TABLE XX.

BIRTHS

OF

PERSONS BORN IN EACH CENSUS YEAR

AND SURVIVING AT

THE CLOSE OF EACH CENSUS YEAR,

BY

MONTHS AND QUARTER-YEARS AT THE CENSUS OF 1870;
FOR THE ENTIRE YEAR AT THE CENSUSES OF 1860 AND 1850;

WITH

THE PROPORTION OF SUCH PERSONS TO POPULATION,

(BY STATES AND TERRITORIES)

REMARKS ON THE TABLE OF BIRTHS.

The table following, of the months of birth of the persons under 1 year of age, surviving on the 1st of June, 1870, has value only as a somewhat fragmentary part of the data requisite for the construction of a true table of births.

It will be noticed in the first place that, of those born during the twelve months ending June 1, this table only embraces such as survive at the close of that period. The aggregate number included in the table is, therefore, less than the total number born during the year, by the number of those who, having been born during the year, have also died during the year. The experience of European countries has shown that, in order to a survivorship of 100, there should have been from 109 to 113 born. The neglect of this distinction has led some very pretentious writers on population into gross errors in dealing with the results of former censuses of the United States, for the purpose of deducing therefrom the law of our national growth. The disparaging conclusions thus derived as to the vigor of our pure American stock, in contrast with that of the several foreign elements of our population, have been widely trumpeted, and have come to be accepted in many quarters as authentic, while, in fact, wholly without value or significance.

Moreover, it has been evident to careful observers that, even after allowance for those dying within the year, something more is still needed to be done to the statistics of "persons under 1 year," at the censuses of 1850 and 1860, before they can be taken as even approximately correct for the purposes of determining the birth-rate of the country. Thus, the number reported in 1850 as under 1 year was only 629,446, out of a total population of 23,191,876, or 1 in 36.8, while the number reported at 1860 was only 934,582, out of a total population of 31,443,321, or 1 in 33.6.

Now, it is clear at a glance that such a birth-rate as is here indicated will not support a population in a condition of such rapid advance as characterizes the progress of population in the United States.

But while it has been clear that the numbers of this class, returned in 1860 and in 1850, were below the fact, it did not appear, nor could it be deduced, from the results furnished by the compiled ages at either census, what caused the deficiency; what was its degree, or where, specifically, it resided. The total number under 1 was not divided into the several months of the year, so that it might be seen whether the omissions took place with approximate uniformity among the months, while the total number from 1 to 5, was not distributed into yearly periods, so that it might be determined whether the loss of the "under 1 year" period was compensated by the gain in the period from 1 to 2. The assumption most favored by statistical writers of repute was, that the deficiency of the period under 1 year was a dead loss; that is, that the children of that age were actually omitted from enumerations and not carried forward into the next period of life.

The Superintendent has been disposed to take a somewhat different view of the cause of the deficiency in the period under 1 year, and to believe that the result of dividing the year into its constituent months would be to show such a falling off in the last two or three months, going backward from the date of enumeration, as to amount to a demonstration that the deficiency noted was due to the tendency, if not of mothers, at least on the part of fathers, nurses, servants, and unsympathetic fellow-boarders, to speak of infants of ten and eleven months old as a year old; that the defect complained of, therefore, did not result from the omission of names from the schedules, but from an erroneous classification; and that all which was lost from the "under 1 year" period would be found in the period next succeeding. With a view to reducing this matter, so far as possible, to certainty, assistant marshals were instructed, in preparation for the Ninth Census, to record the month of birth for the living inhabitants under 1 year; and the blank schedules issued for the enumeration were adapted to this end. Moreover, when the compilation of results was commenced, it was determined for this reason, as well as for other and larger reasons, to separate the period 1 to 5 into yearly terms. These two measures, it was clear, would put it in the power of the Census Office to deal with all the questions arising out of this feature of the census at a decided advantage as contrasted with the opportunities for such computations afforded by preceding censuses.

When the report of the Superintendent was rendered, in December, 1871, the statistics of the month of birth,

as gathered in the census, had been tabulated for five or six States, and the results seemed completely to confirm the hypothesis just alluded to, viz, that the entire loss of the period under 1 year would be compensated out of the next year period. Of every State for which the figures were at that time available, it held true that the number of births returned for each of eight, nine, or ten consecutive months, (going backward from the date of enumeration,) was reasonably full, the aggregate for these fractions of a year being amply sufficient to account for the increase of population observed between 1860 and 1870, and the variations from month to month, within such fractional periods, being such only as in the nature of things would probably occur. After these fractional periods, however, the numbers returned for the remaining months of the year were so grossly or grotesquely inadequate as to establish a moral certainty that the inadequacy was due in the main, if not wholly, to the tendency to speak in round numbers, from which it would result that parents, nurses, and house-servants would, in a very large proportion of cases, characterize children approaching 1 year as a year old.

Generally, it may be said of the States whose statistics of the month of birth were available for the purposes of that report, that the falling off in the tenth month, (going backward still from the date of enumeration,) though decided, was of a degree which, in a single case, might have been accepted as possible and reasonable under the influence of exceptional causes, but which, occurring through the whole list, showed the existence of a serious disturbing cause affecting the completeness of the returns of the census in this particular; that the falling off in the eleventh month was such as in no single case could, for a moment, be explained on any other ground than that of a general omission or an erroneous classification of the persons properly appearing in this class; while, for the twelfth month, the numbers returned became ridiculously small, the class in some States almost disappearing.

Now, upon such a showing, and without any other data than that obtained from this subdivision of the "under 1 year" period into its constituent months, for the first time at the Ninth Census, by which to explain the startling deficiency in the return of births for the months approaching the complete year, the Superintendent, even in the light of the results developed by further investigation not then possible, apprehends that but one assumption was justifiable, namely, that the persons who should have been reported in the census as ten or eleven months old, had been reported as a year old, and had consequently gone into the next class in the tabulation of ages. Upon this assumption, then, the Superintendent acted in the premises, and, in the report of December 20, 1871, (made a part of the Population Volume of the present series,) indicated this as the true explanation of the heretofore unexplained deficiency in the number of persons reported at the census (whether for 1850, 1860, or 1870) as under one year of age.

Since that report, however, not only have the statistics of the month of birth for the other States of the Union become available for the purposes of comparison, but the complete tabulation of the ages of the living population has been effected. As previously remarked, the period 1 to 5, which, in the publications of the Seventh and Eighth Censuses, was given entire, has, in compilation of the Ninth Census, been resolved into its constituents, thereby enabling us, for the purposes of such discussions as the present, to deal separately with the number of the living inhabitants severally from 1 to 2, from 2 to 3, from 3 to 4, and from 4 to 5. Here, then, was afforded the opportunity for testing the soundness of the hypothesis that the error noted was due, not to omissions of persons from the census, but to the erroneous classification of persons actually returned. If the elements of the problem were as simple as had been assumed, the number in the period 1 to 2 would be found in excess, and, to a degree, reasonably corresponding to the deficiency in the last three months of the period under 1. Candor compels the Superintendent to confess that the problem is more complex than appeared at the date of the report of December, 1871, and that the results of subdividing the period 1 to 5 show a vice of classification extending much further than from the last quarter of the first year to the end of the second. The second year itself was found to be deficient, and it was discovered that any plan for compensating the loss of the "under 1 year" period must involve the re-grading of pretty much the whole period under 5.

The Superintendent, finding the elements of the case so much more complicated than he had supposed, and deeming it desirable that an attempt should be made to construct a true table of the month of birth, and to re-distribute the entire period under 5 among its constituent years, if the material at command would allow this being done, and believing that if this were to be done at all it should be by some scholar not only habituated to the use of the highest functions of mathematics, but having a name for the character of his work in fields of investigation where the Superintendent himself treads very gingerly, and rarely ventures at all, placed all the available data relevant to the subject in the hands of a gentleman having wide reputation and high authority in such studies, with the request that he would favor the Census Office and the country by treating them according to the methods by which he had dealt with the vital statistics of Massachusetts, England, France, Belgium, and Prussia, in the construction of life-tables which have become standard both in this country and in Europe. Mr. Elliott has kindly consented, notwithstanding the pressure of other public duties, and the Superintendent has great

pleasure in introducing his discussion of the subject as a valuable contribution to the Vital Statistics of the United States.

The following communication has been received from Mr. Elliott in connection with this subject:

TREASURY DEPARTMENT, *Washington, D. C., October* 1, 1872.

I have carefully examined the data which you have placed in my hands.

The irregularity in the numbers of population returned during the first two years of life, especially during the latter half of the first year, is very marked.

You desire the data to be so adjusted as to present approximately a correct exhibit of the distribution of the population of the United States during the first few years of life, more especially during the first five years. This task I have undertaken, with the following general results:

In a community comprising a large population, the number of persons existing within successive equal intervals of age should, as a rule, gradually diminish with advancing age. Under a strictly accurate census, involving large numbers, this rule will, in general, be found to hold, not merely with respect to a *stationary* population—that is, with respect to a population in which the *loss* at each interval of age caused by advancing age, by death, and by emigration, is exactly compensated by the gain arising from births, from advancing age, and from *immigration*, but also with respect to a population *fluctuating* by reason of excess or deficiency in the number of births, as compared with the number of deaths, and by any ordinary excess or deficiency in the number of immigrants as compared with the number of emigrants.

Inspection of the tabulated returns of the United States census of 1870 shows that the numbers purporting to represent the population at the earlier years of life, especially under the age of five years, do not conform to this standard, and the deviations are so marked and extreme as to impress the conviction that they are, to a notable extent, erroneous, and to demand inquiry as to the probable amount and distribution of the error.

According to the returns, the number under 1 year of age (that is, for the first year of life) is smaller than the number from 1 to 2, (that is, for the second year of life,) and the number returned for the second year of life is, in turn, smaller than that for the third year. From this age onward, however, the general progress does not conflict with the test above assigned, the number diminishing by somewhat regular gradations with advancing age.

The following table shows, according to the United States census of 1870, the numbers for each of the first five years of life, and the annual mean of the first two years, compared with that of the three years next following:

Age in years.	Number of persons living for each annual interval of age.	Yearly mean.
0 to 1	1,100,475	1,089,639
1 to 2	1,078,803	
2 to 3	1,143,139	1,111,812
3 to 4	1,113,782	
4 to 5	1,078,514	

From this table it will be seen that the mean of the number of the first two years of life, (to wit, 1,089,639,) is *less* by *two* per cent. than the mean of the numbers of the three years next following, (to wit, 1,111,812.)

In England, according to the census of 1861, the mean of the earlier two years (to wit, 568,380) is in *excess* of the mean of the three years next following (to wit, 521,340) by *nine* per cent.

In France, Italy, and Norway the corresponding rates of excess, according to the censuses of 1861 and 1865, respectively, are *ten*, *seventeen*, and *fourteen* per cent.

In the calculated series of numbers for the United States, hereinafter given, the corresponding rate of excess is nearly *twelve* (11.7) per cent., manifestly a more probable rate than that furnished directly by the census.

Interval of age.	England and Wales, 1861.		France, 1861.		Italy, 1861.		Norway, 1865.	
Years.	Number of persons living within each interval of age.	Yearly mean.	Number of persons living within each interval of age.	Yearly mean.	Number of persons living within each interval of age.	Yearly mean.	Number of persons living within each interval of age.	Yearly mean.
0–2, (2 years)	1,136,761	568,380	1,530,728	765,364	1,294,556	647,278	99,728	49,864
2–5, (3 years)	1,564,021	521,340	2,081,493	693,811	1,665,135	555,045	130,733	43,578

NOTE.—While the numbers in the several groups of ages for France and Italy, in the above table, are harmonious, reference to the table in the Appendix, (page 531,) where the figures are given by single years, will show, in respect to those countries, that irregularities exist of the same kind as those existing in the United States, which form the subject of this discussion, though at different points and far less marked in degree. The censuses of Great Britain and Norway, for these years, are free from defects of this character.

The irregularity noticeable in the first year, and the apparent defect in the returns of the United States census for the last half of the first year of life, are very marked. During the first six months, the tabulated number returned is 701,272, being a monthly mean of 116,879, numbers not varying greatly from, but probably in excess of, the actual numbers within that half-year interval of age. During the last six months of the year the number returned is 399,203, showing a monthly mean of only 66,534, a falling off of 43 per cent., which is incredible, from the number returned for the first six months.

The number returned during the second year of life is 1,078,803, a monthly mean of 89,900; this mean being 35 per cent. in excess of the mean of the preceding six months, but two per cent. less than the mean of the preceding twelve months, and 23 per cent. less than the mean of the first six months of life.

The following table exhibits by quarters and half-years the number and the monthly mean of persons returned, under the United States census of 1870, as surviving during the first year of life, commencing with the month of May, 1870, (the month immediately preceding the date of the census,) and reckoning backward; and also the number and monthly mean for the entire second year of life.

Ages by months.	Months.	Number of persons surviving.	Monthly mean.
0 to 3	May, 1870 April, 1870 March, 1870	355,130	118,377
3 to 6	February, 1870 January, 1870 December, 1869	346,142	115,381
6 to 9	November, 1869 October, 1869 September, 1869	273,272	91,091
9 to 12	August, 1869 July, 1869 June, 1869	125,931	41,977
0 to 6	May back to December, inclusive.	701,272	116,879
6 to 12	December back to June, inclusive.	399,203	66,534
0 to 12	Entire year	1,100,475	91,706
12 to 24	Second year	1,078,803	89,901

The following table shows, according to the United States census of 1870, the number of persons returned as surviving for each month of the first twelve months of life; also, the number living during each quarter-year; also, the number living during each year of the first five years of life; also, the number living under twenty-five years of age during each five-year period. The table also shows the proportion surviving at each of these periods, out of 100,000 persons, at all ages specified in the returns; also, the number of children surviving at each of the intervals specified under one year of age.

Age.	United States census of 1870.			
	Months of birth.	Number of persons surviving at different intervals of age.	Proportion to 100,000 persons of all specified ages.	Proportion to 100,000 children under one year of age.
Months.				
0 to 1	May, 1870	117,081	304	10,639
1 to 2	April, 1870	115,421	299	10,488
2 to 3	March, 1870	122,628	318	11,143
3 to 4	February, 1870	115,153	299	10,464
4 to 5	January, 1870	114,492	297	10,404
5 to 6	December, 1869	116,497	302	10,586
6 to 7	November, 1869	91,593	238	8,323
7 to 8	October, 1869	93,391	242	8,486
8 to 9	September, 1869	88,288	229	8,023
9 to 10	August, 1869	69,679	181	6,332
10 to 11	July, 1869	42,463	110	3,859
11 to 12	June, 1869	13,789	36	1,253

Age.	United States census of 1870.			
	Months of birth.	Number of persons surviving at different intervals of age	Proportion to 100,000 persons of all specified ages.	Proportion to 100,000 children under one year of age.
Quarter-years.				
0 to 3	May, 1870 April, 1870 March, 1870	355, 130	921	32, 271
3 to 6	February, 1870 January 1870 December, 1869	346, 142	898	31, 454
6 to 9	November, 1869 October, 1869 September, 1869	273, 272	709	24, 832
9 to 12	August, 1869 July, 1869 June, 1869	125, 931	327	11, 443
Years.				
0 to 1		1, 100, 475	2, 854	100, 000
1 to 2		1, 078, 803	2, 798	
2 to 3		1, 143, 139	2, 965	
3 to 4		1, 113, 782	2, 889	
4 to 5		1, 078, 514	2, 798	
0 to 5		5, 514, 713	14, 304	
5 to 10		4, 814, 713	12, 488	
10 to 15		4, 786, 189	12, 414	
15 to 20		4, 040, 588	10, 481	
20 to 25		3, 748, 299	9, 723	
All other specified ages		15, 648, 708	40, 590	
All specified ages		38, 553, 210	100, 000	
Unknown ages		5, 161		
All ages		38, 558, 371		

The question may quite naturally arise whether any such disparity as is shown by the preceding table obtains with respect to the number of the immediate survivors of those born alive at different seasons of the year.

Trustworthy returns of such survivors in England and Wales, a country the vital conditions of which most nearly approach our own, do not show any such actual disparity, nor do the returns of births and of deaths in early life from other countries, from a number of which the requisite data are in possession, afford margin which would allow of so great an inequality.

The following table, prepared by Dr. Farr, the eminent statistician, for the English Life-Table No. 3, shows the number surviving each month of life under 1 year of age, distinguishing sex, calculated from the population under 1 year of age, according to the censuses of 1841 and 1851, and from the corrected births; and from the deaths registered in the 17 years, (1838–1854,) under 3 months, at 3 and under 6 months, and at 6 months and under 1 year.

Age.	Proportion living at birth, and at the end of each month of age.		
Months.	Both sexes.	Boys.	Girls.
0	1, 000, 000	511, 745	488, 255
1	953, 497	484, 958	468, 539
2	936, 302	475, 318	460, 984
3	924, 124	468, 560	455, 564
4	914, 024	462, 962	451, 062
5	904, 474	457, 642	446, 832
6	895, 441	452, 598	442, 843
7	886, 894	447, 827	439, 067
8	878, 807	443, 329	435, 478
9	871, 150	439, 100	432, 050
10	863, 897	435, 141	428, 756
11	857, 025	431, 450	425, 575
12	850, 507	428, 026	422, 481

In the following table is shown the number of births, by quarter-years, for the year 1869; also, the annual mean by quarter-years for the five years, 1865–1869, in Massachusetts, according to the State official returns, a law having been in force for many years in that State for the compulsory registration of births and other data illustrat-

ing the movement of population. This table also shows the mean annual number of births in England and Wales by quarter-years, according to official returns for the thirty-three years, 1838–1870.

Period.		Number of births occurring in each quarter-year.			Proportion in each quarter-year to 100,000 born during a year.		
		Massachusetts.		England and Wales.	Massachusetts.		England and Wales.
		1869.	1865–'69. 5 yr's average.	1838–'70. 33 y'rs average.	1869.	1865–'69. 5 y'rs average.	1838–'70. 33 y'rs average.
January, February, March	First quarter	7,955	7,711	163,572	22,010	22,451	26,159
April, May, June	Second quarter.	8,284	7,948	163,712	22,921	23,141	25,894
July, August, September	Third quarter.	9,963	9,261	153,781	27,568	26,964	24,058
October, November, December	Fourth quarter.	9,939	9,426	152,667	27,501	27,444	23,889
Entire year		36,141	34,346	633,732	100,000	100,000	100,000

From this table it will be seen that the disparity between the numbers born at the different seasons of the year is not sufficient to account for the extraordinary contrasts which are shown in the actual returns of the census, between the survivors of those born at different periods of the year immediately preceding the date (June 1, 1870) to which the enumeration of the population is by law referred.

It may be interesting here to note the fact that, while in England the number of births during the first half of the calendar year is somewhat in excess of the mean for the year, in Massachusetts the reverse is the case, the greater proportion of births occuring in the latter half of the year.

The following table shows the number of births, by months, registered in Massachusetts during the year 1869; also the proportion in each month on the basis of 100,000 born alive during the year, in comparison with like data in Norway for the average of the three years, 1867, 1868, 1869, and in Sweden for the average of the two years, 1869, 1870:

Period.	Massachusetts.		Norway.		Sweden.	
	No. of births, 1869.	Proportion in 100,000 per annum.	No. of births, average 1867–'68–'69.	Proportion in 100,000 per annum.	No. of births, average 1869–70.	Proportion in 100,000 per annum.
January	2,633	7,285	4,805	9,096	10,617	8,661
February	2,457	6,798	4,366	8,265	9,992	8,152
March	2,865	7,927	4,732	8,938	10,909	8,900
April	2,630	7,277	4,449	8,422	10,058	8,205
May	2,794	7,731	4,537	8,588	9,898	8,075
June	2,860	7,913	4,301	8,141	9,651	7,873
July	3,242	8,971	4,230	8,007	9,996	8,155
August	3,405	9,422	4,409	8,346	9,646	7,869
September	3,316	9,175	4,774	9,037	11,084	9,042
October	3,375	9,338	4,258	8,060	10,487	8,555
November	3,163	8,752	3,590	6,796	9,625	7,852
December	3,401	9,411	4,387	8,304	10,616	8,661
1st quarter-year	7,955	22,010	13,893	26,299	31,518	25,713
2d quarter-year	8,284	22,921	13,287	25,151	29,607	24,153
3d quarter-year	9,963	27,568	13,413	25,390	30,726	25,066
4th quarter-year	9,939	27,501	12,235	23,160	30,728	25,068
1st half-year	16,239	44,931	27,180	51,450	61,125	49,866
2d half-year	19,902	45,069	25,648	48,550	61,454	50,134
Entire year	36,141	100,000	52,828	100,000	122,579	100,000

An important influencing cause of the irregularities is believed to be found in the fact that, although the enumeration was made with reference to the population as it existed on the 1st day of June, 1870, yet the actual

collection of the facts by the marshals was extended over a period of several months subsequent to that date, some of the enumerations having been made as late as nine months after the date designated by law. Inquiries, therefore, relative to the month of birth of children under the age of twelve months, living on the first day of June, 1870, required not unfrequently that investigation be made relative to the month of birth of children who were, at the date of actual enumeration, from 16 to 20 months of age. With respect to these more distant months of birth, it is believed that there was less effort in general by the enumerator to secure the requisite information, and greater difficulty encountered in successfully conducting the inquiries.

It is earnestly hoped that, in future censuses of the population, the system will be followed which has proved so successful in England and certain other countries of Europe, to wit, that of taking the census in one day, or as nearly so as is possible, through the instrumentality of a prior distribution of schedules, to be filled up with reference to a single night; such schedules to be collected by the enumerators on the following day, or as soon thereafter as practicable.

We may adjust the irregularities in the data under consideration by one of two methods—the one based on the assumption that there is no actual deficiency in the number of persons enumerated, but that the irregularities observed are due exclusively to an erroneous distribution of the numbers as regards age; that there may be, for some cause, or combination of causes, a general tendency on the part of the enumerators to record the ages of those under two years, and especially those of the second half of the first year of life as either less advanced or more advanced than accords with fact. The other method is based on the assumption that the irregularities in question are not to be wholly accounted for by imperfect distribution as respects age; but that, in addition to a faulty distribution, there were, with regard to the younger ages, actual deficiencies in the returns, and that some considerable portion of those who were under the age of two years escaped enumeration.

The latter assumption is deemed the more probable.

An adjustment of the data under the age of five years has, however, been prepared in accordance with each of these two assumptions, and is herewith presented: the one, on the assumption that the irregularities in question are due entirely to faults in distribution; the other, that they are due in part to defective distribution of the numbers returned, and, in part, to actual omissions. (See also Tabular groups A and B in Appendix.)

Population of the United States—1870—*at different intervals of age.*

Age.	Month of birth.	Observed.	Adjusted without addition.	Adjusted with 100,000 added under age 5.
Months.	2.	3.	4.	5.
0 to 1	May, 1870	117,081	109,646	111,299
1 to 2	April, 1870	115,421	106,252	108,155
2 to 3	March, 1870	122,628	104,441	106,377
3 to 4	February, 1870	115,153	103,099	105,080
4 to 5	January, 1870	114,492	102,007	104,002
5 to 6	December, 1869	116,497	101,075	103,074
6 to 7	November, 1869	91,503	100,256	102,254
7 to 8	October, 1869	93,391	99,521	101,514
8 to 9	September, 1869	88,288	98,853	100,838
9 to 10	August, 1869	69,079	98,236	100,213
10 to 11	July, 1869	42,463	97,665	99,630
11 to 12	June, 1869	13,789	97,130	99,083
0 to 3	May, April, March, 1870	355,130	320,339	325,831
3 to 6	February, January, December, 1869	346,142	306,181	312,156
6 to 9	November, October, September, 1869	273,272	298,551	304,606
9 to 12	August, July, June, 1869	125,931	293,107	298,926
0 to 6	May to December, inclusive.	701,272	626,520	637,987
6 to 12	November to June, inclusive.	399,203	591,658	603,652

Population of the United States, &c.—Continued.

Age.	Month of birth.	Observed.	Adjusted without addition.	Adjusted with 100,000 added under age 5.
Years.	2.	3.	4.	5.
0 to 1		1,100,475	1,218,181	1,241,519
1 to 2		1,078,803	1,132,347	1,154,698
2 to 3		1,143,139	1,086,503	1,106,754
3 to 4		1,113,782	1,052,658	1,070,687
4 to 5		1,078,514	1,024,965	1,041,055
0 to 2		2,179,278	2,350,528	2,396,217
2 to 5		3,335,435	3,164,185	3,218,496
0 to 5		5,514,713	5,514,713	5,614,713
All other specified ages		33,038,497	33,038,497	33,038,497
All specified ages		38,553,210	38,553,210	38,653,210
Unknown ages		5,161	5,161	5,161
All ages		38,558,371	38,558,371	38,658,371

In the foregoing table the third column exhibits the reported number of the population in 1870, according to the officially published abstract. The fourth and fifth columns give adjusted values, the adjustment being made in conformity with the rule that the numbers of the population, in equal intervals of age, diminish gradually with advancing years. In the preparation of the former of these two columns, there has been no addition from without to supply supposed omissions; but the average number under the age of 5 years, and also from ages 5 to 25 in this adjusted column, are retained the same as furnished by the returns. In the second of the adjusted columns, however, the number expressing the aggregate of the adjusted values, under the age of five years, has been augmented by an addition of 100,000 to supply supposed omissions.

It will be seen, on comparing the observed series of values (column 3) with the first of the adjusted series of values, (column 4,) that 171,250 of the number of persons reported as surviving in the last three years of the first five-year group are transferred to the first two years of that group, making the entire number under two years of age, in the adjusted series, 2,350,528 instead of 2,179,278, as in the observed or unadjusted series.

On comparing the values in the observed series (column 3) of that table with those in the second series of adjusted values, (column 5,) it will be seen that the number in the first two years of life has been augmented by 216,939, 100,000 of which were added from without for supposed omissions, and the remaining 116,939 transferred from the group of three years of age next following, the number of persons in the adjusted series, under the age of two years, thereby becoming 2,396,217, instead of the observed number, 2,179,278.

Each of these adjusted series conforms, as already stated, to the test of progressive and gradual diminution with advancing years.

The annual number of births furnished by each of these formulas is somewhat in excess of the annual average number of survivors returned for the first six months of life.

Population of the United States at all ages—1870.—*Proportion at different intervals of age of* 100,000.

Age.	Month of birth.	Observed.		Adjusted without additions for assumed omissions.		Adjusted with 100,000 added under the age of five years for assumed omissions in returns.	
		Proportion.	Annual rate.	Proportion.	Annual average.	Proportion.	Annual average.
1.	2.	3.	4.	5.	6.	7.	8.
Months.							
0 to 1	May, 1870	304	3,644	284	3,412	288	3,455
1 to 2	April, 1870	290	3,592	276	3,306	280	3,360
2 to 3	March, 1870	318	3,816	271	3,250	275	3,302
3 to 4	February, 1870	299	3,583	267	3,208	272	3,262
4 to 5	January, 1870	297	3,563	264	3,174	269	3,228
5 to 6	December, 1869	302	3,625	262	3,145	267	3,199
6 to 7	November, 1869	238	2,850	260	3,120	265	3,174
7 to 8	October, 1869	242	2,900	258	3,097	263	3,151
8 to 9	September, 1869	229	2,748	256	3,076	261	3,130
9 to 10	August, 1869	181	2,168	255	3,057	259	3,110
10 to 11	July, 1869	110	1,321	253	3,039	258	3,092
11 to 12	June, 1869	36	429	252	3,023	256	3,076
0 to 3	May, April, March, 1870	921	3,684	831	3,329	843	3,371
3 to 6	February, January, December, 1869	898	3,591	793	3,175	807	3,230
6 to 9	November, October, September, 1869	709	2,835	774	3,098	788	3,152
9 to 12	August, July, June, 1869	327	1,306	760	3,039	773	3,093
0 to 6	May to December, inclusive.	1,819	3,637	1,624	3,248	1,650	3,300
6 to 12	November to June, inclusive.	1,035	2,071	1,534	3,068	1,561	3,123
Years.							
0 to 1		2,854	2,854	3,160	3,160	3,212	3,212
1 to 2		2,798	2,798	2,937	2,937	2,987	2,987
2 to 3		2,965	2,965	2,818	2,818	2,863	2,863
3 to 4		2,889	2,889	2,730	2,730	2,770	2,770
4 to 5		2,798	2,798	2,659	2,659	2,693	2,693
0 to 2		5,653	2,826	6,097	3,048	6,199	3,100
2 to 5		8,651	2,884	8,207	2,736	8,326	2,775
0 to 5		14,304	2,861	14,304	2,861	14,525	2,905
All other specified ages		85,696		85,696		85,475	
All specified ages		100,000		100,000		100,000	

In the foregoing table is shown, with reference to the series of observed values and of adjusted values, the proportion living at each monthly and annual interval of age, under the age of five years, out of 100,000 at all ages specified in the returns; also, the average annual number indicated for each age-interval by such proportionate numbers. For example, the proportionate number living between the ages of six and twelve months, according to the returns, (columns 3 and 4,) was, for every 100,000 of population of specified ages, 1,035, corresponding to an annual rate of 2,071. According to the first of the adjusted series, (columns 5 and 6,) that in which no allowance is made for supposed omissions, the proportionate numbers between the ages of six and twelve months, out of 100,000 population of specified ages, would be 1,534, corresponding to an annual rate of 3,068.

In the second of the adjusted series, that in which allowance is made for 100,000 supposed omissions, (columns 7 and 8,) the proportion in this age-interval of six months would be 1,561, corresponding to an annual rate of 3,123.

The aggregate number of persons stated as of "unknown age," in the published abstract of the census returns, is 5,161; or about one and one-third (1⅓) in every ten thousand persons of specified ages.

In the foregoing tables no attempt has been made to distribute the numbers of the "unknown ages" among those of the specified ages.

The addition, however, to each of the numbers representing the several specified ages of life, of one and one-third in every ten thousand at such ages, both in the "observed" and in each of the "adjusted" series, will readily give a proportionate distribution of the numbers returned as of "unknown age."

For the correctness of the numerical computations for the accompanying tables, credit is in large measure due to Mr. A. W. Paine, of the Census Bureau, who has been detailed by you for the purpose of aiding in their construction.

E. B. ELLIOTT.

APPENDIX.

PROCESS OF CONSTRUCTION OF THE ADJUSTED SERIES.

The process adopted for the adjustment of the irregularities of the observed values is as follows:

Let $P_{0:x}$ denote the number of persons living *at and under* the age of x years; then, obviously, will $\frac{1}{x} P_{0:x}$ denote the *annual mean* of such number.

For $\frac{1}{x} P_{0:x}$ put X, and let the formula—

$$(1) \qquad X = A - (A - B) \left(\frac{x-a}{b-a}\right)^q$$

express the law of relation which connects the values of X (or $\frac{1}{x} P_{0:x}$) for different ages of life. A, it is manifest, will be that value of X which corresponds to age a, (that is, A will equal $\frac{1}{a} P_{0:a}$) and B will denote that value of X which corresponds to the age b, (that is, B will equal $\frac{1}{b} P_{0:b}$). In like manner C may be so taken as to denote that value of X (or $\frac{1}{x} P_{0:x}$) which shall correspond to the age of c years, (that is, C may be made equivalent to $\frac{1}{c} P_{0:c}$); and from formula (1) may be derived the following expression:

$$(2) \qquad A = \frac{\left(\frac{c-a}{b-a}\right)^q B - C}{\left(\frac{c-a}{b-a}\right)^q - 1}$$

The number of persons returned by the enumerators of the United States census as living *at and under* the age of five years ($P_{0:5}$) was 5,514,713, the annual mean $\left(\frac{1}{5} P_{0:5}\right)$ being consequently 1,102,942.6; and the number returned as *at and under* the age of *twenty-five* years ($P_{0:25}$) was 22,904,502, the annual mean $\left(\frac{1}{25} P_{0:25}\right)$ consequently being 916,180.08.

In the computation of the *first* series of adjusted values, those of Group A, based on the assumption that the irregularities observable are wholly due to faulty distribution, and not at all to actual omission, (see Tables following,) B was taken to denote $\frac{1}{5} P_{0:5}$ or $\frac{5,514,713}{5}$ equal to 1,102,942.6, the annual mean of the number of persons returned as living at and under the age of five years; and C as denoting $\frac{1}{25} P_{0:25}$ or $\frac{22,904,502}{25}$ equal to 916,180.08, the annual mean of the number of persons returned as living at and under the age of twenty-five years; while A was taken to denote $\frac{1}{0} P_{0:0}$ the corresponding annual number of births. To q was given the value $\frac{3}{10}$ from which it follows by substitution in Formula (2) that the value of A (the number of persons born alive) was 1,403,852.5, a number slightly in excess of 1,402,544, the annual mean of number of persons returned as living under the age of six months.

$$\text{Thus, } A = \frac{\left(\frac{25-0}{5-0}\right)^{\frac{3}{10}} 1,102,942.6 - 916,180.08}{\left(\frac{25-0}{5-0}\right)^{\frac{3}{10}} - 1} = 1,403,852.5$$

By the substitution of these data in formula (1,) given above, were computed the several values given in Group A, Table I, column 3. From these values were obtained, by multiplying each by the corresponding age (x,) the series of values in Group A, Table II, column 3. The successive differences of the numbers constituting this series gave the series of values in Group A, Table III, column 3.

In the computation of the *second* series of adjusted values, those of Group B, based on the assumption that the irregularities observed in the unadjusted values are due in part to faulty distribution, and in part to actual omission in the enumeration at the younger years of life, 100,000 was added to the number returned under the age of five years, making $P_{0:5}$ for that period 5,614,713 persons, the annual mean of such adjusted number $\left(\frac{1}{5} P_{0:5}\right)$ becoming 1,122,942.6. B was taken equal to the annual mean so adjusted, and C as equal to the annual mean of the number under the age of 25 years, $\frac{23,004,502}{25}$, or 920,180.08.

To q was given the value $\frac{1}{3}$, the corresponding value of A, (the annual number of births, $\frac{1}{0} P_{0:0}$) consequently being 1,408,533, a number somewhat in excess of the mean annual number of survivors indicated by the returns of the first six months of life.

By the substitution of these values for the constants, A, B, and q in the general formula (1,) above given, the series of numbers in Group B, Table I, column 3, were computed. From the adjusted values in Table I, the adjusted values in Tables II and III are readily derived.

GROUP A.

TABLE I.

Table showing the *average annual number* of persons *at and under different specified ages* $\left(\frac{1}{x} P_{0:x}\right)$ within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870, and also as "adjusted," together with the difference between the observed and adjusted.

In the formation of the adjusted series of this table *no addition* has been made for assumed omissions.

0 to x Years.	$\frac{1}{x} P_{0:x}$		Difference.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 0	.....	1,403,852.5	.....
0 to 1-12	1,404,972	1,315,749.5	− 89,222.5
0 to 2-12	1,395,013	1,295,384.9	− 99,627.1
0 to 3-12	1,420,520	1,281,354.9	− 139,165.1
0 to 4-12	1,410,849	1,270,313.2	− 140,535.8
0 to 5-12	1,403,460	1,261,057.7	− 142,302.3
0 to 6-12	1,402,544	1,253,040.3	− 149,503.7
0 to 7-12	1,359,197	1,245,902.2	− 113,294.8
0 to 8-12	1,329,384	1,239,446.3	− 89,937.7
0 to 9-12	1,299,392	1,233,533.2	− 65,858.8
0 to 10-12	1,253,068	1,228,063.8	− 25,004.2
0 to 11-12	1,185,476	1,222,964.9	+ 37,488.9
0 to 1	1,100,475	1,218,180.9	+ 117,705.9
0 to 2	1,089,636	1,175,263.9	+ 85,625.9
0 to 3	1,107,472	1,145,696.7	+ 38,224.7
0 to 4	1,109,050	1,122,437	+ 13,387
0 to 5	1,102,942.6	1,102,942.6	0
0 to 10	1,032,942.6	1,033,388.9	+ 446.3
0 to 15	1,007,707.7	985,470.6	− 22,237.1
0 to 20	957,810.15	947,758.4	+ 10,051.75
0 to 25	916,180.08	916,180.08	0

$$\frac{1}{x} P_{0:x} = X = A - (A - B)\left(\frac{x-a}{b-a}\right)^q$$

$$= 1,403,852.5 - (1,403,852.5 - 1,102,942.6)\left(\frac{x-0}{5-0}\right)^{\frac{3}{10}}$$

$$= 1,403,852.5 - 300,909.9\left(\frac{x}{5}\right)^{\frac{3}{10}}$$

GROUP A.

TABLE II.

Table showing the *number* of persons *at and under specified ages*, ($P_{0:x}$), within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870; and also as "adjusted," together with the differences between the observed and adjusted.

In the formation of the adjusted series of this table *no addition* has been made for assumed omissions.

0 to x Years.	$P_{0:x}$		Differences.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 0	0	0	0
0 to 1-12	117,081	109,645[8]	— 7,435[8]
0 to 2-12	232,502	215,897[3]	— 16,604[5]
0 to 3-12	355,130	320,338[7]	— 34,791[3]
0 to 4-12	470,260	423,4157	— 46,845[3]
0 to 5-12	584,775	525,444[9]	— 59,330[1]
0 to 6-12	701,272	626,520[1]	— 74,751[9]
0 to 7-12	792,805	726,776[3]	— 66,088[7]
0 to 8-12	866,256	820,297[8]	— 59,958[6]
0 to 9-12	974,544	925,150[1]	— 49,393[7]
0 to 10-12	1,044,223	1,023,386[5]	— 20,836[5]
0 to 11-12	1,086,686	1,121,051[2]	+ 34,365[8]
0 to 1	1,100,475	1,218,180[9]	+ 117,705[9]
0 to 2	2,179,278	2,350,527[8]	+ 171,249[8]
0 to 3	3,322,417	3,437,090[1]	+ 114,673[1]
0 to 4	4,436,109	4,489,748	+ 53,540
0 to 5	5,514,713	5,514,713	0
0 to 10	10,329,426	10,333,889	+ 4,463
0 to 15	15,115,615	14,782,059	— 333,556
0 to 20	19,150,233	18,955,168	— 201,035
0 to 25	22,904,502	22,904,502	0

GROUP A.

TABLE III.

Table showing the *number* of persons *in each specified age-interval* ($P_{x:y}$) within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870; and also as "adjusted," together with the differences between the observed and adjusted.

In the formation of the adjusted series of this table *no addition* has been made for assumed omissions.

x to y Years.	$P_{x:y}$		Difference.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 0	0	0	0
0 to 1-12	117,081	109,645[8]	— 7,435[2]
1-12 to 2-12	115,421	106,251[7]	— 9,169[3]
2-12 to 3-12	122,628	104,441[2]	— 18,186[8]
3-12 to 4-12	115,153	103,099	— 12,054
4-12 to 5-12	114,492	102,007[2]	— 12,484[8]
5-12 to 6-12	116,497	101,075[2]	— 15,421[8]
6-12 to 7-12	91,593	100,256[2]	+ 8,663[2]
7-12 to 8-12	93,391	99,521[2]	+ 6,130[2]
8-12 to 9-12	88,288	98,852[8]	+ 10,480[4]
9-12 to 10-12	69,679	98,236[2]	+ 28,632[6]
10-12 to 11-12	42,463	97,664[7]	+ 55,201[7]
11-12 to 1	13,789	97,129[7]	+ 83,340[7]
0 to 1	1,100,475	1,218,180[9]	+ 117,705[9]
1 to 2	1,078,803	1,132,346[9]	+ 53,543[9]
2 to 3	1,143,130	1,086,563[3]	— 56,576[7]
3 to 4	1,113,782	1,052,657[0]	— 61,124[1]
4 to 5	1,078,514	1,024,965	— 53,549
0 to 5	5,514,713	5,514,713	0
5 to 10	4,814,713	4,819,176	+ 4,463
10 to 15	4,786,189	4,448,170	— 338,019
15 to 20	4,040,588	4,173,109	+ 132,521
20 to 25	3,748,299	3,949,334	+ 201,035

GROUP B.

TABLE I.

Table showing the *average annual number* of persons *at and under different specified ages* $\left(\frac{1}{x} P_{0:x}\right)$ within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870; and also as "adjusted," together with the differences between the observed and adjusted.

In the formation of the adjusted series of this table 100,000 has been *added*, under the age of five years, for assumed omissions.

x Years.	$\frac{1}{x} P_{0:x}$		Difference.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 0	.....	1,408,533.4	.....
0 to 1-12	1,404,072	1,335,583.1	− 69,389
0 to 2-12	1,395,012	1,316,721.7	− 78,290
0 to 3-12	1,420,520	1,303,320.9	− 117,199
0 to 4-12	1,410,849	1,292,732	− 118,117
0 to 5-12	1,403,460	1,283,790.1	− 119,670
0 to 6-12	1,402,544	1,275,973.9	− 126,570
0 to 7-12	1,359,197	1,268,984.5	− 90,212
0 to 8-12	1,329,384	1,262,632.8	− 66,751
0 to 9-12	1,299,392	1,256,790.6	− 42,601
0 to 10-12	1,253,068	1,251,366.7	− 1,701
0 to 11-12	1,185,476	1,246,293.4	+ 60,817
0 to 1	1,100,475	1,241,518.9	+ 141,044
0 to 2	1,089,638	1,198,108.3	+ 108,470
0 to 3	1,107,472	1,167,656.8	+ 60,185
0 to 4	1,109,050	1,143,414.4	+ 34,364
0 to 5	1,102,942.6	1,122,942.6	+ 20,000
0 to 10	1,032,942.6	1,048,711.6	+ 15,769
0 to 15	1,007,707.7	996,640.3	− 11,067
0 to 20	957,810.15	955,186.2	− 2,624
0 to 25	916,180.08	920,180.08	+ 4,000

$$\frac{1}{x} P_{0:x} = X = A - (A - B)\left(\frac{x-a}{b-a}\right)^{q}$$

$$= 1{,}408{,}533.4 - (1{,}408{,}533.4 - 1{,}122{,}942.6)\left(\frac{x-0}{5-0}\right)^{\frac{1}{3}}$$

$$= 1{,}408{,}533.4 - 285{,}590.8\left(\frac{x}{5}\right)^{\frac{1}{3}}$$

GROUP B.

TABLE II.

Table showing the *number* of persons *at and under specified ages* ($P_{0:x}$) within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870; and also as "adjusted," together with the differences between the observed and adjusted.

In the formation of the adjusted series of this table 100,000 has been *added*, under the age of five years, for assumed omissions.

0 to x Years.	$P_{0:x}$		Difference.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 0	0	0	0
0 to 1-12	117,081	111,298[7]	— 5,782[3]
0 to 2-12	232,502	219,453[0]	— 13,048[4]
0 to 3-12	355,130	325,830[2]	— 29,299[8]
0 to 4-12	470,283	439,910[7]	— 30,372[3]
0 to 5-12	584,775	534,912[5]	— 49,862[5]
0 to 6-12	701,272	637,987	— 63,285
0 to 7-12	792,805	740,241	— 52,624
0 to 8-12	886,256	841,755[2]	— 44,500[8]
0 to 9-12	974,544	942,593	— 31,951
0 to 10-12	1,044,223	1,042,805[9]	— 1,417[4]
0 to 11-12	1,086,686	1,142,435[9]	+ 55,749[8]
0 to 1	1,100,475	1,241,518[9]	+ 141,043[9]
0 to 2	2,179,278	2,396,216[6]	+ 216,938[6]
0 to 3	3,322,417	3,502,970[4]	+ 180,553[4]
0 to 4	4,436,199	4,573,657[8]	+ 137,458[8]
0 to 5	5,514,713	5,614,713	+ 100,000
0 to 10	10,329,426	10,487,116	+ 157,690
0 to 15	15,115,615	14,949,604[5]	— 166,010[5]
0 to 20	19,156,203	19,103,726	— 52,477
0 to 25	22,904,502	23,004,502	+ 100,000

GROUP B.

TABLE III.

Table showing the *number* of persons *in each specified age-interval* ($P_{x:y}$) within the first twenty-five years of life, according to the "observed" or unadjusted returns of the United States census of 1870; and also as "adjusted," together with the differences between the observed and adjusted.

In the formation of the adjusted series of this table, 100,000 has been *added*, under the age of five years, for assumed omissions.

x to y Years.	$P_{x:y}$		Difference.
	Observed.	Adjusted.	
1.	2.	3.	4.
0 to 1-12	117,081	111,298[7]	− 5,782[3]
1-12 to 2-12	115,421	108,154[9]	− 7,266[1]
2-12 to 3-12	122,628	106,376[0]	− 16,251[4]
3-12 to 4-12	115,153	105,080[5]	− 10,072[5]
4-12 to 5-12	114,492	104,001[8]	− 10,490[2]
5-12 to 6-12	116,497	103,074[5]	− 13,422[5]
6-12 to 7-12	91,593	102,254	+ 10,661
7-12 to 8-12	93,391	101,514[2]	+ 8,123[2]
8-12 to 9-12	88,288	100,837[8]	+ 12,549[8]
9-12 to 10-12	69,679	100,212[6]	+ 30,533[0]
10-12 to 11-12	42,463	99,630	+ 57,167
11-12 to 1	13,789	99,089[3]	+ 85,294[3]
0 to 1	1,100,475	1,241,518[9]	+ 141,043[9]
1 to 2	1,078,803	1,154,697[2]	+ 75,894[7]
2 to 3	1,143,139	1,106,753[8]	− 36,385[2]
3 to 4	1,113,782	1,070,687[2]	− 43,094[8]
4 to 5	1,078,514	1,041,055[4]	− 37,458[0]
0 to 5	5,514,713	5,614,713	+ 100,000
5 to 10	4,814,713	4,872,403	+ 57,690
10 to 15	4,786,189	4,462,488	− 323,700[5]
15 to 20	4,040,588	4,154,122	+ 113,533[6]
20 to 25	3,748,299	3,900,776	+ 152,477

NOTE.—The following table exhibits the processes by which the adjusted results in the tables of Groups A and B, severally, are reached. The figures given for illustration are those pertaining to the tables of Group B. (See Group B, Table I, column 3, ages 0, 5, and 25, respectively.) The symbol λ is here employed to denote that the common logarithm of the quantity to which it is prefixed is to be taken.

$$A = 1{,}408{,}533^{4}.$$
$$B = 1{,}122{,}042^{6}.$$
$$C = 920{,}180^{08}.$$
$$\lambda\left(\frac{A-B}{\sqrt[3]{5}}\right) = 5.2227542$$

x	λx	$\lambda(\sqrt[3]{x})$	$\lambda\left(\frac{A-B}{\sqrt[3]{5}}\sqrt[3]{x}\right)$	$\frac{A-B}{\sqrt[3]{5}}\sqrt[3]{x}$	$A-\frac{A-B}{\sqrt[3]{5}}\sqrt[3]{x}$
	1.	2.	3.	4.	5.
0	− ∞	− ∞	− ∞	0	1,408,533[4]
½	2.9208188	$\bar{1}$.6402720	4.8630971	72,950[3]	1,335,583[1]
1	1.2218488	$\bar{1}$.7406163	4.9633705	91,911[61]	1,316,621[7]
1½	1.3979401	$\bar{1}$.7993134	5.0220676	105,212[5]	1,303,320[9]
2	1.5228788	$\bar{1}$.8400596	5.0637138	115,801[4]	1,292,732
2½	1.6197888	$\bar{1}$.8732629	5.0969171	124,743[3]	1,283,790[1]
3	1.6989701	$\bar{1}$.8990567	5.1224109	132,559[5]	1,275,973[9]
3½	1.7659168	$\bar{1}$.9219723	5.1447265	139,548[9]	1,268,984[5]
4	$\bar{1}$.8239088	$\bar{1}$.9413020	5.1640571	145,900[6]	1,262,632[8]
4½	$\bar{1}$.8750613	$\bar{1}$.9583538	5.1811080	151,742[8]	1,256,790[0]
4½	$\bar{1}$.9208188	$\bar{1}$.9736063	5.1963605	157,166[7]	1,251,366[7]
4½	$\bar{1}$.9622115	$\bar{1}$.9874038	5.2101580	162,240	1,246,293[4]
1	0	0	5.2227542	167,014[5]	1,241,518[9]
2	.3010300	.1003433	5.3230975	210,425[1]	1,198,108[3]
3	.4771213	.1590404	5.3817946	240,876[6]	1,167,656[8]
4	.6020600	.2006867	5.4234409	265,119	1,143,414[4]
5	.6989700	.2329900	5.4557442	285,590[8]	1,122,942[6]
10	1.0000000	.3333333	5.5560875	359,821[8]	1,048,711[0]
15	1.1760913	.3920304	5.6147846	411,893[1]	996,640[3]
20	1.3010300	.4336767	5.6564309	453,347[1]	955,186[3]
25	1.3979400	.4659800	5.6887342	488,353[4]	920,180[08]

TABLE C.—*Population of different countries by single years under five years of age and by five-year periods under the age of twenty-five years; also giving the proportion at the different ages to* 100,000 *of total population; also the annual average of these numbers.*

YEARS.	UNITED STATES—1870. (Observed.)			UNITED STATES—1870. (Adjusted with addition of 100,000 under age 5.)			ENGLAND AND WALES—1861.		
	Numbers.	Proportion in 100,000, at total specified ages.		Numbers.	Proportion in 100,000, at total specified ages.		Numbers.	Proportion in 100,000, total population.	
		Amount.	Annual average.		Amount.	Annual average.		Amount.	Annual average
Under 1	1,100,475	2,854	2,854	1,241,519	3,212	3,212	593,721	2,959	2,959
1 to 2	1,078,803	2,798	2,798	1,154,698	2,987	2,987	543,040	2,706	2,706
2 to 3	1,143,139	2,965	2,965	1,106,754	2,863	2,863	535,981	2,671	2,671
3 to 4	1,113,782	2,889	2,889	1,070,687	2,770	2,770	516,296	2,573	2,573
4 to 5	1,078,514	2,798	2,798	1,041,055	2,693	2,693	511,744	2,550	2,550
Under 5	5,514,713	14,304	2,861	5,614,713	14,524	2,905	2,700,782	13,459	2,692
5 to 10	4,814,713	12,487	2,497	4,872,403	12,604	2,521	2,344,066	11,682	2,336
10 to 15	4,786,189	12,413	2,483	4,462,489	11,543	2,309	2,105,176	10,491	2,098
15 to 20	4,040,588	10,479	2,096	4,154,191	10,746	2,149	1,932,642	9,631	1,926
20 to 25	3,748,299	9,721	1,944	3,900,776	10,090	2,018	1,829,493	9,117	1,823

YEARS.	FRANCE—1861.			ITALY—1861.			NORWAY—1865.		
	Numbers.	Proportion in 100,000, total population.		Numbers.	Proportion in 100,000, total population.		Numbers.	Proportion in 100,000, total population.	
		Amount.	Annual average.		Amount.	Annual average.		Amount.	Annual average.
Under 1	810,743	2,169	2,169	723,726	3,319	3,319	51,764	3,042	3,042
1 to 2	719,985	1,926	1,926	571,830	2,626	2,626	47,964	2,818	2,818
2 to 3	722,585	1,933	1,933	685,265	3,147	3,147	46,814	2,751	2,751
3 to 4	689,120	1,843	1,843	507,744	2,331	2,331	43,721	2,569	2,569
4 to 5	669,728	1,791	1,791	472,126	2,168	2,168	40,198	2,362	2,362
Under 5	3,612,161	9,662	1,932	2,950,691	13,591	2,718	230,461	13,542	2,708
5 to 10	3,272,759	8,754	1,751	2,345,701	10,771	2,154	203,094	11,934	2,387
10 to 15	3,235,448	8,654	1,731	2,215,358	10,173	2,035	179,855	10,569	2,114
15 to 20	3,247,835	8,687	1,737	2,025,232	9,300	1,860	160,704	9,443	1,889
20 to 25	3,074,775	8,224	1,645	1,902,549	8,736	1,747	138,204	8,122	1,624

TABLE XX.—PERSONS BORN IN, AND SURVIVING AT THE CLOSE OF, EACH CENSUS YEAR, WITH PROPORTION TO ALL LIVING PERSONS—1870–1860–1850.

	STATES AND TERRITORIES.	1870								
		Born in May, 1870.	Born in April, 1870.	Born in March, 1870.	Born in three months ended May 31, 1870.	Born in February, 1870.	Born in January, 1870.	Born in December, 1869.	Born in three months ended February 28, 1870.	Born in six months ended May 31, 1870.
	The United States	117,081	115,421	122,628	355,130	115,153	114,492	116,497	346,142	701,272
1	Alabama	3,280	3,250	3,565	10,095	3,574	3,433	4,044	11,051	21,146
2	Arizona	13	32	20	65	23	30	12	65	130
3	Arkansas	1,809	1,737	1,938	5,484	1,918	2,132	2,063	6,113	11,597
4	California	1,601	1,404	1,412	4,417	1,425	1,339	1,364	4,128	8,545
5	Colorado	141	130	102	373	124	91	103	318	691
6	Connecticut	1,380	1,219	1,273	3,872	1,067	1,105	1,176	3,348	7,220
7	Dakota	68	48	51	167	54	46	34	134	301
8	Delaware	400	368	355	1,123	378	360	363	1,091	2,214
9	District of Columbia	321	378	378	1,077	382	397	395	1,174	2,251
10	Florida	639	721	602	1,962	631	577	647	1,855	3,817
11	Georgia	3,670	4,187	4,574	12,431	4,224	4,193	4,320	12,737	25,168
12	Idaho	20	31	21	72	18	23	17	58	130
13	Illinois	7,925	8,059	8,801	24,785	8,352	8,521	8,714	25,587	50,372
14	Indiana	4,953	5,020	5,501	15,474	5,247	5,186	5,218	15,651	31,125
15	Iowa	4,345	3,943	4,192	12,480	4,115	4,150	3,806	12,080	24,560
16	Kansas	1,312	1,260	1,383	3,955	1,279	1,266	1,207	3,752	7,707
17	Kentucky	4,074	4,570	4,825	13,469	4,524	4,463	4,669	13,656	27,125
18	Louisiana	1,866	2,266	2,748	6,880	2,395	2,654	2,783	7,832	14,712
19	Maine	1,302	1,392	1,449	4,143	1,250	1,102	1,210	3,622	7,765
20	Maryland	2,205	2,263	2,469	6,937	2,316	2,318	2,450	7,084	14,021
21	Massachusetts	3,771	3,430	3,287	10,488	3,130	3,117	3,229	9,485	19,973
22	Michigan	3,672	3,515	3,513	10,700	3,175	3,002	3,059	9,236	19,936
23	Minnesota	1,572	1,521	1,514	4,607	1,523	1,547	1,373	4,443	9,050
24	Mississippi	3,111	3,009	3,218	9,338	3,145	3,252	3,691	10,088	19,426
25	Missouri	5,778	5,538	6,231	17,547	6,172	5,879	5,745	17,796	35,343
26	Montana	60	41	23	124	32	31	19	82	206
27	Nebraska	583	450	438	1,471	440	470	416	1,326	2,797
28	Nevada	86	83	65	234	76	70	75	221	455
29	New Hampshire	576	603	541	1,720	508	489	547	1,544	3,264
30	New Jersey	2,913	2,491	2,776	8,180	2,520	2,456	2,357	7,333	15,513
31	New Mexico	442	364	340	1,146	314	273	286	873	2,019
32	New York	10,938	10,954	11,314	33,206	10,487	10,023	10,121	30,631	63,837
33	North Carolina	3,531	3,341	3,494	10,366	3,172	3,432	3,464	10,068	20,434
34	Ohio	7,815	7,590	8,207	23,612	7,518	7,370	7,476	22,364	45,976
35	Oregon	334	302	272	908	273	273	245	791	1,699
36	Pennsylvania	11,004	10,339	11,067	32,410	9,894	9,663	9,718	29,275	61,685
37	Rhode Island	585	542	521	1,648	452	444	464	1,360	3,008
38	South Carolina	2,147	2,294	2,528	6,969	2,215	2,457	2,419	7,091	14,060
39	Tennessee	3,880	3,921	4,341	12,142	4,173	4,425	4,600	13,198	25,340
40	Texas	2,604	2,463	2,849	7,916	3,078	3,098	3,157	9,333	17,249
41	Utah	297	306	443	1,136	376	400	383	1,159	2,295
42	Vermont	844	780	771	2,395	686	626	659	1,971	4,366
43	Virginia	4,295	4,254	4,152	12,701	3,822	3,611	3,955	11,388	24,089
44	Washington	87	63	78	228	81	62	69	212	440
45	West Virginia	1,388	1,470	1,601	4,459	1,497	1,434	1,325	4,256	8,715
46	Wisconsin	3,433	3,355	3,367	10,155	3,080	3,132	3,039	9,251	19,406
47	Wyoming	11	34	18	63	9	11	11	31	94

TABLE XX.—PERSONS BORN IN, AND SURVIVING AT THE CLOSE OF, EACH CENSUS YEAR, WITH PROPORTION TO ALL LIVING PERSONS—1870–1860–1850—Continued.

1870											1860		1850		
Born in November, 1869.	Born in October, 1869.	Born in September, 1869.	Born in three months ended November 30, 1869.	Born in nine months ended May 31, 1870.	Born in August, 1869.	Born in July, 1869.	Born in June, 1869.	Born in three months ended August 31, 1869.	Born in twelve months ended May 31, 1870, and then surviving.	Living persons to one person so born and surviving.	Born in twelve months ended May 31, 1860, and then surviving.	Living persons to one person so born and surviving.	Born in twelve months ended May 31, 1850, and then surviving.	Living persons to one person so born and surviving.	
91,593	93,301	88,288	273,272	974,544	69,079	42,403	13,789	125,931	1,100,475	34.61	934,583	33.64	629,444	36.85	
2,271	2,357	1,901	6,529	27,075	1,370	951	374	2,695	30,370	32.83	29,656	32.51	20,375	37.87	1
9	7	12	28	158	11	2	7	20	178	54.26	.....	.....	.....	.....	2
1,482	1,278	1,169	3,929	15,526	816	511	182	1,509	17,035	28.42	14,259	30.54	6,640	31.61	3
1,258	1,139	1,033	3,430	11,975	846	508	161	1,515	13,490	41.53	9,175	41.42	273	339.18	4
82	82	69	233	924	69	42	28	139	1,063	37.50	49	699.53	.....	.....	5
927	1,092	1,053	3,072	10,292	918	587	203	1,708	12,000	44.79	11,135	41.32	7,646	48.49	6
29	23	27	79	380	16	17	10	43	423	33.52	65	74.42	.....	.....	7
294	291	289	874	3,088	223	90	34	356	3,444	36.30	3,316	33.84	2,554	35.84	8
325	382	349	1,056	3,307	273	132	67	472	3,779	34.85	2,423	30.99	1,319	39.19	9
387	400	303	1,090	4,907	283	119	69	471	5,378	34.91	4,205	33.39	2,236	39.11	10
3,087	2,865	2,535	8,487	33,655	1,883	1,007	257	3,237	36,892	32.10	33,180	31.87	24,858	36.45	11
16	23	25	64	194	17	10	.....	27	221	67.87	.....	.....	.....	.....	12
6,670	6,993	6,915	20,578	70,950	5,057	2,043	380	8,380	79,330	32.02	57,062	29.54	26,681	31.91	13
4,481	4,683	4,482	13,646	44,771	3,594	2,222	474	6,290	51,061	32.91	45,027	29.99	32,296	30.60	14
3,301	3,433	3,043	9,777	34,337	2,515	1,551	552	4,638	38,975	30.64	24,859	27.15	6,699	31.52	15
1,066	1,072	1,134	3,272	10,979	1,028	692	236	1,956	12,935	28.17	3,599	29.79	.....	.....	16
3,594	3,591	3,302	10,487	37,619	2,484	1,469	455	4,408	42,020	31.44	38,070	30.36	30,073	32.67	17
1,916	1,777	1,655	5,348	20,060	1,261	665	120	2,046	22,106	32.88	17,878	30.60	12,232	42.33	18
1,044	1,113	1,117	3,274	11,039	1,003	719	283	2,005	13,044	48.06	14,831	42.36	13,995	41.67	19
1,844	1,994	1,841	5,679	19,700	1,306	703	227	2,386	22,086	35.36	19,315	35.57	16,482	35.37	20
2,705	2,899	2,830	8,434	28,407	2,429	1,584	567	4,580	32,987	44.18	31,535	39.04	23,192	42.88	21
2,731	2,813	2,790	8,334	28,270	2,300	1,480	489	4,359	32,629	36.20	21,517	34.81	10,898	36.49	22
1,076	1,131	1,085	3,292	12,342	852	562	181	1,595	13,937	31.55	6,338	27.14	168	36.17	23
2,193	2,232	1,775	6,200	25,626	1,292	725	316	2,333	27,959	29.61	21,915	36.11	16,086	37.71	24
4,412	4,400	4,518	13,330	48,673	3,260	1,873	444	5,577	54,250	31.73	40,206	29.33	22,331	30.54	25
19	25	21	65	271	15	17	11	43	314	65.59	.....	.....	.....	.....	26
325	357	334	1,016	3,813	226	80	29	341	4,154	29.85	1,006	28.67	.....	.....	27
43	51	37	131	586	37	10	5	52	638	66.60	68	100.84	.....	.....	28
465	487	494	1,446	4,710	478	356	196	1,030	5,740	55.45	6,690	48.74	6,111	52.03	29
2,069	2,210	2,119	6,398	21,911	1,650	990	329	2,975	24,886	36.41	19,907	33.61	13,550	36.11	30
150	190	142	491	2,510	78	37	5	120	2,630	38.90	2,709	34.52	1,233	49.92	31
9,029	8,691	8,772	26,492	90,329	7,250	4,510	1,780	13,540	103,878	42.19	103,432	37.52	76,337	40.58	32
2,432	2,437	2,252	7,121	27,555	1,706	1,053	456	3,215	30,770	34.85	28,632	34.67	24,734	35.14	33
6,362	6,903	6,683	19,948	65,924	5,375	3,298	1,060	9,733	75,657	35.23	71,170	32.87	56,884	34.81	34
224	219	208	651	2,350	168	77	37	282	2,632	34.55	2,014	26.05	310	42.88	35
8,124	8,721	8,363	25,228	86,913	6,647	4,326	1,375	12,348	99,261	35.48	86,871	33.45	64,331	35.04	36
399	363	421	1,183	4,191	378	331	20	729	4,920	44.18	4,390	39.78	3,610	40.87	37
1,493	1,447	1,309	4,249	18,309	998	469	125	1,592	19,901	35.46	19,902	35.36	15,801	42.31	38
3,374	3,512	2,965	9,851	35,191	2,257	1,365	605	4,227	39,418	31.93	35,237	31.50	30,151	33.26	39
2,142	2,104	1,757	6,003	23,252	1,336	701	111	2,148	25,400	32.23	20,010	30.20	6,194	34.32	40
316	361	271	948	3,243	197	81	24	302	3,545	24.48	2,017	19.97	432	26.34	41
556	608	628	1,792	6,158	519	323	128	970	7,128	46.37	6,8 9	46.28	6,594	47.04	42
2,853	2,805	2,576	8,234	33,323	1,955	1,101	423	3,479	35,802	34.22	35,242	34.61	27,311	40.99	43
66	58	48	172	612	43	28	.....	71	683	35.07	331	35.03	.....	.....	44
1,307	1,267	1,161	3,735	12,450	942	654	308	1,904	14,354	30.79	11,739	32.09	8,997	33.60	45
2,618	2,492	2,445	7,555	26,961	2,125	1,309	621	4,055	31,016	34.00	25,702	30.19	10,424	29.30	46
18	13	10	41	135	4	12	5	21	156	58.45	.....	.....	.....	.....	47