsters by Caste*—There are altogether 17,860 spinsters aged 15 and upward in the State, of whom 4,616 are between 20 and 45, and 352 are aged 45 and over. 203 spinsters aged 15–40 are afflicted with one or other of the four infirmities recorded in the census. In 1921 the number of spinsters aged 15 and over was 15,375. In 1911, they were only 13,762. Thus their number has increased by nearly 30 per cent, while the total number of women in 1931 is only 21.3 per cent more than in 1911. In the castes selected in Imperial Table VIII the total of spinsters in the two age-groups 17–23 and 24–43 in the three classes is 5,178 and 1,109 respectively. In the higher age-group the Illiterate section contributes nearly 44 per cent of adult spinsters. The chief contributories to the spinsters' total of 24–43 from amongst the Advanced groups are Brahmans (19), Vantias (30), Marathas (8), Saiyads (10) and Vohras (41). The primitive tribes alone have 666 spinsters of the adult ages. The Parsis who are not included in the Caste Table have as many as 247 spinsters aged 25–45.

CLASS	Spinsters aged	
	17–23	24–43
Total .. .. .	5,178	1,109
Advanced .. .. .	932	158
Intermediate .. .. .	2,389	471
Illiterate .. .. .	1,857	480

(d) *Civil Condition in Rural and Urban Areas*—Lastly the contrast in the civil condition returns in urban and rural areas may be considered. The City

and urban ratios of the unmarried are lower than the rural, particularly amongst the females. The proportion of widows as already stated is the highest in the City. The marriage age in rural areas is much lower than in the urban, although the marriage rate in the latter is higher. The higher female index in the general population has been already accounted for (*vide* para 203 *supra*). The City and urban

AREA	Unmarried per mille		Female index of the married
	Male	Female	
State .. .. .	454	329	1,031
City .. .. .	450	306	838
Urban .. .. .	453	302	971
Rural .. .. .	454	333	1,048

areas show the effect of immigration of the type in which males predominate.



## SUBSIDIARY TABLE I

DISTRIBUTION BY CIVIL CONDITION OF 1,000 OF EACH SEX, RELIGION, AND MAIN AGE-PERIOD AT EACH OF THE LAST FIVE CENSUSES

RELIGION, SEX AND AGE.	UNMARRIED					MARRIED					WIDOWED				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>All Religions</i>															
<b>Males</b>															
0-5 .. ..	996	990	959	973	957	4	8	39	24	41	..	2	2	3	2
5-10 .. ..	916	948	883	897	879	79	50	111	94	117	5	2	6	9	4
10-15 .. ..	810	803	753	730	721	182	185	236	245	272	8	12	11	25	7
15-20 .. ..	443	527	539	462	488	540	441	434	481	499	17	32	27	57	13
20-40 .. ..	143	163	163	152	143	804	750	765	731	814	53	87	72	117	43
40-60 .. ..	42	53	47	65	62	768	748	764	714	797	190	199	189	221	141
60 and over ..	32	45	49	66	57	576	555	554	551	618	392	400	397	383	325
<b>Females</b>															
0-5 .. ..	989	985	915	961	907	10	15	83	36	92	1	..	2	3	1
5-10 .. ..	798	886	807	836	763	197	112	188	154	234	5	2	5	10	3
10-15 .. ..	580	547	464	477	446	412	441	515	485	542	8	12	21	38	12
15-20 .. ..	108	132	111	127	103	872	840	856	786	875	20	28	33	87	22
20-40 .. ..	12	14	11	16	14	885	862	862	786	801	103	124	127	198	95
40-60 .. ..	2	4	5	5	6	526	519	467	487	530	472	477	528	508	464
60 and over ..	2	2	4	5	3	169	176	154	250	162	829	822	842	745	835
<i>Hindu</i>															
<b>Males</b>															
0-5 .. ..	996	989	952	972	956	4	9	45	25	42	..	2	3	3	2
5-10 .. ..	909	941	867	894	871	86	57	126	96	125	5	2	7	10	4
10-15 .. ..	795	775	725	716	704	197	211	263	256	288	8	14	12	28	8
15-20 .. ..	420	483	514	444	471	563	481	457	492	516	17	36	29	64	13
20-40 .. ..	133	156	159	148	137	814	754	766	733	821	53	90	75	119	42
40-60 .. ..	41	55	48	68	53	768	741	758	709	804	191	204	194	223	143
60 and over ..	32	45	52	73	58	575	550	546	555	616	393	405	402	372	326
<b>Females</b>															
0-5 .. ..	988	982	902	956	899	11	18	96	40	100	1	..	2	4	1
5-10 .. ..	781	872	777	826	744	215	126	218	162	252	4	2	5	12	4
10-15 .. ..	551	494	405	438	415	441	492	570	518	572	8	14	25	44	13
15-20 .. ..	89	81	83	106	97	891	890	882	799	881	20	29	35	95	22
20-40 .. ..	8	5	8	10	13	890	868	863	784	894	102	127	129	206	93
40-60 .. ..	1	3	3	3	6	529	510	458	469	533	470	487	539	528	461
60 and over ..	1	1	2	4	4	171	169	151	221	162	828	830	847	775	834
<i>Jain</i>															
<b>Males</b>															
0-5 .. ..	999	994	992	959	952	1	5	8	29	47	..	1	..	12	1
5-10 .. ..	990	985	980	889	942	10	13	19	78	57	..	2	1	33	1
10-15 .. ..	956	955	890	750	847	43	41	107	229	150	1	4	3	21	3
15-20 .. ..	644	671	658	508	569	349	320	33	455	423	7	9	9	37	8
20-40 .. ..	270	281	269	218	267	680	650	664	676	689	50	69	67	106	44
40-60 .. ..	105	105	95	96	121	676	672	677	685	714	219	223	228	219	165
60 and over ..	75	101	75	74	96	483	455	476	539	542	442	444	449	387	362
<b>Females</b>															
0-5 .. ..	999	996	989	963	960	1	3	10	27	19	..	1	1	10	1
5-10 .. ..	976	966	978	871	965	23	34	21	112	32	1	..	1	17	3
10-15 .. ..	825	789	739	605	728	172	179	250	384	265	3	32	11	11	7
15-20 .. ..	175	88	71	111	54	797	873	880	801	914	28	39	49	68	32
20-40 .. ..	11	9	7	11	10	788	743	723	738	828	201	248	270	251	162
40-60 .. ..	3	4	3	1	7	376	370	356	446	421	621	626	641	553	572
60 and over ..	4	3	7	1	..	107	109	110	217	135	839	868	883	782	865
<i>Tribal</i>															
<b>Males</b>															
0-5 .. ..	1,000	998	996	997	991	..	2	4	2.9	9	..	..	..	.1	..
5-10 .. ..	996	989	979	951	984	3	11	20	48	16	1	..	1	1	..
10-15 .. ..	987	963	945	834	945	12	36	54	163	54	1	1	1	3	1
15-20 .. ..	734	804	736	541	641	255	188	252	439	344	11	8	12	20	15
20-40 .. ..	210	163	119	134	97	737	765	842	763	870	53	72	39	103	33
40-60 .. ..	20	30	22	22	20	800	808	863	777	855	180	162	115	201	125
60 and over ..	7	21	36	16	14	566	618	653	487	698	427	361	311	497	288

SUBSIDIARY TABLE I—concl'd.

DISTRIBUTION BY CIVIL CONDITION OF 1,000 OF EACH SEX, RELIGION, AND MAIN AGE-PERIOD AT EACH OF THE LAST FIVE CENSUSES

RELIGION, SEX AND AGE	UNMARRIED					MARRIED					WIDOWED				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Females</b>															
0-5 .. ..	1,000	997	998	998	990	..	3	2	1.8	10	..	..	..	0.2	..
5-10 .. ..	991	954	980	929	983	8	44	19.9	70.6	17	1	2	0.1	0.4	..
10-15 .. ..	941	820	850	671	823	58	177	148	325	176	11	3	2	4	1
15-20 .. ..	422	476	388	226	279	567	507	604	739	714	11	17	8	35	7
20-40 .. ..	87	86	33	38	30	860	845	928	836	918	53	69	39	126	52
40-60 .. ..	7	8	9	5	12	671	694	700	684	652	322	298	291	311	336
60 and over ..	9	2	6	1	6	231	388	254	445	254	760	610	740	554	740
<b>Muslim</b>															
<b>Males</b>															
0-5 .. ..	997	995	986.8	950	981	3	5	13	45	19	..	..	0.2	5	..
5-10 .. ..	982	973	957	869	937	37	25	41	122	61	1	2	2	9	2
10-15 .. ..	913	900	866	752	841	84	94	128	228	154	3	6	6	20	5
15-20 .. ..	598	705	658	532	645	392	283	328	427	347	10	12	14	41	8
20-40 .. ..	198	207	205	193	192	748	721	727	687	766	54	72	68	120	42
40-60 .. ..	42	43	38	71	44	783	789	785	696	819	175	177	177	233	137
60 and over ..	96	40	31	68	43	602	580	585	576	642	372	380	384	356	315
<b>Females</b>															
0-5 .. ..	987	993	969	946	972	5	7	30	50	27	8	..	1	4	1
5-10 .. ..	903	941	914	822	886	86	58	83	166	112	11	1	3	12	2
10-15 .. ..	760	743	635	602	630	236	252	356	375	364	4	5	9	23	6
15-20 .. ..	204	224	158	197	141	778	745	814	724	836	18	31	28	79	23
20-40 .. ..	23	15	19	43	20	870	870	858	760	876	107	115	123	197	104
40-60 .. ..	4	6	12	20	9	507	521	467	498	497	489	473	521	482	494
60 and over ..	4	4	6	15	7	150	148	153	283	145	846	848	841	702	848
<b>Zoroastrian</b>															
<b>Males</b>															
0-5 .. ..	1,000	1,000	1,000	1,000	983	..	..	..	..	17	..	..	..	..	..
5-10 .. ..	1,000	1,000	995	983	986	..	..	5	17	14	..	..	..	..	..
10-15 .. ..	1,000	991	996	958	932	..	9	4	40	68	..	..	..	2	..
15-20 .. ..	967	983	951	808	734	33	17	49	185	254	..	..	..	7	12
20-40 .. ..	502	370	352	241	126	472	582	622	707	854	26	48	26	52	20
40-60 .. ..	76	54	29	25	8	820	839	880	814	908	104	107	91	161	84
60 and over ..	16	14	18	13	3	691	698	691	728	714	293	288	291	259	283
<b>Females</b>															
0-5 .. ..	1,000	1,000	1,000	998	991	..	..	..	2	9	..	..	..	..	..
5-10 .. ..	1,000	998	987	975	970	..	2	11	25	30	..	..	..	..	..
10-15 .. ..	1,000	1,000	954	909	766	..	..	46	85	234	..	..	..	6	..
15-20 .. ..	845	849	793	389	325	150	151	200	564	651	5	..	7	47	24
20-40 .. ..	371	283	202	47	38	572	680	725	849	895	57	37	73	104	67
40-60 .. ..	57	42	71	..	5	551	598	641	593	682	392	360	288	407	313
60 and over ..	10	..	88	..	..	305	274	182	224	288	685	726	730	776	712
<b>Christian</b>															
<b>Males</b>															
0-5 .. ..	990	982	961	947	1,000	10	16	37	40	..	..	2	2	11	..
5-10 .. ..	834	824	615	870	963	155	166	380	116	37	11	10	5	14	..
10-15 .. ..	674	658	553	612	737	303	292	413	347	263	23	50	34	41	..
15-20 .. ..	412	489	397	257	911	556	463	561	683	89	32	48	42	60	..
20-40 .. ..	146	123	103	70	384	789	808	833	835	607	65	69	64	95	9
40-60 .. ..	13	35	19	19	61	866	817	824	840	829	121	148	157	141	110
60 and over ..	..	36	18	23	..	650	665	613	701	1,000	350	399	369	276	..
<b>Females</b>															
0-5 .. ..	962	937	858	917	970	36	61	132	67	30	2	2	10	16	..
5-10 .. ..	638	627	462	540	840	347	350	418	443	120	15	23	120	17	40
10-15 .. ..	499	510	323	260	937	481	456	662	692	63	20	34	15	48	..
15-20 .. ..	270	364	204	86	714	708	620	690	828	286	22	16	6	86	..
20-40 .. ..	71	40	35	13	141	874	901	900	887	798	55	59	65	100	61
40-60 .. ..	33	8	7	..	..	557	604	574	505	790	410	388	419	495	210
60 and over ..	..	..	9	109	..	200	174	195	182	250	800	826	796	709	750

## SUBSIDIARY

## DISTRIBUTION BY CIVIL CONDITION OF 1,000 OF EACH SEX AT

RELIGION AND NATURAL DIVISION	MALES																	
	All Ages			0—5			5—10			10—15			15—40			40 and over		
	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Baroda State</b>																		
<i>All Religions</i> ..	454	479	67	996	4	..	916	79	5	810	182	8	217	739	44	40	730	230
Hindu ..	447	486	67	996	4	..	909	86	5	795	197	8	203	752	45	40	730	230
Jain ..	524	396	80	999	1	..	990	10	..	956	43	1	363	598	39	99	635	266
Tribal ..	554	389	57	1,000	..	..	996	3	1	987	12	1	319	637	44	18	768	214
Muslim ..	497	439	64	997	3	..	962	36	2	913	84	3	294	662	44	88	744	218
Zoroastrian ..	586	356	58	1,000	..	..	1,000	..	..	1,000	..	..	623	358	19	55	775	170
Christian ..	412	531	57	990	10	..	834	155	11	674	303	23	216	728	56	11	833	156
<b>Baroda City</b>																		
<i>All Religions</i> ..	450	476	74	993	7	..	919	79	2	840	157	3	312	636	52	60	706	244
Hindu ..	444	482	74	991	9	..	910	88	2	819	178	3	302	647	51	51	704	245
Jain ..	489	427	84	1,000	..	..	949	43	8	944	56	..	391	560	49	54	669	277
Muslim ..	453	466	81	997	3	..	960	38	2	920	77	3	312	623	60	41	708	251
Zoroastrian ..	558	388	54	1,000	..	..	1,000	..	..	1,000	..	..	617	357	26	149	723	128
Christian ..	579	391	30	988	12	..	926	74	..	892	100	8	478	492	30	24	879	97
<b>Central Gujarat</b>																		
<i>All Religions</i> ..	425	503	72	996	4	..	905	92	3	778	217	5	194	760	46	52	718	230
Hindu ..	421	507	72	996	4	..	902	95	3	769	225	6	188	765	47	52	715	233
Jain ..	508	412	80	998	1	1	993	7	..	949	49	2	344	622	34	103	631	266
Muslim ..	461	477	62	997	3	..	941	56	3	861	135	4	248	713	39	33	758	209
Christian ..	330	601	69	988	12	..	763	219	18	518	448	34	90	845	65	4	809	187
<b>Kathiawad</b>																		
<i>All Religions</i> ..	527	415	53	999	1	..	980	19	1	933	65	2	232	680	38	36	741	223
Hindu ..	520	421	59	999	1	..	978	21	1	925	73	2	271	690	39	35	739	226
Muslim ..	569	383	48	999	1	..	997	2	1	987	12	1	349	619	32	23	785	187
<b>North Gujarat</b>																		
<i>All Religions</i> ..	448	484	68	995	4	1	898	94	8	778	209	13	198	759	43	36	731	233
Hindu ..	442	490	68	995	4	1	891	100	9	764	222	14	186	771	43	33	735	232
Jain ..	524	396	80	999	1	..	996	4	..	960	39	1	354	606	40	99	647	254
Muslim ..	513	421	66	996	3	1	963	36	1	918	78	4	293	658	44	50	724	226
<b>South Gujarat</b>																		
<i>All Religions</i> ..	487	453	60	998	2	..	945	54	1	878	119	3	238	720	42	29	754	217
Hindu ..	474	467	59	998	2	..	934	64	2	855	142	3	212	747	41	30	753	217
Jain ..	520	388	92	1,000	..	..	943	57	..	924	70	6	410	539	51	97	592	311
Tribal ..	554	389	57	1,000	..	..	996	3	1	987	12	1	319	637	44	18	768	214
Muslim ..	520	418	62	998	2	..	974	24	2	940	57	3	329	626	45	28	759	213
Zoroastrian ..	591	350	59	1,000	..	..	1,000	..	..	1,000	..	..	626	357	17	38	783	179

TABLE II

CERTAIN AGES IN EACH RELIGION AND NATURAL DIVISION

FEMALES																		
All Ages			0-5			5-10			10-15			15-40			40 and over			
Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	
329	524	147	989	10	1	798	197	5	580	412	8	36	881	83	2	451	547	
321	533	146	988	11	1	781	215	4	551	441	8	28	890	82	2	453	545	
347	421	232	999	1	..	976	23	1	825	172	3	50	790	160	3	320	677	
502	420	78	1,000	..	..	991	8	1	941	58	1	166	791	43	8	600	392	
368	475	157	987	5	8	903	86	11	760	236	4	67	847	86	4	426	570	
472	351	177	1,000	..	..	1,000	..	..	1,000	..	..	478	477	45	43	476	481	
354	558	88	962	36	2	638	347	15	499	481	20	125	829	46	28	510	462	
306	499	195	987	12	1	845	152	3	635	358	7	42	843	115	4	325	671	
298	501	201	987	12	1	830	167	3	613	380	7	33	843	124	2	320	678	
338	466	196	1,000	..	..	945	55	..	768	224	8	45	824	131	..	345	655	
332	490	178	992	8	..	914	84	2	713	281	6	60	859	81	10	330	660	
492	385	123	1,000	..	..	1,000	..	..	1,000	..	..	430	533	37	74	531	395	
372	554	74	955	45	..	685	315	..	642	358	..	147	818	35	113	452	435	
294	562	144	981	18	1	747	249	4	507	487	6	16	913	71	1	471	523	
290	567	143	981	18	1	735	261	4	492	502	6	14	916	70	1	474	525	
336	455	209	998	2	..	960	40	..	775	223	2	26	849	125	9	349	642	
339	513	148	990	10	..	845	153	2	649	347	4	45	878	77	1	452	547	
324	579	97	954	43	3	581	399	20	446	527	27	105	844	51	14	517	469	
403	455	142	999	1	..	959	40	1	794	204	2	43	874	78	2	432	566	
399	459	142	999	1	..	955	44	1	781	217	2	44	879	77	1	432	567	
433	436	131	999	1	..	988	11	1	886	112	2	72	851	77	2	465	533	
313	526	161	987	11	2	753	240	7	520	470	10	27	877	96	1	424	575	
308	535	157	988	11	1	737	257	6	494	496	10	23	883	94	1	430	569	
336	411	253	999	1	..	980	19	1	830	166	4	57	767	176	2	305	693	
367	461	172	973	4	23	899	72	29	779	218	3	63	835	102	4	406	590	
394	493	113	996	4	..	895	102	3	737	255	8	35	853	62	6	531	463	
377	511	112	996	4	..	873	124	3	692	298	10	62	875	63	5	585	460	
394	415	191	1,000	..	..	984	16	..	886	114	..	53	803	144	..	338	662	
502	420	78	1,000	..	..	991	8	1	941	58	1	166	791	43	8	600	392	
401	456	143	998	2	..	943	53	4	848	147	5	122	804	74	9	451	540	
471	346	183	1,000	..	..	1,000	..	..	1,000	..	..	485	470	45	41	468	491	

## SUBSIDIARY TABLE III

DISTRIBUTION BY MAIN AGE-PERIODS AND CIVIL CONDITION OF 10,000 OF EACH  
SEX AND RELIGION

RELIGION AND AGE	MALES			FEMALES		
	Unmarried	Married	Widowed	Unmarried	Married	Widowed
1	2	3	4	5	6	7
<b>All Religions</b> .. .. .	<b>4,541</b>	<b>4,787</b>	<b>672</b>	<b>3,289</b>	<b>5,237</b>	<b>1,474</b>
0—10 .. .. .	2,618	106	7	2,468	256	7
10—15 .. .. .	978	221	9	670	476	9
15—40 .. .. .	860	2,931	175	146	2,581	336
40 and over .. .. .	85	1,529	481	5	924	1,122
<b>Hindu</b> .. .. .	<b>4,466</b>	<b>4,859</b>	<b>675</b>	<b>3,207</b>	<b>5,330</b>	<b>1,463</b>
0—10 .. .. .	2,613	115	7	2,451	279	6
10—15 .. .. .	964	239	10	639	511	10
15—40 .. .. .	806	2,978	176	114	3,611	332
40 and over .. .. .	83	1,527	482	3	929	1,115
<b>Jain</b> .. .. .	<b>5,236</b>	<b>3,965</b>	<b>799</b>	<b>3,465</b>	<b>4,204</b>	<b>2,331</b>
0—10 .. .. .	2,471	12	1	2,369	27	1
10—15 .. .. .	1,089	49	1	885	185	3
15—40 .. .. .	1,438	2,372	155	203	3,198	646
40 and over .. .. .	238	1,532	642	8	794	1,681
<b>Tribal</b> .. .. .	<b>5,542</b>	<b>3,891</b>	<b>567</b>	<b>5,024</b>	<b>4,201</b>	<b>775</b>
0—10 .. .. .	3,093	4	1	3,259	12	1
10—15 .. .. .	1,178	14	1	1,082	67	1
15—40 .. .. .	1,238	2,469	173	671	3,205	175
40 and over .. .. .	33	1,404	392	12	917	598
<b>Muslim</b> .. .. .	<b>4,974</b>	<b>4,386</b>	<b>640</b>	<b>3,684</b>	<b>4,753</b>	<b>1,563</b>
0—10 .. .. .	2,637	49	3	2,544	111	25
10—15 .. .. .	1,069	98	4	855	265	5
15—40 .. .. .	1,187	2,675	176	277	3,496	353
40 and over .. .. .	81	1,564	457	8	881	1,180
<b>Zoroastrian</b> .. .. .	<b>5,858</b>	<b>3,562</b>	<b>580</b>	<b>4,722</b>	<b>3,508</b>	<b>1,770</b>
0—10 .. .. .	2,403	..	..	1,709	..	..
10—15 .. .. .	1,179	..	..	930	..	..
15—40 .. .. .	2,110	1,214	65	1,943	1,935	182
40 and over .. .. .	166	2,348	515	140	1,573	1,588
<b>Christian</b> .. .. .	<b>4,124</b>	<b>5,311</b>	<b>565</b>	<b>3,546</b>	<b>5,579</b>	<b>875</b>
0—10 .. .. .	2,276	192	13	2,212	529	23
10—15 .. .. .	848	381	29	743	717	29
15—40 .. .. .	982	3,310	256	552	3,649	203
40 and over .. .. .	18	1,428	267	38	684	620

SUBSIDIARY TABLE IV

PROPORTION OF THE SEXES BY CIVIL CONDITION AT CERTAIN AGES FOR RELIGIONS  
AND NATURAL DIVISIONS

NATURAL DIVISION AND RELIGION	NUMBER OF FEMALES PER 1,000 MALES														
	All ages			0-10			10-15			15-40			40 and over		
	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<b>Baroda State</b>															
All Religions .. ..	682	1,031	2,067	888	2,272	1,055	645	2,033	899	160	1,151	1,806	49	570	2,199
Hindu .. ..	676	1,031	2,038	881	2,275	797	622	2,007	886	133	1,140	1,775	36	572	2,176
Jain .. ..	642	1,029	2,829	930	2,133	1,500	788	3,708	2,666	137	1,308	4,029	34	503	2,540
Tribal .. ..	887	1,056	1,337	1,030	2,889	1,000	898	4,656	667	530	1,270	992	351	639	1,492
Muslim .. ..	702	1,027	2,316	914	2,150	9,417	757	2,549	1,171	221	1,239	1,899	100	534	2,446
Zoroastrian .. ..	1,064	1,301	4,034	939	..	..	1,041	..	..	1,216	2,105	3,700	1,118	885	4,076
Christian .. ..	759	927	1,867	859	2,432	1,600	773	1,659	909	496	973	697	1,857	423	2,048
<b>Baroda City</b>															
All Religions .. ..	543	838	2,098	870	1,635	1,615	621	1,877	1,944	97	961	1,599	68	396	2,367
Hindu .. ..	545	848	2,217	876	1,602	1,900	619	1,771	2,071	82	966	1,770	22	403	2,454
Muslim .. ..	554	795	1,656	847	1,878	1,000	640	3,013	1,667	132	933	929	211	366	2,072
<b>Central Gujarat</b>															
All Religions .. ..	623	1,002	1,795	846	2,470	1,098	566	1,950	1,009	223	1,102	1,405	15	56	1,950
Hindu .. ..	390	1,004	1,761	840	2,471	1,125	552	1,936	1,000	61	1,099	1,358	11	566	1,921
Jain .. ..	592	988	2,339	889	4,600	500	726	4,034	1,000	66	1,222	3,370	79	491	2,141
Muslim .. ..	667	975	2,158	889	2,452	636	650	2,202	1,167	165	1,136	1,842	29	519	2,287
<b>Kathiawad</b>															
All Religions .. ..	730	1,044	2,328	941	1,895	1,357	763	2,799	1,208	164	1,242	1,981	42	564	2,456
Hindu .. ..	728	1,036	2,274	937	1,878	1,231	753	2,666	1,130	158	1,222	1,888	49	564	2,419
Muslim .. ..	752	1,122	2,701	967	3,400	2,000	820	8,875	3,000	213	1,416	2,457	71	756	2,786
<b>North Gujarat</b>															
All Religions .. ..	678	1,057	2,294	876	2,311	988	611	2,060	672	136	1,166	2,250	39	563	2,396
Hindu .. ..	676	1,054	2,241	872	2,321	648	591	2,038	663	124	1,150	2,169	38	565	2,368
Jain .. ..	656	1,064	3,222	918	4,285	..	829	3,859	6,000	172	1,366	4,714	18	522	2,860
Muslim .. ..	718	1,099	2,605	910	1,800	29,857	804	2,632	857	228	1,367	2,442	79	547	2,550
<b>South Gujarat</b>															
All Religions .. ..	801	1,078	1,875	961	1,820	1,641	788	2,007	3,345	371	1,230	1,532	205	659	2,000
Hindu .. ..	784	1,076	1,869	949	1,814	1,667	756	1,957	3,775	303	1,212	1,571	145	659	1,972
Tribal .. ..	887	1,056	1,337	1,030	2,889	1,000	898	4,656	667	530	1,270	992	351	639	1,492
Muslim .. ..	796	1,128	2,406	975	2,093	2,000	875	2,511	1,400	395	1,374	1,774	315	631	2,688

SUBSIDIARY TABLE V—DISTRIBUTION BY CIVIL CONDITION

CASTES	DISTRIBUTION OF 1,000 MALES OF EACH AGE BY CIVIL CONDITION																	
	0-6			7-13			14-16			17-23			24-43			44 and over		
	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Advanced</b>	996	3	1	930	67	3	740	255	5	433	552	15	143	760	77	76	634	290
<i>Hindu and Jain</i>	996	3	1	928	69	3	729	266	5	426	559	15	149	773	78	79	625	296
Bhavsar (Hindu and Jain)	993	7	..	874	126	..	597	398	5	284	691	25	102	802	96	44	658	298
Brahmabhat-Barot	998	..	2	946	48	6	762	227	11	503	482	15	104	735	71	117	606	277
<b>Brahman</b>	995	4	1	975	24	1	854	143	3	566	423	11	188	739	73	100	599	301
Anavala	999	1	..	953	24	1	907	91	2	543	451	6	206	728	68	145	555	300
Audich	998	1	1	972	27	1	837	160	3	518	468	14	160	768	72	88	617	295
Desastha	998	2	..	1,000	..	..	996	4	..	897	101	2	216	695	89	75	569	356
Khedawal	997	3	..	966	34	..	809	191	..	466	526	8	190	733	77	136	541	323
Konkanstha	1,000	..	..	996	4	..	988	12	..	946	51	3	225	725	50	48	667	285
Mewada	1,000	..	..	967	33	..	779	221	..	522	469	9	219	709	72	111	576	313
Modh	997	..	3	980	20	..	812	180	..	495	490	15	196	725	79	98	596	306
Nagar	1,000	..	..	988	10	2	934	66	..	726	268	6	232	708	60	88	603	309
Tapodhan	993	7	..	916	77	7	652	339	9	318	670	12	64	880	56	32	751	217
Other Brahmans	984	15	1	982	17	1	862	134	4	506	420	14	216	701	83	120	574	306
Ghanchi	992	7	1	762	236	2	898	595	7	186	794	20	60	873	67	28	727	245
Kachhla-Khambar	992	7	1	820	177	3	461	532	7	202	758	40	53	848	99	25	671	304
Lewa Patidar (Hindu and Jain)	996	3	1	893	103	4	649	345	6	338	646	16	146	770	84	74	620	306
Luhana	996	3	1	863	36	1	808	188	4	409	582	9	62	871	67	21	757	222
Maratha Kshatriya	999	1	..	996	4	..	939	58	3	642	346	12	103	827	70	30	707	263
Prabhu	1,000	..	..	1,000	..	..	978	22	..	936	64	..	245	730	25	33	741	226
Soni	996	2	2	976	23	1	757	238	5	405	582	13	109	806	85	60	653	227
Sutar	994	5	1	872	123	5	667	426	7	248	735	17	51	893	56	53	719	288
<b>Vanias (Hindu and Jain)</b>	999	1	..	992	8	..	860	136	4	514	470	16	163	754	78	94	606	300
Disawal	993	7	..	991	7	2	847	144	9	523	455	22	169	756	75	94	581	325
Kapol	1,000	..	..	1,000	..	..	981	19	..	758	242	..	266	652	82	108	587	305
Khadayata	1,000	..	..	971	29	..	735	258	7	309	608	23	128	790	82	85	595	320
Lad	1,000	..	..	992	8	..	865	131	4	480	510	10	159	746	95	94	591	316
Porwad	1,000	..	..	991	9	..	863	110	7	514	467	19	166	746	88	78	602	320
Shrimall	1,000	..	..	994	6	..	887	111	2	517	470	13	173	758	69	102	632	266
Other Vanias	1,000	..	..	991	9	..	822	176	2	525	454	21	163	756	81	87	591	322
<b>Muslims</b>	996	3	1	949	48	3	856	140	4	500	490	10	84	851	65	25	749	226
Khoja	992	4	4	987	13	..	904	96	..	576	415	9	101	869	30	16	762	222
Memon	999	1	..	998	2	..	959	41	..	510	475	15	69	882	49	12	777	211
Pinjara	1,000	..	..	865	130	5	823	371	6	282	708	10	43	902	55	17	728	255
Salyad	1,000	..	..	993	6	1	963	34	3	594	401	5	110	804	86	33	707	260
Vohra (agricultural)	992	6	2	928	66	6	822	175	3	495	491	14	94	850	56	38	769	193
Vohra (trading)	996	4	..	932	65	3	806	185	9	496	498	6	73	851	76	15	745	240
<b>Intermediate</b>	992	7	1	820	169	11	513	469	18	273	702	25	67	858	75	28	724	248
<i>Hindu Jain and Tribal</i>	992	7	1	808	180	12	418	561	21	248	727	25	61	863	76	28	724	248
Anjana Chaudhari	970	29	1	695	286	19	447	537	16	246	729	25	93	835	72	39	683	278
Baria	993	7	..	851	145	4	471	519	10	185	793	22	48	875	77	18	779	293
Bava and Gossain	998	1	1	923	78	4	740	252	8	447	529	24	325	598	77	336	456	208
Chamar (Khalpa)	991	8	1	883	110	7	585	405	10	216	772	12	14	938	48	8	805	187
Darji (Hindu and Jain)	995	4	1	835	155	10	684	410	6	242	745	13	55	877	68	5	735	260
Garoda	989	11	..	827	167	6	483	500	17	134	857	9	16	927	57	21	807	172
Gola (Rice-pounder)	924	74	2	840	649	11	154	833	13	78	892	30	40	871	89	14	789	197
Kadwa Patidar (Hindu and Jain)	997	3	..	690	280	30	292	665	43	191	772	37	50	851	99	17	665	318
Karadia	1,000	..	..	984	16	..	831	169	..	355	642	3	31	927	42	9	794	197
Kumbhar (Hindu and Jain)	980	19	1	720	267	13	406	574	20	168	811	21	40	874	83	10	732	258
Luhar	996	3	1	837	167	6	667	425	8	241	734	25	55	885	60	9	708	223
Mochi	991	8	1	845	151	4	513	485	2	213	770	17	36	900	64	16	740	238
Patanwadla	995	4	1	880	114	6	649	435	16	193	776	31	39	895	66	11	768	231
<b>Primitive and Forest Tribes (Hindu and Tribal)</b>	999	1	..	997	3	..	958	41	1	551	429	20	132	771	97	19	770	211
Chodhra	999	1	..	999	1	..	971	27	2	607	370	23	105	830	65	21	759	220
Dhanka	997	3	..	988	12	..	756	244	..	462	514	24	36	911	53	9	806	185
Dhodia	999	1	..	993	6	1	958	41	1	486	498	16	41	912	47	17	782	201
Rajput	997	2	1	928	72	2	673	322	5	363	622	15	106	833	61	45	707	248
Sathwara	988	7	5	739	240	21	467	519	14	206	771	23	32	920	48	10	755	235
Talabada	988	11	1	774	222	4	438	557	10	206	769	25	48	871	81	15	733	259
Targala (Hindu and Jain)	987	13	..	883	107	10	629	346	25	409	549	42	132	789	79	66	732	202
Valand	990	8	2	838	152	10	525	461	14	254	719	27	42	882	78	14	702	284
Vankar—Dhed	991	8	1	811	181	8	466	519	15	178	792	30	23	916	61	4	792	204
<b>Muslim</b>	993	6	1	943	55	2	791	201	8	481	603	16	118	804	73	31	718	251
Fakir	996	2	2	958	42	..	846	145	9	497	489	14	163	753	84	80	688	232
Ghanchi	985	15	..	816	179	5	622	371	7	327	660	13	63	867	70	18	724	258
Malek	1,000	..	..	994	6	1	899	111	..	523	462	15	107	830	63	32	710	258
Molesalam	997	1	2	967	33	..	762	235	3	397	597	6	96	851	63	42	730	228
Momna	978	19	3	856	139	5	544	441	15	250	734	16	36	886	78	6	755	239
Pathan	996	3	1	988	12	..	902	90	8	588	400	12	158	758	84	36	703	262
Shaikh	998	2	..	972	28	..	871	12										

OF 1,000 OF EACH SEX AT CERTAIN AGES FOR SELECTED CASTES

DISTRIBUTION OF 1,000 FEMALES OF EACH AGE BY CIVIL CONDITION																	
0-6			7-13			14-16			17-23			24-43			44 and over		
Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
983	16	1	790	205	5	251	736	13	24	935	41	2	784	214	1	344	655
983	16	1	777	218	5	216	771	13	15	942	43	1	776	223	1	339	660
974	24	2	665	833	2	164	811	25	47	914	39	5	772	228	8	324	668
983	17	..	706	287	7	232	742	26	4	911	85	2	708	295	..	256	744
994	5	1	845	153	2	244	738	18	17	913	70	1	696	303	1	265	734
999	1	..	927	71	2	321	666	13	11	931	58	..	742	258	2	351	647
996	3	1	828	169	3	154	828	18	6	914	80	1	673	326	1	261	738
998	2	..	989	9	2	523	471	6	25	886	89	3	701	296	..	225	775
972	28	..	721	276	8	107	843	50	4	904	92	..	707	293	..	275	725
1,000	..	..	992	8	..	661	339	..	58	894	48	4	708	288	..	248	752
995	5	..	716	281	..	159	808	33	18	912	70	..	653	347	..	259	741
993	7	..	813	184	3	207	786	7	7	926	67	..	678	327	1	236	763
992	8	..	900	95	5	428	535	37	60	849	91	1	647	352	..	247	753
983	17	..	615	383	2	81	901	18	7	959	84	2	789	209	4	278	718
997	2	1	884	114	2	293	691	16	29	914	57	2	722	276	1	260	739
981	17	2	603	393	4	113	887	..	..	983	17	1	839	160	1	396	608
974	26	..	594	399	7	31	957	12	4	971	25	1	866	138	..	380	620
975	24	1	690	305	5	158	831	11	8	964	28	..	839	161	..	415	585
996	4	..	920	80	..	239	753	8	5	960	35	1	806	198	2	392	606
999	1	..	926	70	4	349	642	9	47	898	55	5	718	277	4	149	847
1,000	..	..	1,000	..	..	872	122	6	298	675	27	7	759	234	9	404	587
994	5	..	837	159	4	165	812	23	5	947	48	3	775	222	..	274	726
926	72	2	610	358	32	90	893	17	4	979	17	2	833	165	..	356	644
999	1	..	955	44	1	357	632	11	26	926	48	3	713	284	2	290	708
1,000	..	..	901	95	4	168	817	15	7	930	63	1	670	329	..	222	778
1,000	..	..	996	4	..	508	492	..	8	939	53	..	707	293	4	295	701
997	3	..	890	110	..	71	929	..	8	961	31	..	760	240	..	348	652
1,000	..	..	930	70	..	203	784	13	10	935	55	1	711	288	3	410	587
998	2	..	959	41	..	399	588	13	20	942	38	1	708	291	2	284	714
999	1	..	974	25	1	481	513	6	23	932	45	4	723	273	2	272	726
999	1	..	953	44	3	294	687	19	49	899	52	3	709	288	..	293	702
992	7	1	992	95	3	565	428	7	106	871	23	8	854	138	3	408	589
996	4	..	985	15	..	603	352	15	39	946	15	4	874	122	6	429	565
997	2	1	983	16	1	604	396	..	64	917	19	6	855	139	1	497	502
977	23	..	798	226	6	289	675	36	39	952	9	2	844	154	2	374	624
1,000	..	..	896	100	4	601	399	..	108	858	34	8	765	227	1	303	696
990	9	1	879	116	5	635	359	6	163	804	33	15	883	102	6	431	563
990	10	..	905	94	1	522	474	4	94	894	12	3	884	113	3	409	588
977	22	1	603	388	9	187	797	16	36	942	22	5	847	148	2	389	609
976	23	1	579	412	9	166	817	17	29	950	21	3	850	147	2	364	634
929	68	3	465	523	12	78	901	21	88	894	18	2	811	187	1	338	661
975	24	1	594	401	5	81	908	11	4	984	12	1	882	117	1	429	570
987	12	1	791	206	3	215	766	19	6	972	22	5	849	146	17	326	667
973	26	1	710	285	5	213	772	15	20	962	18	1	865	134	..	344	656
973	26	1	654	343	3	143	839	18	34	936	30	1	830	169	1	352	647
970	26	4	544	446	10	91	896	13	12	963	25	2	866	132	2	348	650
824	173	3	271	717	12	35	940	25	2	984	14	..	803	197	2	258	740
991	8	1	398	584	18	135	844	21	18	954	28	1	825	174	1	371	628
998	1	1	962	38	..	327	667	6	53	931	16	2	883	115	1	334	665
953	45	2	520	475	5	125	865	10	7	978	15	1	876	123	1	385	614
971	27	2	636	357	7	90	894	16	9	972	19	1	815	184	..	850	650
974	25	1	626	372	2	118	871	11	8	971	21	1	877	122	1	426	573
977	21	2	634	362	4	79	912	9	7	984	9	1	893	106	..	461	539
998	1	1	981	15	4	766	227	7	188	800	12	26	905	69	10	547	443
998	1	1	986	8	5	799	194	7	224	766	10	37	892	71	12	567	421
1,000	..	..	863	137	..	287	690	23	17	974	9	6	944	50	..	618	487
999	..	1	987	11	2	769	225	6	161	823	16	14	918	68	8	520	472
988	11	1	759	236	5	184	797	19	11	947	42	2	797	201	1	326	673
953	45	2	471	519	10	51	915	34	8	975	17	..	791	209	..	285	715
966	32	2	508	485	7	87	897	16	8	972	20	3	874	123	2	498	500
965	35	..	618	373	9	101	882	17	8	962	30	..	832	168	2	365	633
963	35	2	582	410	8	90	903	7	7	971	22	1	822	177	..	325	675
966	33	1	564	427	9	127	855	18	13	972	15	1	877	122	1	395	604
990	9	1	856	142	2	404	587	9	76	889	35	5	838	157	3	364	633
994	6	..	852	140	8	413	587	..	59	898	43	5	867	128	4	342	654
964	33	3	676	321	3	298	694	8	111	871	18	4	874	122	2	409	589
995	5	..	906	92	2	440	544	16	84	944	22	3	805	192	1	333	666
995	5	..	822	176	2	230	761	9	10	960	30	1	826	173	..	382	618
977	21	2	755	243	2	350	650	..	140	803	57	1	933	66	3	480	517
997	2	1	130	68	2	501	481	18	60	902	38	7	814	179	2	295	703
996	3	1	920	80	..	461	527	12	63	908	29	7	822	171	8	339	653
995	3	2	936	64	..	497	490	13	45	947	8	2	852	146	5	346	649
994	6	..	813	178	9	368	626	6	103	874	23	15	826	159	3	393	604
936	62	3	581	401	18	281	695	24	251	726	23	23	875	97	6	624	370
985	14	1	815	182	3	329	664	7	48	939	13	6	903	91	3	484	513
957	41	2	553	441	6	153	840	7	7	973	20	1	867	132	1	349	610
915	83	2	482	509	9	139	854	7	28	960	12	1	900	99	1	430	589
997	2	1	943	54	3	382	618	..	23	960	17	1	884	115	2	366	632
998	1	1	950	49	1	598	488	4	92	896	12	14	923	63	3	556	441
998	1	1	933	66	1	419	575	6	42	947	11	4	933	63	2	554	444
998	1	1	940	60	..	448	546	6	30	952	18	3	941	56	4	570	426
998	1	1	991	9	..	818	178	4	250	735	15	36	895	69	7	522	471
998	..	2	951	49	..	551	446	3	64	925	11	9	944	47	3	574	423
999	1	..	923	77	..	304	696	..	16	976	8	2	946	52	..	549	451
996	3	1	926	77	3	333	661	6	21	967	12	4	829	67	3	586	411



## CHAPTER VII

### INFIRMITIES

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#### § 1. GENERAL CONSIDERATIONS

**205. Introductory**—The census schedule reserved to its last column its query about infirmities. The question asked was: “whether insane. . . ., deaf-mute. . . ., totally blind. . . . or a leper. . . .?” The statistics discussed in this chapter will be concerned with these four kinds of infirmities. The instructions on the cover of the enumeration book sufficiently indicate the limitations of the return:

“If any person be blind of both eyes, or insane, or suffering from corrosive leprosy, or deaf and dumb, write yes (or ✓) on the card against the name of the infirmity from which he or she is suffering; otherwise, put a cross (X). Do not enter those who are blind of one eye only or who are suffering from white leprosy only. No other infirmity except the four above is to be mentioned. For those who suffer from more than one infirmity, write ‘yes’ (or ✓) after each of the infirmity with which the person is afflicted.”

It is to be noted that insanity to be recorded must be one of the more active forms of mental derangement, blindness must be of both eyes, deaf-mutism may be either congenital or acquired after birth and leprosy does not include the initial stages of the nodular type of the disease. The “speaking deaf”, the imbecile “cretin” or idiot, the short-sighted or blind of one eye and the sufferer from white leprosy were not to come into the return at all.

**206. Reference to Statistics**—The figures dealt with here were compiled in the three parts of Imperial Table IX—Part A, showing the distribution of each kind of infirmity by age, Part B showing similar distribution by administrative divisions and Part C showing the prevalence in absolute figures of the different infirmities in selected races or castes. The castes selected for this purpose are the same as those for Imperial Tables VIII (Civil Condition), XI (Occupation) and XIV (Literacy). Of these castes, however, such as returned less than 10 afflicted cases were omitted. It is necessary to add here in regard to the figures compiled under each infirmity that, added together they do not agree with the total of persons afflicted shown in columns 2, 3 and 4 of the Imperial Table. As a person afflicted with more than one such misfortune has been separately counted to each of them, the basis of figures under each refers to *cases* and not *persons*. This has been the practice since 1911. In 1901, the basis was presumably persons, and one with multiple infirmities was entered under the most important of his afflictions. In addition to the above statistics, further details regarding infirmities have been compiled by mahals in State Table XV—B. A special Table showing the age and civil condition of afflicted persons has been also prepared (State Table XV—A).

**207. Utility of the Return**—At the outset the point may be discussed whether a census of infirmities serves any useful purpose at all. The census organisation is a layman’s organisation. As a result the statistics of infirmities are not very reliable. The English census depending as it did until the latest year on the householder’s whims, was notoriously defective in this respect. The Royal Commission on the Care of the Feeble-minded reported on the unsuitability of the census agency for ascertaining facts concerning mental defects,—

“the nature of which in very many instances can only be learnt by the personal observation of men and women whose judgment has been trained and well-practised in a special branch of medical work. Both for administrative and scientific purposes it would be better, we think, to ascertain the facts by special investigation such as that which has been made by our medical investigators, or by means of the cumulative records which we hope may be compiled as confidential documents, as soon as the importance of the subject is recognised.” (Column 4202, page 198).

Instancing the case of Insanity in particular, Major W. S. J. Shaw, I.M.S., the Superintendent of the Yerowda Lunatic Asylum, indeed advocated in 1920, the omission of insanity returns and the mere statement in their stead of the certified cases of insanity in the asylums. He wrote :

“ I would suggest.....that no attempt be made to obtain figures of the incidence of insanity in general, as such can only be quite inaccurate. In the last census report, the return was for ‘mania’ alone, and ‘mania’ is almost the most recoverable type of insanity, but now-a-days it is considered a phase of ‘manic-depressive’ insanity and not a definite disease in itself. We must assume that the graver varieties of insanity exist in India outside Asylums, as they do in all other countries ; consequently it is difficult to understand why a return of cases of ‘mania’ alone is made in India, unless it is meant to include all serious cases of insanity, which from every point of view it should not.”

The purport of the above observations is that as the census return is only concerned with obvious types of maniacal derangement, which are the most recoverable, it misses those more important cases of real insanity, the ascertainment of which is more to the purpose of social welfare. So is it the case with leprosy. It is true that most people recognise the difference between white leprosy and leprosy proper. The vernacular terms respectively for these—*kodh* and *raktapitta*—are well-understood. But it is more difficult to ascertain real cases of incipient or nodular leprosy, or to draw the line between this disease and that other scourge—syphilis ; so that a census return under this head fails to give an accurate idea of the real incidence of this affliction.

**208. Accuracy of the Record**—On the whole therefore a census return of infirmities does not serve any very useful purpose. But on the other hand, there is public demand for knowledge of the extent to which these infirmities are each in their own way re-acting on the efficiency of the population. Again, decade after decade, the census machinery is getting more improved and better stored with knowledge and as it is the only organisation by whose means such data can be at all effectively collected throughout the country, it is better that an imperfect record should be made rather than that no figures be compiled altogether. With the progressive improvement in the quality of the enumerating staff, the record becomes increasingly reliable, the margin of error is narrowed, and the variations from census to census do indicate in a continuous and satisfactory manner the extent to which the disease or affliction is spreading or is being controlled. In support of this statement, the testimony of the Indian Council of the British Empire Leprosy Association may be quoted from their latest report\* as proving that in important sections of the country there is undoubtedly a changed outlook. “There is less tendency to conceal the disease and less reluctance to come forward for treatment,” so that in one important particular, the leprosy record, which used to be most vitiated by the factor of wilful concealment, has become more reliable. Further if leprosy and insanity returns do not adequately show the real incidence of these infirmities, there is no reason why the return of the blind and the deaf-mute, if properly supervised should not be accepted as fairly satisfactory. These are afflictions which can be readily recognised. There is no particular shame attached to them : as the occurrence of deaf-mutism and blindness is most in evidence at the two extremes of life. Lastly the reader is assured that the figures of blindness and deaf-mutism were most carefully enquired into and revised. The slips regarding them were recopied and sent back to the mahals, very elaborate instructions were issued as to what each infirmity meant and how the return was to be compiled, and the charge superintendents were specially directed to enquire into each individual case and revise the record in the light of these instructions. The leprosy record was similarly revised in the majority of cases in those areas where the incidence is known to be severe. In many cases the slips were revised wholesale, and a new record was made. All cases of multiple infirmities were similarly carefully scrutinised and the slips revised wherever necessary. Many cases of one-eyed or night blindness were removed from the list of infirmities during census tours ; census inspectors and other touring officers specially took note that the record was being

\* From the *Times of India* of 5th July, 1930.

accurately made, and in other ways particular attention was paid to see that accuracy was maintained. We shall presently assess the relative value of figures under each head.

**209. General Results**—The general results may now be given. The total number of infirm persons in the State was found in the present census to be 11,146

Types of Infirmity	Cases in 1931	Variation per cent since 1921
1	2	3
Insanity .. ..	1,373	+ 38.1
Deaf-mutism .. ..	1,266	+ 111.7
Blindness .. ..	8,033	+ 18.2
Leprosy .. ..	575	+ 4.2

(4,944 males and 6,202 females). In 1921, the number was 8,901. Thus the infirm have increased by 2,245 or over 25 per cent. The general increase of population being only 15 per cent, the increase in the number of the afflicted since 1921 is serious. As seen in the marginal table, the largest increases are amongst the insane and the deaf-mute. The blind have increased a little more than the general population, but leprosy, as shown in the proportionate figures set out below, has actually declined.

**210. Co-existent Infirmities**—The afflicted cases under each of the four heads as seen in the table above if added up, differ from the total of afflicted persons by 101, as 96 persons suffer from multiple infirmities. 91 persons suffer from double infirmities (insane and deaf-mute—48 persons, insane and blind—9, deaf-mute and blind—27, blind and leper—5, and deaf-mute and leper—2). 5 persons are afflicted with triple misfortunes—four are insane, deaf-mute and blind, and one is insane, deaf-mute and also a leper. In the 1921 Census, only 33 cases of such combined afflictions were disclosed. That the number of such multiple misfortunes has increased is a tribute to better record. Generally certain infirmities are associated together in one and the same person. To quote the same authority mentioned above, Major Shaw of the Poona Asylum,—“a large proportion of deaf-mutes (enumerated separately in the census) may be considered definitely insane.” A proper record therefore should show a much larger number of persons than the 53 recorded in this census who combine deaf-mutism with insanity. Even then this figure is an improvement on 1921 which had only 18, and 1911 which had only 2 such cases. Again leprosy and blindness are both diseases associated with squalid conditions of living and should occur in combination more frequently than the census record which shows only 5 such cases.

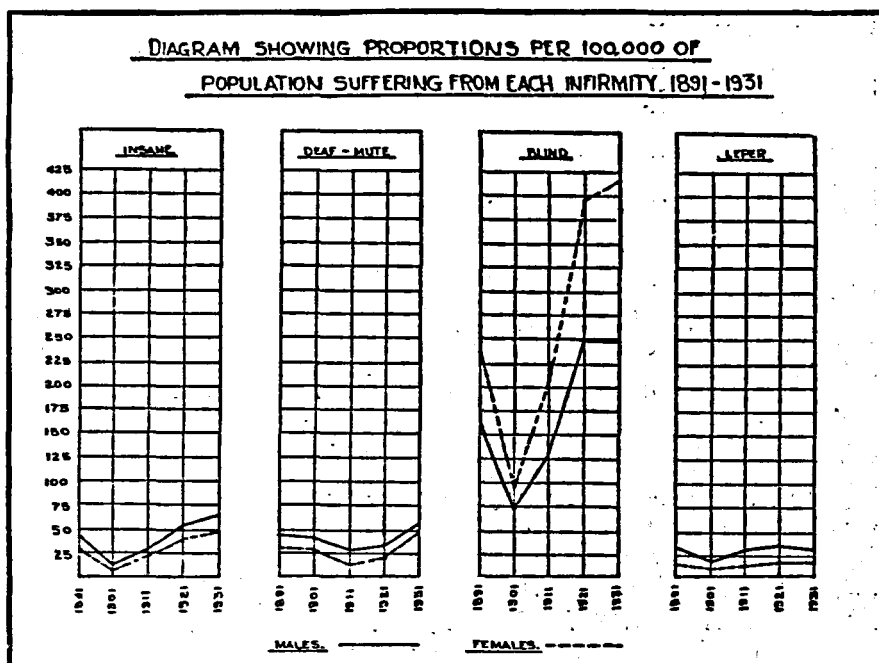
**211. Variations in Infirmities since 1891**—The best way to study variations is to mark the change in the proportionate figures. The following Table gives the proportionate figures (calculated per 100,000) of the population under each infirmity since 1891:—

SUBSIDIARY TABLE I  
NUMBER AFFLICTED PER 100,000 OF THE POPULATION  
AT EACH OF THE FIVE CENSUSES

INFIRMITY	PROPORTION PER 100,000									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
Insane .. ..	65	54	30	15	43	47	39	21	9	27
Deaf-mute .. ..	55	34	29	41	45	48	22	13	23	30
Blind .. ..	246	249	129	75	161	417	395	204	95	235
Leper .. ..	31	35	31	18	32	15	16	12	10	15

Insanity has steadily increased since 1911 among both sexes, and its proportion is now more than double. Blindness amongst males has slightly declined since 1921, but amongst females it has increased, so much so that it has now proportionately doubled itself since 1911. Deaf-mutism amongst males has similarly increased and amongst females its incidence is more than three times what it was 20 years ago. It is only in leprosy that we have apparently some grounds for satisfaction, as the proportions show actually a decline since 1921, while compared to 1911, the state of things is nearly the same. A diagram is given here also to illustrate the

proportional variations from census to census under each infirmity. Taking the earlier censuses, the 1901 figures show a general all round drop under each head since 1891, because the severe famine preceding that census had worked havoc more among these unfortunates



than in any other section of the population. The ratios for 1891, which was the final year of the "normal decade," compare very favourably with those of the present census. The variations will be subjected to further analysis, when we take up each infirmity in turn, but we may notice here in passing that the leprosy figures show a remarkably stationary trend, while under insanity and deaf-mutism, the variations are a continuous series. It is only under blindness, the most easily discoverable infirmity and therefore likely to be the most accurate, that the figures curiously enough show a jump in 1921, since which date, the proportionate increase seems more or less normal. The reason for this untoward happening in 1921 is perhaps that the earlier censuses were very imperfect in this respect and that the standard of improvement began to be definitely raised since 1921 and has maintained itself on the present occasion. In regard to deaf-mutism, the 1901 figures show a small decline since 1891, but in 1911 there was a big drop under this infirmity, which can be only explained by stricter limitation of the return to congenital deaf-mutes only. Since then there has been a sharp rise in figures under this head due to a change in definition.

**212. Certain General Considerations: Infirmities by Caste**—Before each infirmity is taken up, certain general considerations about figures of the infirm by caste, age-period, sex and civil condition will be made. Imperial Table IX-C gives the absolute figures of infirm persons in selected castes. Caste figures are of interest as they show in the first place directly the comparative incidence of each particular type of affliction in the different social strata, and secondly indirectly they give a clue to the extent to which certain kinds of occupations and social habits favour or inhibit the progress of these infirmities. The Government of India decided to drop the compilation of this Table of Infirmities in selected castes from motives of economy, but we in this State have retained it in view of the wide public interest for such data as we are able to compile in this regard and also because, on account of the smallness of figures, it is comparatively easy to compile this table. The marginal table has been prepared from that Imperial Table and the ratios are calculated per 100,000 of the strength of each section concerned. Of

INFIRMITIES BY SOCIAL STRATA					
CASTE	Number afflicted	Insane	Deaf-Mute	Blind	Leper
<i>Advanced</i> .. ..	457	81	46	314	16
Hindu and Jain ..	464	78	46	325	15
Muslim .. ..	410	107	56	230	17
Parsi .. ..	266	98	14	154	..
<i>Intermediate</i> .. ..	479	54	54	350	21
Hindu and Jain ..	483	51	54	356	22
Muslim .. ..	451	80	53	300	18
Indian Christian ..	268	28	28	184	28
<i>Illiterate</i> .. ..	475	39	59	340	69
<b>General population</b> ..	<b>456</b>	<b>65</b>	<b>55</b>	<b>246</b>	<b>31</b>

course as regards sections whose numbers are below 100,000, the proportions calculated are actually larger than the absolute figures and the marginal table suffers in utility in consequence. But there are certain points of general interest as the sections selected represent definite strata of society. As might be expected, the Advan-

ced sections show the least incidence of affliction—the Muslim advanced groups—Memon, Pinjara, Saiyad and Vohra—showing less proportions than the Hindu and Jain. The Parsis are the most fortunate in this respect. The Intermediate, it is true, has a higher ratio of the afflicted than the Illiterate. But the Intermediate ratios, it must be understood, are affected not merely by social environment but also by climatic considerations. The bulk of Intermediate communities are localised in areas like North Gujarat and Kathiawad where the dust and glare combine with other reasons to keep up a high incidence of blindness. The insanity ratio amongst the Intermediate is, as may be expected between the Advanced and the Illiterate, and as insanity is a disease of the mind, it is least evident in the Illiterate sections. Leprosy is a disease associated with poverty and dirt, and it is, therefore, most evident in the Illiterate section particularly amongst the Primitive and Forest Tribes. The low proportion of lepers amongst the Advanced is also due to some extent to deliberate concealment.

**213. Infirmities by Occupation**—Infirmities and occupational details are not directly correlated in the census, but it is possible from the usual occupations of groups of castes to find out how far these have an effect on the incidence of infirmities. The following Table has been also prepared from Imperial Table IX-C :—

SUBSIDIARY TABLE II  
INFIRMITIES IN SELECTED CASTES

CASTES	Number afflicted per 100,000 of the strength of each caste or section			
	Insane Persons	Deaf-Mute Persons	Blind Persons	Leper Persons
1	2	3	4	5
(1) <i>Learned Professions and Public Administration</i> ..	95	59	395	12
Barot .. ..	89	69	514	14
Brahman .. ..	96	59	402	12
Saiyad .. ..	83	73	292	10
Parsi .. ..	98	14	154	..
(2) <i>Trade</i> .. ..	103	57	263	15
Vania .. ..	98	57	290	13
Memon .. ..	100	45	223	..
Vohra .. ..	120	60	194	25
(3) <i>Artisan</i> .. ..	65	88	484	15
Bhavsar .. ..	119	85	256	17
Darji .. ..	83	133	629	19
Ghanchi .. ..	112	140	573	14
Kumbhar .. ..	51	82	512	10
Luhar .. ..	52	86	314	14
Valand .. ..	57	46	482	21

## SUBSIDIARY TABLE II—concl'd.

## INFIRMITIES IN SELECTED CASTES

CASTES	Number afflicted per 100,000 of the strength of each caste or section			
	Insane Persons	Deaf-Mute Persons	Blind Persons	Leper Persons
1	2	3	4	5
(4) <i>Agricultural</i> .. .. .	47	42	283	13
Anjana .. .. .	49	55	268	..
Kadwa .. .. .	42	53	292	8
Lewa .. .. .	50	27	273	20
Malek .. .. .	27	18	286	18
Momna .. .. .	36	72	318	22
Pathan .. .. .	94	69	296	6
(5) <i>Military and Dominant</i> .. .. .	68	65	364	23
Maratha .. .. .	132	41	206	8
Rajput .. .. .	60	68	384	25
(6) <i>Labour</i> .. .. .	45	51	335	19
Baria .. .. .	36	50	223	23
Patanwadia .. .. .	39	53	221	58
Talabda .. .. .	57	40	240	39
Thakarda .. .. .	37	55	318	5
Vankar .. .. .	64	52	549	20
(7) <i>Religious Mendicant (Hindu and Muslim)</i> .. .. .	72	63	414	25
(8) <i>Unclean Occupations</i> .. .. .	51	60	520	30
Bhangi .. .. .	45	74	496	32
Chamar .. .. .	56	49	537	28
(9) <i>Primitive and Forest Tribes</i> .. .. .	35	47	231	69
Intermediate .. .. .	31	20	135	35
Illiterate .. .. .	36	55	260	79

The above table certainly points to certain broad conclusions. Insanity is a disease associated with intellectual occupations or else with such other employments in which the stress of economic factors has the fullest operation. The highest ratios therefore are found in the trading communities and amongst castes which bulk most largely in the learned professions. The Vohra and Memon amongst Muslims, just as Parsis, Vanias and Brahmans amongst others, show the largest proportions of the insane. Artisan groups, especially those which show a very high literacy ratio, are also affected like the Bhavsar and Ghanchi. Agriculture and pasturage are usually supposed to have a salutary effect on the mind, so that even though recent years have hit hard these principal industries, the castes mainly depending on them still show the lowest ratios of insanity, with the exception of the Pathan who shows rather a higher figure. Insanity seems to increase since 1911 amongst this group and the cause of its rise must be sought—rather in their social habits such as consanguineous marriage, which generally accounts for its comparatively high incidence amongst typical Muslims of all grades of society.

These practices generally lead to cretinism, idiocy and even to certain true forms of insanity, but they are not generally believed to result in mania. As to other occupations and their reactions on this particular infirmity, it is to be noted that the dominant and military groups show a low ratio while religious mendicancy has a way of attracting the insane. The Marathas included under military and dominant however show a high insanity figure because of their high literacy and the share which they have increasingly taken in professions and the public administration. While on the subject of insanity, it is important to reiterate, what has

MUSLIM CASTES	Incidence of Insanity
Saiyad .. .. .	83
Vohra .. .. .	120
Memon .. .. .	100
Pathan .. .. .	94
Fakir .. .. .	123

been often pointed out, the inverse correlation between it and such afflictions as

OCCUPATION	Order according to Insanity	Order according to Blindness	Order according to Leprosy
Trade .. .. .	1	8	7
Learned Professions ..	2	4	9
Religious Mendicancy.	3	3	3
Military .. .. .	4	5	4
Artisan .. .. .	5	2	6
Unclean .. .. .	6	1	2
Agriculture .. .. .	7	7	8
Labour .. .. .	8	6	5
Primitive .. .. .	9	9	1

leprosy and blindness as the marginal table shows it. Where insanity is more prevalent, there the latter named are apt to be less in evidence on the general ground that blindness and leprosy are diseases of dirt and are usually found in the lower grades of employments and amongst tribes and classes with a very low standard of life. But blindness is also the result of intellectual toil, of social conditions such as the *purdah*, of congested conditions of living in towns where its high incidence amongst females is due to their work-

ing in smoke-infested kitchens and also of such physical causes as dust and glare. This explains the relatively high place in the order according to blindness of learned professions and also of artisans, who have the second place and living mostly in towns have to work in dingy homes without light; the primitive tribes in spite of their dirt manage to escape from blindness because they live in forest areas, where the sun's glare does not intrude. Religious mendicancy takes a uniformly high place in all the three infirmities while agriculture appears to be the most fortunately circumstanced.

**214. The Infirm by Age: Certain Preliminary Considerations**—We now come to the age figures of the infirm. Certain preliminary considerations are necessary for a proper understanding of the figures. Deaf-mutism and blindness may be acquired from or after birth, but the former can only be acquired in infancy before speech is fixed, while blindness is not merely congenital but it can also be acquired after birth any time during life. In fact there are more blind who are so after birth than those who are congenitally not able to see. It is a disease peculiarly associated with old age, and does not directly affect, except through social neglect and poverty, the longevity of persons it affects. Insanity and leprosy however are afflictions of adult ages and rarely found amongst children. Taken generally, all these afflictions however make their sufferers shortlived. Consequently any large increase in higher age-groups in subsequent censuses can only be due to (i) better record, and (ii) to other persons newly acquiring the infirmities. Errors in the infirmity returns are mostly due to errors of diagnosis resulting in the bulk of cases in omissions and wilful concealment on the part of the people. The instructions regarding deafness, blindness in one eye, and white leprosy are now so well-known that the error of an excess of returns due to these causes is now eliminated. Therefore any increase in numbers inspite of the known heavy rate of mortality amongst the infirm can only be put down to the above cause. A marginal table showing the absolute figures for the last three censuses for the higher age-groups (35 and over), is instructive. Thus there were, in the age period 35-45, 690, who grew to 1,468 in 1921 and 2,337 in 1931. Similarly the 45-55 group of 1911 increased from 776 to 1,658 in 1921. The infirm aged 35-45 in 1921 increased from 1,098 to 1,623. Now taking the persons aged 45-55 in 1921 (who numbered 1,468) let us calculate

AGE PERIOD	Persons afflicted		
	1911	1921	1931
35-45 ..	690	1,098	..
45-55 ..	776	1,468	1,623
55-65 ..	..	1,658	2,337

the exact number of the infirm who have been added to the list during the decade through the operation of the above two causes. The rate of mortality usual to that age period is 75 per mille per annum. If 80 per mille per annum is the rate assumed for the infirm, then at the end of the decade, only about a fifth of 1,468 will have survived. Thus there must have been at least 2,000 new cases added to the list—nearly 20 per

cent of the total afflicted recorded in this census—during the last ten years. After making allowances for inaccuracies in stating of age, one cannot resist

the broad conclusion (i) that the percentages of omissions have been very much reduced, and (ii) that new afflictions have alarmingly increased.

**215. Subsidiary Table III: The Infirm by Age-Period and Sex**—After preliminary considerations, let us analyse the age returns of the infirm. There are two ways in which these age returns can be reduced to proportionate figures. In the first place, the figures of the infirm per each age group may be proportioned to the total population of those ages, so that the incidence of each infirmity by age groups may be studied and contrasted. Subsidiary Table III has been prepared on this basis, giving the proportions of infirm persons in each sex and under each infirmity per 100,000 persons of those ages. In the last four columns of the table, the proportion of women under each infirmity is shown. There is a second way in which the age returns can be analysed, that is, by proportioning the number of infirm persons in each age-period to the total infirm; this will be done when each kind of infirmity is taken up for consideration.

SUBSIDIARY TABLE III

NUMBER AFFLICTED PER 100,000 PERSONS OF EACH AGE-PERIOD AND NUMBER OF FEMALES AFFLICTED PER 1,000 MALES

AGE	NUMBER AFFLICTED PER 100,000								NUMBER OF FEMALES AFFLICTED PER 1,000 MALES			
	Insane		Deaf-Mute		Blind		Leper		Insane	Deaf-Mute	Blind	Leper
	Males	Females	Males	Females	Males	Females	Males	Females				
1	2	3	4	5	6	7	8	9	10	11	12	13
0-5 ..	5	5	15	10	36	23	8	3	900	667	636	833
5-10 ..	37	22	52	43	74	54	7	3	542	747	661	333
10-15 ..	59	34	66	52	76	62	10	6	511	710	739	533
15-20 ..	85	47	70	46	90	60	20	9	533	640	645	468
20-25 ..	92	46	69	40	102	59	23	7	491	568	571	296
25-30 ..	103	53	62	41	103	103	31	12	500	638	969	379
30-35 ..	100	66	52	50	93	155	42	22	614	891	1,549	486
35-40 ..	87	76	45	43	129	296	55	33	838	914	2,188	581
40-45 ..	75	84	41	45	174	399	62	41	1,057	1,034	2,154	614
45-50 ..	78	86	48	64	290	767	63	41	979	1,172	2,351	579
50-55 ..	71	83	60	66	442	1,030	77	38	1,029	966	2,052	432
55-60 ..	80	70	92	94	1,055	2,155	86	30	808	893	1,878	321
60 and over ..	61	86	117	176	737	4,705	101	35	1,375	1,475	1,681	340
<b>Total</b> ..	<b>65</b>	<b>47</b>	<b>55</b>	<b>48</b>	<b>246</b>	<b>417</b>	<b>31</b>	<b>15</b>	<b>683</b>	<b>824</b>	<b>1,600</b>	<b>463</b>

**216. Consideration of Subsidiary Table III**—In the above table, it is interesting to observe how certain ages more than others are prone to particular infirmities. Taking insanity first, we find that the age-periods 25-35 are most severely affected by insanity. The danger zones are the years of first youth and middle age (20-40) for males and late maternity (35-55) for females. Obviously the economic strain in the one case in the first years of working life, as the psychological effect of the menopause in the other are governing factors. Deaf-Mutism shows a most extraordinary phenomenon in this census because the higher ages show the greatest incidence. In 1911 and 1921 the proportions show more or less a diminishing series from 35 and upwards. In this census, the ratios from age 45 upwards seem to increase in a way which raises a doubt about the accuracy of the age-return. Possibly a few of the speaking deaf of these ages may have been wrongly entered as deaf-mutes. But it is more probable that many of these had their ages wrongly entered and should have been put to earlier ages. The deaf-mutes aged 40 and over numbered 388 in this census while in 1921, they were only 81. I do not think, allowing for corrected record in 1931 that the number of deaf-mutes of these ages could be much more than 100. The rest must be credited with younger ages. Coming to blindness, we find that it is mainly an old age affliction, the danger zone for males being 50 and over and for females 40 and over. Leprosy shows the highest incidence amongst males 35 to 55 and amongst females between 40 and 55. But a caution must be entered here in the consideration of these figures. Age-returns are always defective and they are specially so in respect of the infirm; considering the age-returns of the infirm for the two censuses, one must



conclude that while there were less omissions of record on the present occasion, in 1921 the age-returns were more accurate. Turning to the sex ratio, it will suffice to note that while leprosy and insanity are predominantly masculine afflictions, blindness selected adversely against women and amongst the deaf-mutes, the sexes tend to approach equality. Amongst the blind aged 35-55, the women indeed are more than double the number of afflicted of the other sex. Finally it must be added that the sex ratio of the lepers is vitiated by deliberate concealment particularly in the ages 10-15, 15-20 and 20-25 when with girls about to marry or young married women, the incentive to conceal this dreadful affliction is natural and understandable.

**217. The Infirm by Civil Condition**—One other point of general interest must be briefly dealt with, before each infirmity is discussed. In this State, since 1921 a special table showing the Civil Condition of the Infirm has been compiled. Of the afflicted persons in 1921, 31 per cent were married and 44 per cent were widowed. In 1931, the corresponding ratios of the married and widowed were 31 and 48 respectively. In the general population, the proportions of the married and widowed are 50 and 11 respectively. As infirmities bulk largely amongst castes which allow child-marriage as well as remarriage of widows, it may be concluded that the occurrence of infirmities does inhibit marriage to a certain extent. Especially is this seen in the proportions of the married and widowed amongst infirm women (which are 27.5 and 63.6 per cent) compared to 52 and 15 per cent respectively amongst females generally in the State. The high proportion of the widowed amongst the female infirm is due to the fact that the bulk of them in the older ages are blind and have no chance in matrimony. A fair proportion of these afflicted women are believed to be either aged spinsters, who are ashamed to own that they are still unmarried, or abandoned wives who were deserted by their husbands as soon as their infirmities had overtaken them. Lastly, the very high percentage of the married amongst lepers arrests attention. This high ratio shows public indifference about the dreadfully contagious character of the disease. The following Table prepared from State Table XV-A may be studied with advantage:—

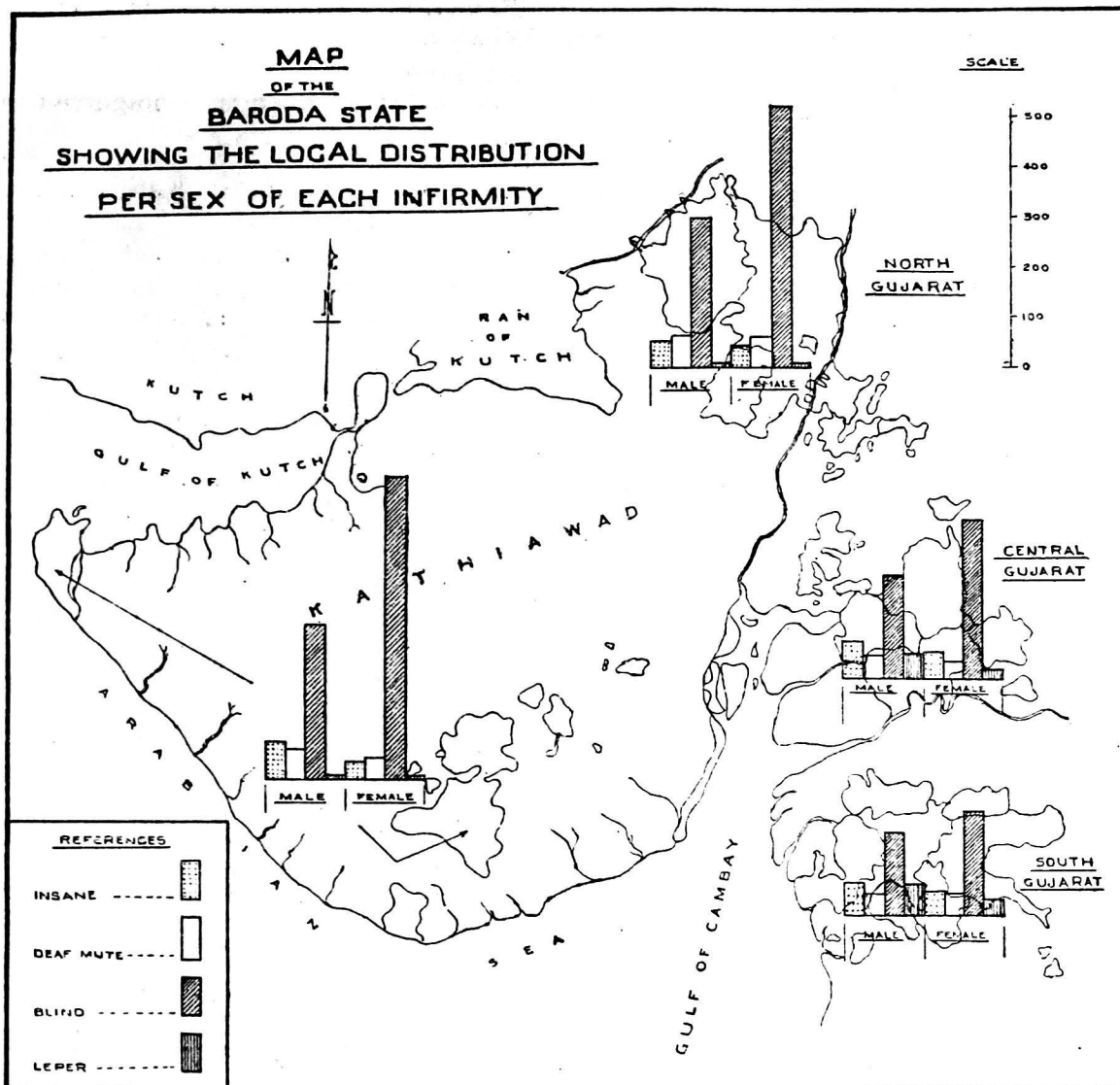
SUBSIDIARY TABLE IV  
THE CIVIL CONDITION OF THE INFIRM

INFIRMITY	Male		Female	
	Proportion to 100 afflicted of		Proportion to 100 afflicted of	
	Married	Widowed	Married	Widowed
1	2	3	4	5
<b>Persons Afflicted</b> .. .. .	<b>35.8</b>	<b>28.1</b>	<b>27.5</b>	<b>63.6</b>
Insanity .. .. .	30.8	13.6	47.6	32.3
Deaf-Mutism .. .. .	24.8	11.2	39.9	31.1
Blindness .. .. .	37.7	36.2	23.0	71.7
Leprosy .. .. .	50.4	22.4	49.4	33.5

Comparing these proportions with the state of things in 1921, we find that the conditions have hardly improved. Of the infirm males in 1921, 34 per cent were married and 26 per cent were widowed. Amongst leper women in 1921, 39 per cent were married and 34.5 were widowed. At first sight these figures would indicate that public opinion is even more callous than before, but the absolute figures are so small that the reader is cautioned against building any conclusions.

**218. Local Distribution of the Infirm**—Now we can subject the figures under each infirmity to a closer analysis; for that purpose a general conspectus of the local distribution is necessary. A map of the State is here given in which, in each division, the comparative incidence of each infirmity in each sex is plotted. As each infirmity is discussed, its particular local distribution will be described and

the reader is invited to refer to this map again for a more graphic understanding of the figures.



§ 2. INSANITY

**219. Insanity: Local Distribution**—Taking infirmities briefly one by one, we find that there has been a real increase of insanity. The following Table gives the comparative figures per sex and natural division (proportioned to 100,000) for the last five censuses :—

**SUBSIDIARY TABLE V-A**  
**NUMBER OF INSANE PER 100,000 OF EACH SEX IN EACH DIVISION**  
**(FIVE CENSUSES)**

NATURAL DIVISION	INSANE									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
<b>Baroda State</b> .. .. .	65	54	30	15	43	47	39	21	9	27
Central Gujarat with City .. .. .	75	67	33	19	37	53	48	20	9	26
Kathiawad .. .. .	73	41	17	10	35	33	19	2	8	25
North Gujarat .. .. .	54	47	26	9	45	44	33	20	5	28
South Gujarat .. .. .	66	51	40	25	55	48	47	33	17	24

The highest incidence of insanity is in Central Gujarat where the City is situated, but the figures for the insane include the inmates of the Baroda City Lunatic Asylum. The corrected proportions for Central Gujarat, therefore, after deducting the number of inmates born outside the natural division work out as in the margin for the last two censuses.

Year	Male	Female
1931 ..	72	52
1921 ..	63	46

With these corrected proportions, Central Gujarat comes below Kathiawad, where the increase is very high. The economic depression has made itself most felt in industrial and commercial centres; and here the City concentrates these activities. It is there also that intellectual classes of the people reside, with whom the insane ratio is high. Kathiawad is a feckless country of moribund rivers and precarious rainfall. Agriculturally this part of the State has been hit the hardest and the increase there is not surprising. The least affected part, relatively, is the North Gujarat division, where the composition of the people has much to do with this circumstance. The mental equipment of a population almost wholly given to tillage has relatively less to fear of derangement than the professional and trading classes from the blows of fortune. Theirs is a more placid life. Continued agricultural depression can only harden their fortitude and inure them to an attitude of patient resignation. It is with the professional and moneyed classes that the changes and mischances of fortune are more sudden and dramatic in their consequences. North Gujarat which is mainly agricultural is, therefore, least liable to insanity. Since 1921, after Kathiawad, South Gujarat has shown the largest proportional increase. While discussing the general trend of variations in para 210 above, we noticed the big drop in the 1901 figures from those of 1891. Mr. Dalal in his Census Report of 1901 was inclined to account for this drop partly by improved conditions of life. These had hardly time to set in so soon after the great famine of 1900. Subsequent observers have therefore agreed to attribute the fall in 1901 wholly to the famine. Improvement in record would imply, as pointed out already, an increase in numbers from census to census. Thus since 1901, part of this increase may be attributable to this cause. But insanity is like leprosy in this that both are most liable to errors of diagnosis. For the layman, the border between mania and insanity proper on the one hand, and idiocy and cretinism on the other is hard to define. In 1911, I have reasons to believe that emphasis was laid more on the violent forms of mental derangement. As a result many true cases of insanity went unrecorded. In 1921 though the definition was widened in the instructions to include all forms of insanity, it is doubtful whether all true cases, such as Major Shaw refers to, were included, while certain cases of congenital cretins aged 0-10 appear to have been wrongly entered as insane in 1921. In 1931, the record has been made under exactly the same conditions as in 1921, with perhaps more frequent inspections and scrutiny. The result is that with the

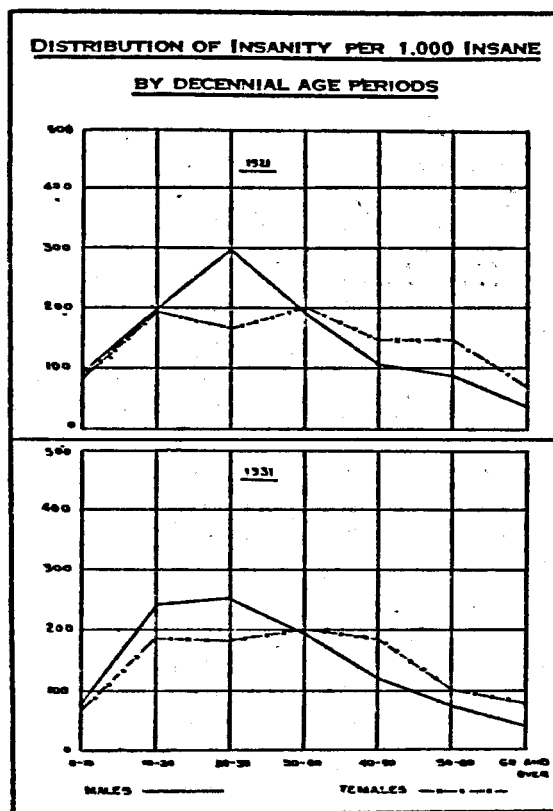
NATURAL SUB-DIVISION	Incidence of Insanity per 100,000	Order according to insanity	Order according to literacy
<i>Central Gujarat</i>			
Vakal .. ..	88	1	1
Charotar .. ..	41	10	3
Chorashi .. ..	55	6	9
Kahnam .. ..	62	4	6
<i>Kathiawad</i>			
Mid-Block .. ..	56	5	4
Scattered Areas..	77	3	5
Sea Coast Areas..	42	9	7
<i>North Gujarat</i>			
East Kadi .. ..	52	7	8
West Kadi .. ..	49	8	11
Trans-Sabarmati Area .. ..	34	12	10
<i>South Gujarat</i>			
Rasti .. ..	82	2	2
Semi-Rasti .. ..	33	13	12
Rani .. ..	38	11	13

margin of error remaining about the same there has been a real increase, with a doubt as to the increase in Kathiawad. Reverting to the figures of 1901, it is interesting to observe that while the famine was generally very effective in killing off these unfortunates, it succeeded most where its effects were most calamitous, as for instance in Kathiawad and North Gujarat. On the other hand in South Gujarat, where general agricultural conditions are fairly satisfactory on the whole and even the blows of 1900 were not so severe as in the other parts, the variations are more uniform.

**220. Insanity by Natural Sub-Divisions—**  
The figures of infirmities have been separately compiled for each mabal. In the margin a table is given showing the incidence of insanity in each natural area and comparing the order according

to the prevalence of this infirmity with that according to literacy, we find that there is a fairly close correspondence between the two. The co-efficient of correlation has been mathematically worked out according to Galton's method and comes to .70 a high correlation, it would have been even higher, had it not been for the Charotar figure, which is an exception. In Charotar, in spite of a high literacy ratio, the insanity figure seems low. In 1921, the Charotar figure was 54. Agricultural depression and economic strain on the other hand in Kahnarn, Mid-Block and East and West Kadi have helped to force up the insanity ratios in those parts. The proportion for the scattered areas seems unduly high for the composition of their people. The Rasti incidence is second highest in the Raj and would have mounted much higher if to the number of insane recorded there we added the lunatics in the City Asylum, whose birthplaces belong to the Rasti area. The incidence for the whole State is 56, so that Rasti, Vakal, Scattered areas and Kahnarn show a higher average of prevalence than the general population. It has now been generally agreed that locality has little to do with the occurrence of insanity. Widely dissimilar areas like the Rasti with its high rainfall and green vegetation and the Vakal with its red soil mixed with salt and the Scattered areas of Kathiawad, dry and windswept, show a like incidence of this affliction.

**221. Insanity by Age**—The general incidence of insanity in the different age-periods has been already shown (*vide* para 215 above). In this paragraph the age-constitution of the insane will be dealt with; for this purpose the following table and also the diagram in illustration should be studied; the diagram compares the age curve of the insane for the last two censuses.



SUBSIDIARY TABLE VI-A

DISTRIBUTION OF THE INSANE BY AGE PER 10,000 OF EACH SEX (FIVE CENSUSES)

AGE	INSANE									
	MALE					FEMALE				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
0-5 ..	123	50	94	198	187	162	25	294	248	32
5-10 ..	723	857	1,097	397	599	575	802	1,030	124	734
10-15 ..	1,103	1,025	877	530	1,140	826	902	932	1,111	766
15-20 ..	1,287	958	972	794	1,364	1,006	1,078	1,274	1,481	1,809
20-25 ..	1,324	1,294	1,191	1,655	1,308	952	752	1,422	1,481	1,002
25-30 ..	1,175	1,697	1,348	1,060	990	862	902	1,078	1,111	1,002
30-35 ..	1,078	1,261	1,097	1,457	1,121	966	1,153	1,470	740	970
35-40 ..	833	605	939	994	785	1,023	852	735	493	809
40-45 ..	650	639	846	1,126	879	1,006	827	490	986	766
45-50 ..	576	403	533	530	411	826	627	148	493	420
50-55 ..	417	555	376	729	599	628	1,203	490	618	679
55-60 ..	319	269	158	199	75	377	250	98	248	364
60 and over	392	387	472	331	542	791	627	539	866	647

The table has been prepared after smoothing the age-returns of the insane in the same way as the general ages were done (*vide* Chapter IV). The numbers at each age are proportioned to 10,000 insane of each sex. It is interesting to compare the age-constitution of the insane with the general age-constitution of

AGE-CONSTITUTION				
Age-Period	General Population		Insane	
	Male	Female	Male	Female
0-15 ..	39	39	19	16
15-40 ..	40	41	57	48
40-60 ..	17	16	20	28
60 and over ..	4	4	4	8
All Ages ..	100	100	100	100

the people. As seen from the margin, the proportion of the insane below 15 is about half of what obtains in the general population. The bulk of the infirm under this head—more than three-fourths—are aged 15-60, although the female insane aged 40 and over are more numerous relatively than the menfolk afflicted in those ages.

**222. Insanity in the Age-Period 0-10**—In the Indian Census, a distinction is made between insanity proper and idiocy, cretinism and weak-mindedness. Insanity belongs to the adolescent or adult periods while these latter occur at the beginning of life. Thus comparative figures of persons recorded as insane in the age-period 0-10 from census to census are a test of accuracy. In the margin the insanity proportions of 0-10 are given for five censuses. Perhaps, the error in return of age remaining the same, it is permissible to infer that the mistakes in diagnosis show a slight diminution since 1911.

Census Year	Percentage of insane aged 0-10 to total insane
1891	8
1901	6
1911	12
1921	9
1931	8

**223. The City Lunatic Asylum**—The City Asylum is the only asylum for the insane in the State. There is besides an Infirmary for the aged and the orphan. There were 51 patients in the Asylum on the census day (33 males and 18 females). They were divided according to ages as in the margin. As may be expected, the largest number of patients were middle aged. Mania claimed the largest number of patients. Melancholia and dementia were other forms in evidence. The bulk of the patients were Hindus. Less than a fifth were Musalmans. The Asylum has now been enlarged, the female ward now affording accommodation for a larger number of inmates. The majority of patients hail from Central Gujarat (21 males and 15 females). South Gujarat sends 4 males and 2 females and North

Gujarat, 4 males and 1 female. There were 2 males from Kathiawad. Only 2 were from outside the State. The distance of Kathiawad accounts for smallness of the number of inmates.

Age-Period	Number of lunatics in the Asylum
0-15	..
15-40	38
40-60	13
60 and over	..

### § 3. DEAF-MUTISM

**224. Deaf-Mutism**—By this infirmity is meant the “congenital want of the sense of hearing which in the absence of special schools . . . for removing the defect, necessarily prevents the sufferer from learning to talk.”\* The point to note is that the defect is congenital and that it must be combined with dumbness. Uptill 1921, deaf-mutism was only to be recorded in respect of persons who had acquired it *from birth*. In 1921, these last words were omitted from the instructions on the recommendation presumably of a committee in the Bombay Presidency who were investigating the problem of defectives and their education. The disturbing effects on the return, which resulted from this change in the instructions, were described in the Census Report of 1921. The change was meant for such real cases of deaf-mutism as were acquired after birth. It must be remembered however that the defect can only be acquired after birth in a very limited sense. As Dr. James Kerr Love, M.D. (Glasgow), stated: about half the number of deaf-mutes acquire their affliction after birth, *but before speech* is fixed. Thus there cannot be any additions to deaf-mutism after the age-period 0-5. We can therefore expect in the higher age-periods that the number of deaf-mutes should show a

\* The India Census Report, 1921, page 349.

diminishing series. But the general results may be now stated. For better understanding of the local distribution, the map given below para 218 should be consulted.

## SUBSIDIARY TABLE V-B

NUMBER OF DEAF-MUTES PER 100,000 OF EACH SEX IN EACH DIVISION  
(FIVE CENSUSES)

NATURAL DIVISION	DEAF-MUTE									
	MALE					FEMALE				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
Baroda State .. .. .	55	34	29	41	45	48	22	13	28	30
Central Gujarat .. .. .	48	31	25	36	43	34	18	14	21	27
Kathiawad .. .. .	57	27	14	57	44	40	27	5	38	45
North Gujarat .. .. .	64	35	20	28	37	62	21	10	22	25
South Gujarat .. .. .	45	39	63	77	81	45	32	19	53	45

The above table shows that North Gujarat has the largest incidence in 1931. South Gujarat claimed that honour in each of the previous censuses since 1891. Kathiawad shows the largest proportionate increase since 1911, there being four times as many deaf-mutes (proportioned to a lakh of population) as there were twenty years ago. Unlike the other infirmities, the proportionate figures for 1901 do not show that jump since 1891, which has been noted already. But the 1901 figures of defectives generally were suspect: as Mr. Dalal himself pointed out: "on looking at the figures generally there was a strong suspicion that the enumerators had put in those who merely suffered from dumbness or deafness or both after birth." One would imagine therefore that the census of 1911 would show a sensible decline in figures (both proportionate and absolute). There was an all round fall in figures, the most notable being in Kathiawad, where the incidence was only about a fourth of what was recorded in 1901. There was a stricter limitation in 1911—so strict indeed that, as stated in Mr. Govindbhai's Report of that year, in the course of tabulation "persons shown as dumb were assumed to be congenital deaf-mutes" as a set-off against the number of genuine deaf-mutes omitted. In 1921, there was an increase in figures which was ascribed to (i) better record, (ii) change in definition and (iii) real increase in the prevalence of the infirmity. For the latest census, the number of deaf-mutes has increased from 598 to 1,266. The deaf-mutes are now more than double. Their strength in this census has been carefully estimated. The slips as originally recorded were sent back and revised after very close scrutiny. Numerous cases of the merely deaf were omitted from the record, and where cases were found to have been omitted, new slips were prepared. At first sort, the deaf-mutes numbered 2,655, but after revision, the figure was brought down to what is shown above. It can therefore be accepted as an accurate estimate of the total incidence. The defect lies however in the age-returns of these persons, to which reference will be presently made.

**225. Deaf-Mutes by Locality**—In the meantime, the occurrence of deaf-mutism in the different parts of the State may now be more closely examined. Generally it is said that locality has some connection with deaf-mutism. The general incidence of deaf-mutism (for both sexes) is 52 per lakh. This figure might be compared with the respective ratios of the 13 natural sub-divisions of the State. As it is also said that there is some connection between insanity and deaf-mutism, the marginal table also gives in the last two columns the relative orders

of these natural divisions according to the prevalence of these two infirmities. East Kadi (which includes Mehsana town) owes its high ratio to the existence of the Boarding School for the Deaf-Mutes and the Blind. From the Vakal figures also the number of those belonging to the City School for the Blind and Deaf-Mute

NATURAL SUB-DIVISION	Proportion of deaf-mutes per 100,000	Order according to deaf-mutism	Order according to insanity
<i>High Figures</i>			
East Kadi ..	72	1	7
Vakal ..	65	2	1
Rasti Area ..	60	3	2
Mid Block Area..	60	4	5
West Kadi ..	53	5	8
<i>Low Figures</i>			
Rani Area ..	45	6	11
Chorashi ..	42	7	6
Sea Coast Area ..	39	8	9
Trans-Sabarmati Area ..	39	9	12
Kahnani ..	37	10	4
Scattered Area ..	33	11	3
Semi-Rasti Area..	16	12	13
Charotar ..	13	13	10

whose birthplaces are outside this area should be omitted to get at the correct figures. Having done this, East Kadi and Vakal ratios are reduced to 69 and 60 respectively. Even with these corrected ratios, the order of these areas according to deaf-mutism is not disturbed. Taking both these infirmities, we find correspondence in seven out of the thirteen natural areas between insanity and deaf-mutism in Vakal, Rasti, Middle Block, Chorashi, Sea Coast, Semi-Rasti and Charotar. Perhaps the correspondence in other areas is disturbed by the fact that the insanity record does not include many true cases of mental derangement which are not obvious to the enumerator. On the whole, in so far as locality reacts on this particular type of affliction, what I wrote in 1921 still holds good:—"It appears the hilly and forested regions suffer more from deaf-mutism than the open low-lands and that tracts in the neighbourhood of the sea where the soil is of recent formation from alluvial deposits

have higher ratios than areas remoter from the coast. Again unhealthy areas with wet and humid climates show more evidence of this infirmity than elsewhere."

**226. Deaf-Mutism on banks of Certain Rivers**—In 1921, from a collation of taluka figures, certain rivers were found to have a marked influence on the incidence of deaf-mutism. It was conjectured that the upper reaches of the Dedumehr and Malan rivers in Khambha (Kathiawad Middle Block), the Tapti river in Kamrej taluka (Rasti) and the proximity of the Rann of Cutch were likely causes of the high prevalence of deaf-mutism in these areas. In this census, the highest incidence occurs in these particular areas also. Perhaps the smallness of absolute figures does not warrant us to press this view any further; in future censuses, the medical authorities may be asked to find out whether

Taluka	Incidence of deaf-mutism (per 100,000)	
	1931	1921
Kamrej .. ..	91	52
Harij .. ..	89	57
Khambha .. ..	61	59

the analysis of the waters of these rivers can give any clue in this respect.

**227. Sex Ratio and Age Distribution of the Deaf-Mutes**—(i) *Sex Ratio*—First the sex ratio of the deaf-mutes may be briefly dwelt upon. As deaf-mutism is a congenital defect, males are more adversely affected than females, because congenital defects are known to select against males. In deaf-mutism however the sexes tend to approach equality more than in any of the other three afflictions.

(ii) *Age Distribution*—Coming to the age-returns, we must first of all test through absolute figures from census to census, whether the deaf-mute record is progressively accurate or otherwise. As a congenital defect, deaf-mutism makes its sufferers very shortlived. Therefore if the age-returns are accurately recorded the numbers in the higher age-groups should show a diminishing series, as the death rate is high and no fresh attack in the higher ages is possible. The marginal table gives the absolute figures of three censuses for decennial age-periods from 30 upwards. All the three censuses show a diminishing series, but the figures of 1921 and 1911 show much

Age-Period	1911	1921	1931
30—40 .. ..	54	75	154
40—50 .. ..	35	40	122
50—60 .. ..	12	29	115
60—70 .. ..	8	9	91

smaller incidence for these ages than the facts would seem to warrant. The figures were so closely scrutinised in the present census, that the total number of deaf-

mutes may be taken as accurately representing the actual prevalence in the State. Care was taken, as far as possible, to exclude cases of senile deafness. It is just probable however that a few may have been wrongly included. But on the whole, as pointed out already in para 216 above, the age-returns were perhaps more correctly shown in 1921, while the total strength is more correctly recorded in 1931.

**228. Subsidiary Table VI-B**—The following Table gives the distribution of the deaf-mutes by age per 10,000 of each sex for five censuses. An *illustrative* diagram is also attached here to show how the age-distribution curve varied in the last two censuses.

SUBSIDIARY TABLE VI-B

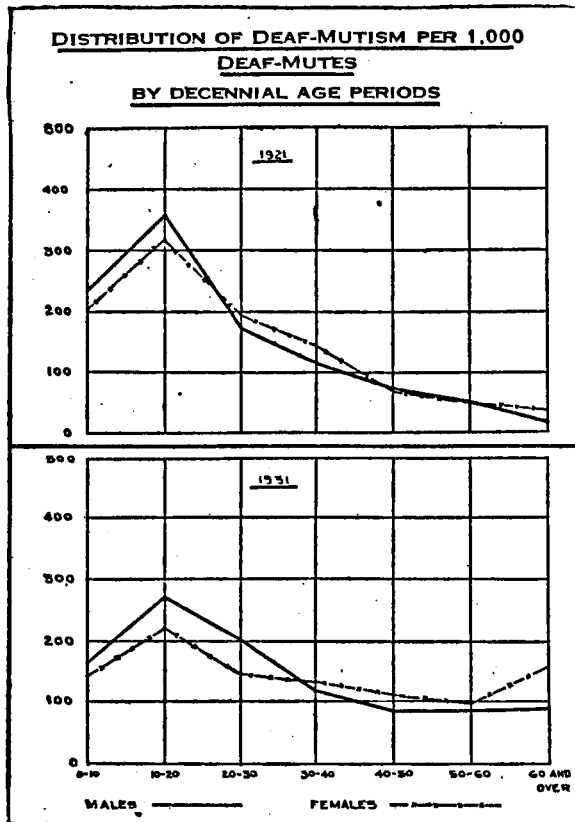
DISTRIBUTION OF THE DEAF-MUTE BY AGE PER 10,000 OF EACH SEX  
(FIVE CENSUSES)

AGE	DEAF-MUTE									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
0-5 .. .. .	389	352	530	289	335	315	742	407	572	514
5-10 .. .. .	1,196	1,924	1,887	994	845	1,084	1,310	2,114	1,031	1,229
10-15 .. .. .	1,441	2,276	1,357	1,211	1,426	1,241	2,140	1,707	1,146	1,429
15-20 .. .. .	1,239	1,247	1,324	1,236	1,109	962	1,004	1,138	954	971
20-25 .. .. .	1,167	921	1,126	967	1,021	804	830	1,382	1,107	771
25-30 .. .. .	836	840	1,093	1,012	951	647	1,092	732	726	600
30-35 .. .. .	663	623	662	791	951	717	961	976	687	829
35-40 .. .. .	504	515	497	606	528	559	480	569	954	457
40-45 .. .. .	418	407	464	1,211	792	524	480	325	687	686
45-50 .. .. .	418	271	397	241	458	594	175	407	152	343
50-55 .. .. .	418	325	166	670	475	490	393	81	648	857
55-60 .. .. .	432	163	166	241	264	490	87	81	305	171
60 and over .. .. .	879	136	331	531	845	1,573	306	81	1,031	1,143

The detailed age distribution is by quinary age groups. The age-constitution of the deaf-mutes may be compared with that of the general population. The marginal table does this and compares the results of the last two censuses. The 1921 figures bring out the diminishing trend from childhood to old age more prominently than those 10 years later : which would at first imply that in 1931 more congenital deaf-mutes aged 0-10 were omitted than in 1921. But this is not the case. In 1921 there were only 131 deaf-mutes aged 0-10. In 1931, there were 190. There is no reason therefore to suppose that fresh cases of congenital deaf-mutism (before or after birth) during the decade

Age-Period	General Population (1931)		Deaf-Mute 1931		Deaf-Mute 1921	
	Male	Female	Male	Female	Male	Female
0-15 .. .. .	39	39	30	26	46	41
15-40 .. .. .	40	41	44	37	41	44
40-60 .. .. .	17	16	17	21	12	12
60 and over .. .. .	4	4	9	16	1	3
All Ages .. .. .	100	100	100	100	100	100





were not properly recorded. In the later ages as the curve shows in the marginal diagram there is a steep rise in the female line after 50-60, implying that mistakes in the return of ages usually occurred amongst the old women.

**229. Schools for Defectives**—Finally this section may be concluded with a brief reference to the two Government Schools for the deaf-mutes and the blind at Baroda City and Mehsana. The City School has 19 deaf-mutes (including 4 girls)—while the Mehsana School is larger and more suitably housed with 52 children—(32 of whom are deaf-mutes). The 32 deaf-mutes consist of 27 boys and only 5 girls. The deaf-mutes of school-going age number 316, so that only 16 per cent are given the advantage of a schooling in their special line.

#### § 4. BLINDNESS

**230. Blindness**—The incidence of blindness shows little variation since 1921, when the census record was pronounced to be very accurate compared to previous returns. For 1921, the question of blindness was elaborately scrutinised (just as deaf-mutism has been taken in hand in this census). Generally the greater part of the increase shown in 1921 was put down to better record. In this census, male blindness has decreased and female blindness has increased slightly. It is the least prevalent in South Gujarat which is relatively cooler and greener than other parts. It is most prevalent in Mehsana and Kathiawad portions on account of the glare and the dust there (as also the comparative poverty of the inhabitants) which are contributory causes. The map given below para 218 can be again consulted for a graphic representation of the local distribution of the blind. The following Table shows the number afflicted with blindness (of both eyes) per 100,000 of the population since 1891.

SUBSIDIARY TABLE V-C

NUMBER OF BLIND PER 100,000 OF EACH SEX IN EACH DIVISION  
(FIVE CENSUSES)

NATURAL DIVISION	BLIND									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
Baroda State .. ..	246	249	129	75	161	417	395	204	95	235
Central Gujarat ... ..	205	195	91	57	122	317	311	134	57	147
Kathiawad ... ..	305	351	169	139	187	599	647	309	205	291
North Gujarat .. ..	301	285	158	62	193	526	438	249	85	304
South Gujarat .. ..	164	215	114	113	137	206	318	177	136	186

Throughout the last 40 years, Kathiawad and North Gujarat have vied with each other for the melancholy honour of being first in the proportion of their blind.

**231. Correlation between Blindness and Rainfall**—As pointed out in the last Census Report the prevalence of blindness varies inversely with the rainfall. A marginal table is given which compares the order of the natural sub-divisions according to the blind ratio and normal rainfall. There is a very obvious inverse correlation.\* The distributing factors are those obscurely connected with social habits, race and occupation. The spread of social diseases amongst relatively higher classes, which is a predisposing cause for this affliction, is also a point not to be forgotten. The Kolis, whose occupation of salt manufacture is said to affect their eyes injuriously, and Anavalas who have a high incidence of blindness bring up the blind ratio in Rasti; although its high average of rainfall would have led one to expect a lower proportion. But from the marginal table it is apparent that blindness is specially in evidence in dry tree-less dust-ridden tracts like Kathiawad and West Kadi where the sun's glare is a potent cause of this disease.

NATURAL SUB-DIVISION	Population of Blind to 100,000	Order according to	
		Incidence of Blindness	Normal Rainfall
Scattered area ..	526	1	12
Mid-Block ..	459	2	13
West Kadi ..	426	3	10
East Kadi ..	426	4	9
Sea Coast area ..	394	5	11
Rasti area ..	324	6	2
Kahnam ..	300	7	5
Charotar ..	269	8	8
Trans-Sabarmati area ..	261	9	6
Chorashi ..	240	10	4
Vakal ..	233	11	7
Rani area ..	121	12	1
Semi-Rasti area ..	96	13	3

**232. Variation since 1921**—The number of blind persons in the State has increased from 6,794 to 8,033 or by 18.2 per cent. The males have increased by 13 per cent and the females by 22 per cent. A marginal table is given in which the proportionate figures calculated per lakh of population in each area for the last two censuses are compared. On the whole, the figures point to a real increase, particularly amongst the females. The only serious decline in figures is in Semi-Rasti, where instead of 224, the proportion is now only 96. The Semi-Rasti consists of Mangrol and Mahuva talukas. In Mahuva the incidence is 180 but the Mangrol figures (2 males and 16 females) appear to be far short of the truth, as they work out to only 36 per 100,000. At the same rate as in Mahuva, there ought to be 91 blind persons in Mangrol, instead of only 18; and the true incidence for the whole Semi-Rasti area should be nearer 180 than 96.

NATURAL SUB-DIVISION	Incidence of blindness	
	1931	1921
Charotar ..	269	308
Vakal ..	233	271
Chorashi ..	240	169
Kahnam ..	300	269
West Kadi ..	426	401
East Kadi ..	426	350
Trans-Sabarmati ..	261	309
Mid Block ..	459	513
Scattered area ..	526	519
Sea Coast area ..	394	455
Rasti area ..	324	367
Semi-Rasti area ..	96	224
Rani area ..	121	135

**233. Accuracy of the Record**—In 1921, the claim was made for the blind census of that year that it was the most accurate so far. This claim was supported by the medical authorities and local workers for the blind who were consulted. On the present occasion the same standard of accuracy has been kept up, except in Mangrol taluka as mentioned in the previous paragraph. A census was taken in selected areas in Nasik and Bijapur in 1919 under the auspices of the Blind Relief Association of Bombay and the incidence of this infirmity (calculated on the population of 1921) was ascertained to be 251 and 170 respectively for these two districts. Nasik is near our State, and its ratio may be compared with the figures for Central and North Gujarat (205 and 305) and also with Rasti and Trans-Sabarmati areas. In point of accuracy therefore it cannot be held that the blind return of this census is defective. Blindness of both eyes is an easily discoverable affliction and there is little public inclination to conceal it from the enumerator.

**234. Distribution of the Blind by Sex and Age**—In Subsidiary Table III above, it can be seen that unlike other infirmities, blindness attacks women more than men: particularly old women are the greatest sufferers from it. In the marginal table age-periods have been chosen from childhood, youth, middle age and old age to show

\* The correlation has been mathematically worked and it is found to be  $-0.8262154 + 0.06745$ , which is a very high inverse rate of correlation.

Selected Age-Period	Male	Female
0-5 .. ..	36	23
5-10 .. ..	74	54
15-20 .. ..	90	60
25-30 .. ..	103	103
30-35 .. ..	93	155
35-40 .. ..	129	296
50-55 .. ..	442	1,630
60 and over ..	2,737	4,705

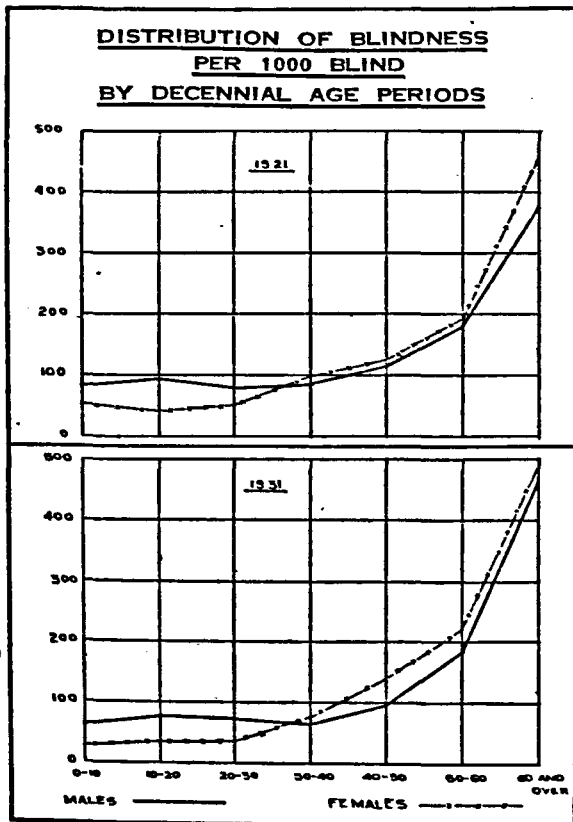
how as the age advances, women owing to greater neglect, more sedentary and harder conditions of living succumb more easily to blindness than men. Amongst persons aged 50 and over, there are twice as many blind women as men. The following Table gives the distribution of the blind in quinary age-groups totalling up to 10,000 afflicted of each sex for each of the last five censuses. A diagram is given below it, similar to the ones for the other infirmities to illustrate the age-distribution curve of the blind for the last two censuses.

SUBSIDIARY TABLE VI-C

DISTRIBUTION OF THE BLIND BY AGE PER 10,000 OF EACH SEX (FIVE CENSUSES)

AGE-PERIOD	BLIND									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
0-5 .. ..	214	288	491	291	382	85	217	305	236	326
5-10 .. ..	382	532	688	742	639	158	304	275	526	398
10-15 .. ..	372	525	756	728	610	172	207	405	604	351
15-20 .. ..	356	398	606	517	530	144	188	345	515	446
20-25 .. ..	385	405	556	755	674	138	195	461	537	476
25-30 .. ..	311	376	547	636	595	188	328	461	760	512
30-35 .. ..	265	441	526	755	694	256	481	581	705	592
35-40 .. ..	327	408	500	702	600	447	489	666	805	497
40-45 .. ..	398	627	565	795	744	536	686	771	1,140	856
45-50 .. ..	563	489	634	503	496	827	543	636	459	457
50-55 .. ..	686	1,138	1,078	953	1,002	880	1,268	1,231	1,174	1,207
55-60 .. ..	1,110	635	491	517	282	1,303	595	365	302	421
60 and over ..	4,631	3,738	2,562	2,105	2,752	4,866	4,499	3,298	2,237	3,460

235. Consideration of Subsidiary Table VI-C—As to the above table and



marginal diagram, it is fortunate that we are dealing with fairly accurate data at least since 1921, and the curve shows a real variation in figures. In the earlier age-periods 0-10 and 10-20, the curve for 1931 (for both sexes) keeps well below the level of 1921, showing that the extension of medical facilities for cataract and diseases of the eye (particularly ophthalmia neonatorum) and of maternity relief has led to a decrease in the incidence of this disease amongst infants and adolescent children. The curve rises thenceforward rather more sharply for females than for males aged between 20 to 50 and it is on a higher level than in 1921. The age-constitution of the general population may be now compared with that obtaining with this infirmity in the last two censuses. It will also appear therefrom that in the latest year the ameliorative measures taken both by the State and the public have

succeeded to a certain extent in controlling the virulence of this affliction amongst the child and the able-bodied elements in the population. Amongst persons aged 40 and over the figures, however, both in proportionate and absolute figures, show a decided increase. The margin gives the variations in absolute figures since 1921. Those who are aged 40 and over are now 32 per cent more than the corresponding age-group in 1921, while the younger blind (*i.e.* below 40 years) are now 16 per cent less than before. These figures are confirmatory of the conclusions arrived at from relative figures. We will now refer to certain figures testifying to the manner in which the State and the public have co-operated to bring light to the blind and in other ways to relieve their suffering.

AGE-PERIODS	AGE CONSTITUTION						
	General Population 1931		Blind				
	Male	Female	1931		1921		
		Male	Female	Male	Female	Male	Female
0-15 ..	39	39	10	5	13	7	
15-40 ..	40	41	16	11	22	17	
40-60 ..	17	16	28	35	28	31	
60 and over ..	4	4	46	49	37	45	
All Ages ..	100	100	100	100	100	100	

YEAR	VARIATION IN NUMBERS OF BLIND	
	Below 40 years	Above 40 years
1921 ..	1,901	4,893
1931 ...	1,592	6,441
	-16.3	+31.6
	Per cent	Per cent

**236. Other Statistics re: the Blind—(a) Schools for the Blind—**The two schools for the deaf-mutes at Mehsana and Baroda also catered for the education of the blind. There were 20 blind children (one girl) in Mehsana and 8 (all boys) in Baroda. The blind of school-age (5-15) numbered 396 (233 boys and 163 girls) so that less than 7 per cent get any advantage of schooling. Much remains to be done in this respect, particularly for the blind girls. The Mehsana school which is an efficiently conducted institution, ought to have a much wider scope of work within its own territory *i.e.* East Kadi, which has a very high ratio of the blind. Of the total afflicted there, there are at least 46 boys and 80 girls who ought to receive relief (instead of the 20 accommodated there). The City School requires a great deal of more attention from the department in the matter of housing, apparatus and staff: instead of the 8 blind children on its rolls, it ought to be able to accommodate at least 45 boys and 60 girls, even if its operation is restricted to the needs of Central Gujarat only.

**(b) Deaths from Small-pox.**—Small-pox plays havoc with the children and is a potent cause of blindness amongst them. Successful primary vaccinations increased from an annual average of 58,791 (in the decade 1910-20) to an average of 62,950 (in the last decade). In both these decades, these vaccinations formed 28 per mille of the mean population of each decade concerned. Deaths from small-pox in the last three decades since 1901 are shown in the margin with the respective proportions for each decade calculated per 10,000 of its mean population. The ratio for the last decade is about double of that of the first, but the last decade was abnormal. In 1929-30, there was a small-pox epidemic (which claimed 8,616 victims): if that year had been a normal one, the small-pox incidence would have been reduced to 29 for the latest decade.

DECADE	DEATHS FROM SMALL-POX	
	Absolute figures	Per ten mille of mean population of decade
1901-1910 ..	6,287	32
1911-1920 ..	10,313	49
1921-1930 ..	14,377	63

**(c) Cataract and other Eye Operations.**—The margin shows interestingly how the State Medical department has coped with the problem of blindness with increasing success through its cataract operations. Altogether 2,044 successful cataract operations were performed in the hospitals of the State during the last ten years. Other eye operations conducted by this agency numbered 9,703. But the State effort in this regard was ably supplemented by public effort in two places in the Raj, which deserves mention in this chronicle. In Sidhpur, a public committee headed by the Vahivatdar and consisting of all local doctors was formed with the strong support of wealthy men of all classes in October 1928. An eye-specialist was invited from Kathiawad and

DECADE	No. of cataract operations
1891-1900 ..	23
1901-1910 ..	101
1911-1920 ..	564
1921-1930 ..	2,044

something like an organised campaign against blindness was carried on for over a fortnight from October 20th of that year. Large sums were collected from all sides—all local bodies co-operated with enthusiasm, and officialdom vied with public workers to work for its success. 7,000 patients were treated during the period the campaign lasted and 789 eye operations, the bulk being of cataract, were successfully performed, the percentage of success being as high as 96. Later on the example of Sidhpur was followed by Petlad, where in March 1929, a local philanthropist took up the burden of expense, and set free for this purpose a spacious building in which he was conducting a Sanskrit Pathshala. The services of the same Kathiawad specialist who was utilised at Sidhpur, were requisitioned for Petlad. From 1st March 1929, the campaign lasted for 20 days and in spite of the restricted area of its work, 10,345 eye patients were given relief : and 1,601 operations (including 447 of cataract) were performed. 30 of these became septic, but the percentage of success was no less than 98. The Sidhpur drive was most economically managed and cost only about Rs. 3,500. The Petlad organisation was a one-man show, and cost, so it is stated, Rs. 15,000.

(d) *Venereal Diseases and Diseases of the Eye—Ophthalmia Neo-natorum* is the congenital disease of sore-eyes of children after birth. It is largely due to defective midwifery but a good proportion is the result of gonorrhoea. In this connection it is interesting to observe that in spite of the wide extension of medical relief through rural areas, the average annual number of venereal diseases treated in hospitals and dispensaries decreased from 6,680 in 1910-20 to 5,666 in 1920-30. On the other hand people showed appreciation of State effort by coming in much larger numbers to State institutions for general relief of eye diseases, the number treated in 1911-12 being 38,651, in 1920-21 being 50,457 and in 1929-30, 72,141.

### § 5. LEPROSY

**237. Leprosy: Local Distribution**—The total number of lepers in the State recorded in the last census was 575 persons (393 males and 182 females) or 24 per 100,000. The following Table gives the number of lepers in each division proportioned per lakh of its population of each sex for the last five censuses.

SUBSIDIARY TABLE V-D

NUMBER AFFLICTED WITH LEPROSY PER 100,000 OF EACH SEX IN EACH DIVISION  
(FIVE CENSUSES)

NATURAL DIVISION	LEPER									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
Baroda State .. .. .	31	35	31	18	32	15	16	12	10	15
Central Gujarat .. .. .	49	50	38	21	39	20	23	16	16	22
Kathiawad .. .. .	8	10	15	13	16	6	6	..	5	15
North Gujarat .. .. .	9	6	4	2	12	7	2	1	1	4
South Gujarat .. .. .	63	94	91	59	89	31	45	36	27	34

The above figures, it must be noted, include the inmates of the Anasuya Leper Asylum in Central Gujarat (Sinor taluka of Baroda *prant*). The corrected proportions for this division in the case of this infirmity for the last two censuses, after deducting the number of inmates born outside the natural division are shown as under :—

Year	Leper per 100,000	
	Male	Female
1931 .. .. .	43	19
1921 .. .. .	41	22

Taking the figures generally we find that the area of greatest prevalence of leprosy is South Gujarat. Here 63 males and 31 females (per 100,000 of their respective sex) suffer from this dreadful infirmity. This is so, for two reasons. In the first place, the Raniparaj (forest tribes) on account of their dirty habits of living are peculiarly liable to this affliction. Secondly, it is presumed that damp humid climates, such as we get in Navsari and Coastal areas composed of recent alluvium are rather more liable to this contagion than other tracts. Kathiawad shows the least evidence. Since 1921, the incidence of leprosy as shown in the marginal table has happily declined. In 1901, there was an all round drop but in 1911 and 1921, the number of lepers everywhere increased except in Kathiawad, where it has steadily declined.

DIVISION	LEPER					
	Male			Female		
	1931	1921	1911	1931	1921	1911
Baroda State ..	31	35	31	16	16	12
Central Gujarat ..	40	50	38	20	23	16
Kathiawad ..	1	10	15	6	6	..
North Gujarat ..	9	6	4	7	2	1
South Gujarat ..	63	94	91	31	45	36

**238. Incidence of Leprosy by Natural Sub-Division**—The point made above about humid climates may be investigated further by studying the proportionate figures of lepers in each natural sub-division and comparing the order according to their strength to the order of these areas according to rainfall. We should remember that the State average is only 24 and the areas of highest incidence are the West and East of Navsari *prant*, the Kahnām tract across the Narmada and the Chorashi part of Central Gujarat, and it is in these areas that the rainfall is the most copious. In the margin the necessary figures are given.

NATURAL SUB-DIVISION	Incidence of leprosy per 100,000	Order according to prevalence of leprosy	Order according to rainfall
Rasti area .. ..	55	1	2
Rani area .. ..	54	2	1
Kahnām .. ..	53	3	5
Chorashi .. ..	37	4	4
Vakal .. ..	23	5	7
Semi-Rasti area ..	22	6	3
Charotar .. ..	21	7	8
Scattered area ..	16	8	12
Trans-Sabarmati area..	12	9	6
Sea Coast area ..	8	10	11
East Kadi .. ..	8	11	9
West Kadi .. ..	7	12	10
Middle Block ..	4	13	13

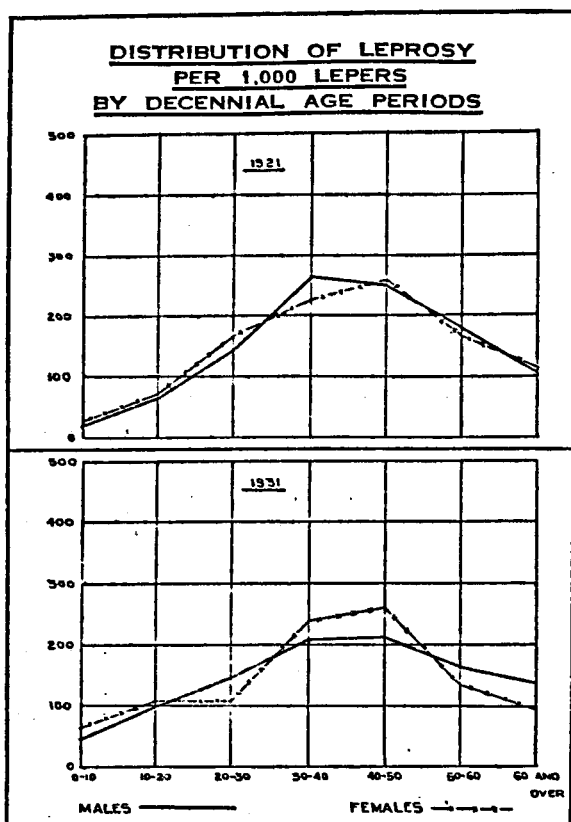
### 239. Correctness of Return

Unlike blindness, the leprosy return is peculiarly liable to errors of record. The factor of wilful concealment particularly amongst women of higher and even intermediate castes bulks largely to defeat the ends of truth. But more than this, the errors of diagnosis are very important, and really vitiate the usefulness of the data collected. The limitations of the return have been already pointed. The large number of incipient cases which are not obvious to the enumerators get left out. The less evident nodular type of affection also is likely to find no place in the record. Again certain forms of syphilitic lesions are apt to be mistaken for leprosy, and this is the case with many old persons returned as lepers who are really syphilitics of the advanced stage. The distinction between white leprosy however and leprosy proper is now well-known, and the census staff are little likely to confuse between the two. One test in gauging the correctness of the return is the well-known fact that lepers are notoriously shortlived. It has been

Year of Census	Number of lepers returned			
	Below 20 years	20-45	45-60	60 and over
1931 .. ..	85	269	150	71
1921 .. ..	47	291	155	59
1911 .. ..	48	291	80	26

estimated that the average duration of a leper's life after attack is rarely more than 20 years. As we found from the age-return (Subsidiary Table III) the period of greatest liability to this disease is between 35 and 55, so that a person contracting this disease at 45 can hardly live beyond 60. All figures of lepers therefore beyond 60 and above are clearly open to the suspicion that (*i*) either their ages are

wrongly returned, or (ii) they are senile syphilitics whose sores have been mistaken for



the leprosy variety. The margin above gives the comparative figures for the last three censuses in the different age-periods. Studied in this light, the figures of 1931 are open to doubt in two directions. The children are less open to attack than the middle aged, and yet lepers below 20 have nearly doubled themselves since 1921. There were only 10 lepers aged 0-10 in 1911, 13 in 1921 and 27 in 1931. These cases are clearly of the class of wrong diagnosis, for errors of age are less likely with these ages than with the last periods of life.

**240. Distribution of the Lepers by Age**—Some further clue about the correctness of the return is seen in the distribution of the lepers by age. The following Table gives the comparative figures proportioned per 10,000 lepers of each sex (for each of the last five censuses). A diagram is also attached marginally to show how the age-constitution curve has varied since 1921.

SUBSIDIARY TABLE VI-D

DISTRIBUTION OF THE LEPER BY AGE PER 10,000 OF EACH SEX  
(FIVE CENSUSES)

AGE	LEPER									
	Male					Female				
	1931	1921	1911	1901	1891	1931	1921	1911	1901	1891
1	2	3	4	5	6	7	8	9	10	11
0-5 .. ..	153	26	92	165	..	275	119	..	421	233
5-10 .. ..	305	182	123	385	126	220	179	254	631	698
10-15 .. ..	382	313	123	549	479	441	179	254	421	581
15-20 .. ..	611	286	671	440	302	604	476	762	316	872
20-25 .. ..	687	599	854	1,154	1,184	441	773	1,272	210	988
25-30 .. ..	738	807	915	1,484	1,134	604	833	1,357	1,790	1,220
30-35 .. ..	941	1,198	1,502	1,209	1,007	989	1,310	1,357	2,527	1,047
35-40 .. ..	1,094	1,380	1,441	1,704	1,033	1,374	893	1,610	1,474	872
40-45 .. ..	1,120	1,354	1,748	604	1,713	1,484	1,310	1,187	210	1,454
45-50 .. ..	967	1,094	854	879	982	1,204	1,190	593	526	465
50-55 .. ..	941	1,198	671	934	982	879	893	846	843	698
55-60 .. ..	712	521	305	219	252	496	714	254	105	58
60 and over ..	1,349	1,042	701	274	806	989	1,131	254	526	814

**241. Consideration of Subsidiary Table VI-D**—As absolute figures are so small, it is somewhat artificial to have elaborate ratios calculated per 100,000. The age constitution of the lepers is therefore reduced to broad groups for better understanding and compared with that of the general population as has been done already with regard to other infirmities. The curve for 1921 differs from that for 1931 in marked particulars.

Age-Period	Age constitution					
	General Population 1931		Leper (1931)		Leper (1921)	
	Male	Female	Male	Female	Male	Female
0-15 .. ..	39	39	8	9	5	5
15-40 .. ..	40	41	42	40	48	43
40-60 .. ..	17	16	37	41	37	41
60 and over ..	4	4	13	10	10	11
All Ages..	100	100	100	100	100	100

First the child leper looms more conspicuously in 1931 than in the previous census. Secondly there is a curious depression in the curves for females for 1931 at 20-30 which is not noticeable in 1921. This is probably, at least to a certain extent, due to the fact that more female-lepers of those ages must have concealed their infirmity when the enumerator came along than in 1921. Again, in the ages 50 and over, there are far more male lepers relatively to the total than in 1921. On the whole therefore, judged by every test, the leprosy record of 1931 was more imperfect than in 1921, in spite of every effort on the part of the census organisation to secure a revised return. Adjustment of figures are necessary. I would reject four-fifths of the children returned as lepers aged 0-10 in this census as wrong entries. Of persons returned as lepers aged 60 and over I would reject half as due to wrong diagnosis, and of the other half I would distribute half to lower ages and retain the remainder for the age-period 10 and over. For the age-period 15-40, I would also add a third as a set off against wilful concealment. To the resulting total, 528, as shown in the above marginal table I would add about a third more to include such cases of nodular and other types of leprosy which the enumerator omitted to return owing to error of diagnosis. This I would distribute by age according to the same ratio, as I have done with regard to the lepers already returned. Thus we arrive at the final marginal table, which at once gives a correcter idea of the total incidence of leprosy in the State and of its distribution in the different age-periods. The recorded incidence of 24 is thus raised to 28 per lakh of population. A recent census under a controlled agency of revenue officers in the central division in Bombay gave out that the spread of leprosy there amounted to 120 per 100,000. This is five times as much as the census return, and a little more than four times the estimate we have given above, for this State. But there is no reason to suppose that the incidence is much higher than as estimated above.

Age-Period	Adjusted Leprosy Figures	
	Absolute	Relative
0-15 .. ..	31	6
15-40 .. ..	320	61
40-60 .. ..	160	30
60 and over ..	17	3
Total .	528	100

Age-Period	Adjusted Leprosy Return	
	Absolute	Relative
0-15 .. ..	41	6
15-40 .. ..	427	61
40-60 .. ..	208	30
60 and over ..	28	3
All ages ..	704	100

**242. Statistics re: Leprosy Relief**—We will now conclude our treatment of the subject of leprosy by reference to the State effort towards relieving the afflicted. The Anasuya Leper Asylum, situated on the Narmada, was founded by the State in 1890. It is adjacent to a temple dedicated to the Anasuya Mata, after whom the Asylum is named and has accommodation for 100 patients. As will appear from the figures given below it seems never to be full and patients seldom stay for the full period of treatment. The annual average of patients treated in the last ten years was only 123; and judging from the birthplaces of inmates, 28 of 45 found on the census date in the Asylum gave their birthplaces from outside the



State, some as far afield as Allahabad, Malabar and Orissa. A large number came not unnaturally from Rajpipla State across the river. The age returns of the inmates as arranged in the margin appear to be a correcter index of the age-constitutions of the lepers in the whole State than the census figures. The total number of cases treated during the last ten years was 1,228; to these no less than 18,138 intravenous injections were given. Owing to the prolonged character of the treatment and the painful nature of the injections, few have waited for a complete cure. The last five years record only two cures and the large number of injections can only be looked upon as a tragic mountain of labour! And it has always been so, for leprosy has been hitherto an enigma to science. Attention has however been hopefully directed to the researches of Sir Leonard Rogers.

Age-period	Number
0-15 .. ..	3
15-40 .. ..	20
40-60 .. ..	20
60 and over ..	2

#### 243. Comparison with other States and Provinces—

PROVINCE OR STATE	Year of Census	Incidence of Infirmities (per 100,000)			
		Insane	Deaf-Mute	Blind	Lepers
India .. ..	1921	28	60	152	32
<i>Bombay Presidency</i> ..	1931	50	80	188	42
<i>British Gujarat</i> ..	1931	58	102	218	23
<i>Travancore</i> .. ..	1931	46	57	63	55
Baroda .. ..	1931	56	52	329	24
Madras .. ..	1931	33	71	110	71

The final figures for all India are not available, but taking the figures of 1921 as a guide and with the latest figures from a few of the provinces and States, a comparative table is prepared and shown in the margin.