

Population Investigation Committee

The Population Statistics of China, A.D. 2-1953

Author(s): John D. Durand

Source: *Population Studies*, Vol. 13, No. 3 (Mar., 1960), pp. 209-256

Published by: Population Investigation Committee

Stable URL: <http://www.jstor.org/stable/2172247>

Accessed: 24/03/2009 10:42

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=pic>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.



Population Investigation Committee is collaborating with JSTOR to digitize, preserve and extend access to *Population Studies*.

<http://www.jstor.org>

The Population Statistics of China, A.D. 2-1953

By JOHN D. DURAND

The earliest census mentioned in Chinese histories is said to have been taken during the reign of Yu the Great, founder of the Hia dynasty, which was supposed to have ruled a part of northern China at some uncertain time in remote antiquity, perhaps two thousand years or more before Christ. According to some sources, Yu found the number of the people to be 13,553,923 (or 13,533,935 etc.), while others give this as the number of households and put the population at 39,220,000. It has been suggested that Han dynasty scholars invented these figures along with other details of the Hia dynasty history.¹

At least by the time of the Chou dynasty (circa 1050-247 B.C.) population censuses and registrations had become normal instruments of public administration in China. Several censuses ordered by Chou rulers are mentioned in the histories, and it is recorded that during this time a system of permanent population registers was established throughout the Chinese empire. But the few Chou dynasty statistics which are quoted in the histories are hardly more trustworthy than the supposed results of Yu the Great's census. The population enumerated in a census around the beginning of the eleventh century B.C. is recorded sometimes as 13,714,923 (or variants such as 13,704,923 and 17,304,923), sometimes 49,232,151 with 13,714,923 as the number of households. Another census taken about 680 B.C. is said to have shown a population of 11,841,923 or variants of this figure. The repetition of the same digits in all these numbers suggests that they might all have been derived by garbled transcription and varying interpretations from a single parent number.

Statistics which are worth more serious consideration begin in A.D. 2, just before the end of the Western Han dynasty, and continue with some long interruptions until 1953, when the latest census was taken on the mainland of China. During the fifteenth century, under the rule of the Ming dynasty, the statistics came to be recorded annually, and this practice was continued under the Ch'ing dynasty from the mid-seventeenth to the mid-nineteenth century. Two figures relating to the population are found for most dates prior to the Ch'ing period: numbers of persons and households ("mouths" and "doors"), although in some cases one figure or the other is lacking. The Ch'ing dynasty statistics refer almost exclusively to persons, but, on the other hand, for most years they are recorded by provinces, while the earlier series, with few exceptions, are limited to totals for the whole empire.

The statistics are found in many different kinds of sources, including contemporary and later encyclopædias, histories, geographies, etc., as well as the dynastic archives. For one not specialized in the study of Chinese historical materials, the practical sources are the works of certain modern scholars who have assembled

¹ On the Chinese population statistics prior to the Han dynasties, see Liu Nan-ming (22), chapter 1 H. Bielenstein (2), p. 126.

the figures for the whole period since A.D. 2 or for particular dynasties.² Selected figures from the latter works are reproduced in the tables of the present article to show the trends of the statistics during each dynastic period.

RELIABILITY AND SCOPE OF THE STATISTICS

These statistics are full of faults which make it obviously impossible to put much confidence in them as measures either of the exact size of the population at any time or of its changes during any period. Their ups and downs are often patently incredible, and the numbers of persons and households are sometimes inconsistent. Conflicting figures for the same date are found in different sources, and when statistics are given for parts of the country they do not always add to the totals recorded for China as a whole. In many cases it is apparent that the numbers have been corrupted in the course of repeated transcriptions by persons who were not sufficiently careful with figures, and the resulting errors sometimes run into millions. Modern scholars have been able to emend some of the errors by comparing figures for different years and from different sources, checking sums, etc., but other errors certainly remain undetected, and in some cases it is hardly possible to choose between contradictory data. If the figures have any value it is only to show the general form of the long-term trends of China's population through the centuries, and even in this respect they may be affected by major biases. Still they deserve more attention than they have received, as the only series of statistics on the population of any country that can be traced back more than a century or two into the past.³

Some historians have held that the early Chinese statistics did not refer to the total population but only to taxpayers or persons who were liable to military service or *corvée* duty.⁴ In fact, it is known that the statistics of the early Ch'ing dynasty (A.D. 1651-1734), represented some kind of tax-units, and that it was only after 1740 that the Ch'ing government made an effort to register and count the whole population. Also, as Professor Ho Ping-ti has shown,⁵ the Ming dynasty statistics during the fifteenth, sixteenth, and early seventeenth centuries came to be based less and less on population records and more and more on records of conventionally defined tax-paying units which bore little relation to the numbers, either of total population or of individuals in the taxable age-group. The evidence regarding the definitions of the statistics of earlier dynasties is not so clear, but the works of Giles and Bielenstein have made it appear that the figures on record from the first to the fourteenth century were not, as a rule, limited to taxpayers or persons liable to military or *corvée* duty. Before going further, it will be well to review briefly the evidence on this point.

² Liu Nan-ming (22) presents a series from the beginning up to the year 1928. Biot (3) lists most of the figures on record up to the sixteenth century. Abridged series are shown in: Sacharoff (29), Rockhill (28), Fitzgerald (12), and Usher (39). The following works contain more detailed compilations and analyses of the statistics for certain periods: Bielenstein (2), Balázs (1), H. Franke (14), Shigeshi, Kato (30), Eichhorn (10a); van der Sprenkel (40), Ho Ping-ti (17), Chen Chang-heng (7); Krotewitch (18), Irene Taeuber and Wang Nai-chi (33), Institute of Economic Research, Academia Sinica (16).

³ Figures purporting to represent the population of Japan go back to the seventh century A.D., but they are highly questionable prior to the eighteenth century. See Taeuber (31), chapters 1 and 2.

⁴ For instance, Fitzgerald (12).

⁵ (17).

In the first place, a document has been found which contains a fragment of the record of a census or registration in the Western Liang State, dated A.D. 416. The members of each household in the village of Kao-chang, commandery of Tun-huang, in the present province of Kansu, are listed by name, sex, age, household relationship, and occupation, in a systematic order which is remarkably like that of a modern census. Women, children, and the aged are included. For example, one household is listed as follows:⁶

Pei Pao, a soldier, aged 66
 his wife, Yuan, aged 63
 their son, Chin, aged 39
 Chin's younger brother, Lung, aged 34 (?)
 Chin's wife, Chang, aged 36
 Lung's wife, Su, aged 22
 Chin's son, Yang, aged 2

The numbers of adult males in the household (2), younger adult sons (1), boys (1), females (3), and the total number of persons (7) are also noted. It should be observed that Pei Pao, as a soldier, would presumably have been exempt from taxation and other duties.

This seems to be the only fragment of a census record prior to the fourteenth century which has been found. It was preserved thanks to some Buddhist texts having been written afterwards on the back of the sheet. But from the beginning of the Ming period, fragments are extant from a census, which was ordered to be taken throughout the empire in the year 1370, and these, too, show that women, children, and the aged were enumerated. For example, one household is listed as follows:⁷

Chang Te-ssu, aged 34
 his wife, Sung Ta-niang, aged 26
 their son, A-kou, aged 1
 their daughter, A-sheng, aged 4

Second, for two years of the T'ang dynasty, A.D. 754 and 755, the numbers of taxpaying and tax-free persons and households are recorded along with the usual totals of persons and households, as follows:⁸

		A.D. 754	A.D. 755
Persons	...	52,880,488	52,919,309
Taxpayers	...	7,662,800	8,208,321
Tax-free persons	...	45,218,480	44,700,988
Households	...	9,069,154	8,914,709
Taxpaying households	...	5,301,044	5,349,208
Tax-free households	...	3,886,504	3,565,501

The totals of "persons" and "households" are intended, obviously, to be the sums of the taxpaying and tax-free groups, although there are some dis-

⁶ A full translation is given by Giles (15).

⁷ Librarian of Congress (38), p. 159. For another example see Ho Ping-ti (17), p. 6.

⁸ Balázs (1), pp. 14-15.

crepancies due to errors in transcription. The meaning of the figures for "taxpayers" and "taxpaying households" is uncertain. We are informed that males and females between the ages of 23 and 60 years were required to pay poll-taxes at this time,⁹ but the ratio of taxpayers to total persons in the above tabulation is much too small to represent the expected proportion of this age group in the population.¹⁰ Apparently more than half the persons of the stated age group either claimed exemption for various reasons or otherwise avoided registration as taxpayers. But it is nevertheless evident that the numbers of "persons" and "households" recorded in these two years were not limited to taxpayers; and since they belong to a consistent series extending from A.D. 705 to 755, it follows that this whole series of T'ang dynasty statistics was not limited to taxpayers. (See Table 2, p. 223.)

Third, the ratios of persons per household derived from the statistics of the various dynasties are generally somewhere near the levels which might be expected if all household members were included in the counts of persons, and these ratios are too high to be plausible on the assumption that only taxpayers were counted. In recent times the average size of Chinese households has apparently been somewhere in the vicinity of six persons or perhaps slightly smaller,¹¹ and this is in line with the averages for other Oriental countries where the birth rate is high and a fair-sized minority of the population is found in extended households (married sons, daughters-in-law, grandchildren, and other relatives sharing the patriarchal home). The averages obtained from the statistics of the various dynasties (all years for which both numbers of persons and households are recorded) fall within the following ranges:

	Persons per household		
Western Han (A.D. 2)	4·9
Eastern Han (A.D. 57-156)	4·9-5·8
Sui (A.D. 606)	5·2
T'ang (A.D. 705-755)	5·7-6·0
Sung (A.D. 1006-1223)	1·4-2·6
Chin (A.D. 1187-1207)	6·4-6·7
Yuan (A.D. 1290-1292)	4·5-4·6
Ming (A.D. 1381-1626)	4·8-7·1

The Sung dynasty statistics are a special case; their interpretation will be discussed in a later section of this article. For the other dynasties, if the statistics of persons are taken to refer only to taxpayers, they imply averages of ten to twenty or even twenty-five persons, including non-taxpayers, to the household,

⁹ Bielenstein (2), p. 130.

¹⁰ The ratio of taxpayers to persons is 14·5% for A.D. 754 and 15·5% for 755, whereas the ratio of persons aged 23 to 60 in a population of high fertility and mortality would normally be somewhere in the neighbourhood of 40%.

¹¹ The incomplete census of 1912 showed an average of 5·5 persons per household in those provinces of China proper which were covered, and a range of provincial averages from 4·5 to 7·6 persons. (See Appendix, Table A.3.) The even less complete census of 1928-1929, in those provinces from which returns were obtained, showed an average of 5·2, and the same figure was deduced by Chen Chang-heng from the 1909-1911 census returns of those provinces for which they were trustworthy in his opinion. The writer has not found a measure of the average size of households in the publications which quote returns of the 1953 census. The censuses of 1909-11, 1912 and 1928-29 almost certainly understated the numbers of infants and women in the households that were enumerated.

depending on the provisions of the tax laws and the frequency of exemptions and evasions in each period. There seems to be no historical evidence to suggest that the size of households had been so much larger in earlier times than recently. Moreover, in the light of the knowledge that the T'ang dynasty statistics were not limited to taxpayers, the comparison of the averages makes it incredible that the figures for the other dynastic periods (except the Sung) were so limited.

The conclusion that the statistics were not limited to taxpayers does not mean that they approximated a measure of the total population. On the contrary, there are several reasons for supposing that in general they fell considerably short of the true totals.

In the first place, up to the time of the Ming dynasty, various parts of the territory now included in the eighteen provinces of China proper were outside the Chinese empire. The areas covered will be indicated below, where the statistics of each period are discussed.

Within the borders of the empire the statistics probably did not, as a rule, include "barbarians", as the Chinese called all non-Chinese peoples. During the early dynastic periods the non-Chinese probably accounted for a substantial part of the population in some parts of the country, especially in the south and along the western and northern frontiers. Some of the Chinese also may have been outside the scope of the statistics, such as nobles, slaves, and inmates of monasteries.¹²

Probably more important than the limitations of coverage were omissions of persons who should have been counted. Experience with efforts to enumerate the population in various parts of China during modern times has shown a strong tendency to overlook women and girls and a certain reluctance to report male children, either because of superstitious fears or the Chinese aversion to bragging about good fortune, especially to strangers. It is not likely that the early statistics were unaffected by these tendencies. Moreover, men who were liable to taxation, military service, or labour draft had good reason to conceal their presence if they could do so, and it was to the advantage of local officials to report the smallest possible numbers in order to minimize their obligation to remit tax-money to the central government. As Wittfogel and Fêng put it, the statistics refer to the admitted population,¹³ and many scholars have suggested that at times when the burdens of taxation and other duties were relatively heavy, the fraction of the true numbers which was reported would diminish.

The instructions for the census of 1370 provide an example of the horrifying penalties which were prescribed for evasion and falsification of the returns:

"On 12 December 1370, the Board of Revenue was informed by Imperial edict, that although the country is now at peace the Government has no clear knowledge of the population. The provincial authorities are therefore instructed to prepare census blanks in duplicate so that a census can be made of the whole Empire. Every revenue official must give notice to the local officials who in turn are to see that all the people under them present to those officials a written statement (without any falsifications) of the number of

¹² Bielenstein (2), p. 132, gives some reasons for supposing that slaves and inmates of monasteries were included in the statistics, at least during the T'ang dynasty, but the evidence seems to be inconclusive. On exclusions from the Ming and Ch'ing statistics see Ta Chen (8), p. 3 and Liu Nan-ming (22), pp. 37, 46-7.

¹³ Wittfogel and Fêng Chia-Sheng (45), p. 53.

persons in their households. Each householder is to be given an official blank with a half-seal on each stub which can be detached from the original. Since the military forces of this region are no longer going out on campaigns they are to be sent to every district and department to make a census of the households and to check the duplicate returns. Those households whose tallies agree will be treated as subjects in good standing; if not, the family will be placed on the list of those liable for military service. If in their search the military come across minor officials who have suppressed the facts, those officials are to be decapitated. Any common people who hide from the census will be punished according to law and will be drafted into the army. Let everyone respect this."¹⁴

The term "census", which is ordinarily used in referring to the Chinese enumerations of the population, is not to be interpreted strictly in the modern, technical sense. Although the details of the methods employed in early times are not known, it can be taken for granted that they never approximated the procedures which are recognized in modern times as indispensable for accurate census-taking. Even with the honest and energetic cooperation of the whole public and all ranks of officials it would have been practically impossible to take a strictly accurate census throughout the whole vast country under the conditions which prevailed until very recent times: archaic means of transportation and communications, no adequate maps, an overwhelmingly illiterate population, and no corps of field workers with the necessary organization and training to assure systematic coverage of every part of the area and all the inhabitants. Actually, it was more a method of permanent population registers than of censuses which was used during the Ch'ing and Ming periods, if not also in earlier times. A record of all households and their members was supposed to be kept in each locality and brought up to date periodically by recording the changes due to births, deaths, and inward and outward movements. To maintain an accurate series of statistics by this method requires even more scrupulous care than the census method, for any laxity in the current recording of population changes will result in cumulative errors in the course of time.

For a number of reasons, then, it is practically certain that the statistics of the early dynasties fell short of accounting for the whole population, or for whatever part of the population they were intended to cover. The degree of understatement cannot be presumed to have been constant, and therefore the statistics do not necessarily provide accurate measures either of the magnitude of the population or its increases and decreases during various periods. It is clear that the deficiencies became very large at certain times when the central government was weakened to such an extent that it could no longer command the cooperation of the provincial or local authorities, or when the administrative system was disrupted by rebellions, civil wars, epidemics, famines, or natural calamities. At such times the statistics show abrupt decreases which greatly exaggerate whatever population losses actually occurred. In times of prosperity and political unity, when the strength of the central government was growing and the efficiency of administrative organization was improving, the statistics show increases which were probably due only partly to actual population growth.

The same presumption of perennial under-reporting in varying degrees does not apply to the statistics of the Ch'ing dynasty after 1740, when the "*pao-chia*"

¹⁴ Librarian of Congress (38), p. 159. Cf. Ho Ping-ti (17), p. 4.

system was established for annual reports on the numbers of the whole population. By this time the former link between population reports and local tax or *corrée* assessments had been severed, and thus the principal motive for evasion and deliberate understatement was removed. But still no adequate administrative machinery was created for accurate record-keeping and compilation of population statistics ; and, as we shall see, the statistics of the Ch'ing dynasty from this time onwards are hardly more reliable than those for earlier periods.

TESTS OF CREDIBILITY AND CONSISTENCY OF THE DATA

Most of the usual tests of the quality of population statistics cannot be applied to the Chinese historical data for lack of the necessary classifications by sex and age groups and complementary statistics of births and deaths. With the material that is available, only a few simple tests are feasible.

In the first place, statistics for geographical divisions can be used, where they are available, to verify that all parts of the country are represented and that the sum of the figures for component areas agrees at least tolerably well with the total recorded for the country as a whole. The tables of the Appendix reproduce the available statistics for provinces from A.D. 2 to 1578 and a selection of those which are available for more recent years.

Second, figures for different dates can be compared to see whether the changes are credible and consistent with what is known of the history of the period. In particular, increases which exceed a maximum credible rate of population growth in the absence of immigration can be taken as presumptive evidence of defective statistics.

Material for a third test is supplied by the ratios between the numbers of persons and households shown in the statistical records. If the data were accurate, these ratios should be stable; they should increase or decrease only slightly over short periods. Large changes in the course of time and large differences between the ratios for different parts of the country at any time, should be explainable in terms of the factors which influence the size of households, namely fertility, mortality, migration, and customs relating to household composition. Otherwise errors are to be suspected either in the enumeration of persons or of households, or both. Because of the obstacles to complete recording of household members, wherever the ratio of persons per household appears unduly low, an understatement of the number of persons is to be suspected.

Applications of these tests to the statistics of the various dynastic periods will be discussed below. In addition, comparisons with other statistics found in the ancient Chinese records may possibly give some indication of the plausibility of the population figures, but efforts to test the data by these means have not been very fruitful as yet. Statistics of the area of cultivated land are recorded for many years from the time of the Han dynasty, but these statistics appear to be very unreliable. Amounts of cultivated land per person, computed from these statistics and the recorded population figure show erratic variations which are at least as likely to have been caused by errors in the land statistics as in the population statistics.¹⁵ Historical data on the construction of city walls are

¹⁵ These data were presented and analyzed by D. K. Lieu and Chen Chung-min (21).

also available from a seventeenth-century encyclopædia, which gives the number of city walls built in each province during each historical period since earliest times, and the number still in use in 1644. The author has experimented with the use of these data to estimate the number of cities at various dates between A.D. 2 and 1644, and so to check the plausibility of the population statistics, but the results were inconclusive.¹⁶

HAN DYNASTY STATISTICS

The population of China during the Western and Eastern Han dynasties (206 B.C.–A.D. 220) is represented by statistics for ten dates in the period from A.D. 2 to 156. The numbers of persons and households on record for those dates are listed in Table 1.¹⁷ Other censuses must also have been taken during the time of the two Han dynasties, but the results have been lost.

Statistics for geographical divisions of the empire are available for two dates in the Han series: A.D. 2 and 140. Bielenstein has succeeded in mapping the areas for which figures were given, by a painstaking search through the records of ancient place names and their changes in the course of the centuries. Thus he was able to chart the distribution of population in China as of A.D. 2 and 140, and also to estimate the numbers of households and persons within the area of each modern province. His estimates for the provinces are reproduced in the Appendix, Tables A.1 and A.2.¹⁸

Table 1. *China: Recorded Population Statistics, A.D. 2–156*

Year (A.D.)	Persons	Households	Persons per Household
2 ...	a59,594,978	a12,233,062	4·9
57 ...	21,007,820	4,279,634	4·9
75 ...	34,125,021	5,860,572	5·8
88 ...	43,356,367	7,456,784	5·8
105 ...	53,256,229	9,237,112	5·8
125 ...	b49,690,789	9,647,838	5·2
140 ...	c49,150,220	c9,698,630	5·1
144 ...	49,730,550	9,946,919	5·0
145 ...	49,524,183	9,937,680	5·0
146 ...	d47,566,772	9,348,227	5·1
156 ...	e56,486,856	e10,677,960	5·3

SOURCE : Bielenstein (2), p. 126, where the Chinese sources are cited. The average numbers of persons per household have been computed by the present author.

a The totals which Bielenstein obtained by adding the statistics for minor administrative divisions were 57,671,400 persons and 12,366,470 households.

b Liu Nan-ming (22) quoted 48,690,789 from a different source.

c See the discussion of the totals which Bielenstein obtained by adding the statistics for minor administrative divisions, p. 219 below.

d Lao Kan (19), p. 86, quotes 61,986,224 for this year.

e In addition to these figures Liu Nan-ming (22) quoted 50,066,856 persons and 16,070,906 households, from a different source.

¹⁶ For an attempt to derive an estimate of China's population in A.D. 618 from the data on city wall building, see Fitzgerald (11).

¹⁷ The series presented here is the one shown by Bielenstein (2), p. 126. The figures quoted by Biot, Sacharoff, Liu Nan-ming, and others for the same dates differ in some instances, as they were from different sources.

¹⁸ Bielenstein's charts of population distribution are appended to his article (2), plates II and III. He was kind enough to give his unpublished estimates of provincial totals to the author.

For A.D. 2 there was a sizeable discrepancy between the sums of the figures for local areas (57.7 million persons and 12.4 million households) and the recorded totals for the empire as a whole (59.6 and 12.2 millions). The totals obtained by adding the local figures are probably more reliable.¹⁹ For A.D. 140 an exact check is not possible because statistics were missing for 3 of the 103 commanderies and "vassal kingdoms" which made up the empire. About 1.2 million persons were recorded in these three areas in A.D. 2.²⁰

The totals for both A.D. 2 and 140 included some areas in Manchuria, Korea, Mongolia, Turkestan, and Viet-Nam, in addition to areas within the present boundaries of the 18 provinces of China proper. In A.D. 2 the number of persons recorded in these outlying areas came to a total of about 2.5 millions. On the other hand, the present province of Fukien, in China proper, was outside the empire and not represented by the statistics of either A.D. 2 or 140.

Comparing his population maps for these two years, Bielenstein found that the indicated shifts of population were generally consistent with the record of historical events during the interval.²¹ The north-western border regions (modern Kansu, Shensi, and Shansi Provinces) were largely depopulated, mainly as a result of Hun and Tibetan invasions. Large decreases took place also on the Great Plain of north-central China, especially in Shantung and Honan; Bielenstein interpreted them as the result of flood damage and internal fighting, but it appears that they were in line with a long-term trend (see Tables A.1 and A.2). The depopulation of the north was partly offset by increases in the south, especially Kiangsi, Hunan, Kwangtung, and Yunnan, where extensive Chinese colonization took place during this period.

A study of the changes in the recorded population totals for the whole empire reveals that the number of persons must have been greatly understated in A.D. 57. For A.D. 57 the recorded total of 21 millions is 38.6 millions less than the total for A.D. 2 and 13.1 millions less than the total for A.D. 75. If these figures were correct, they would mean that the population increased between the years 57 and 75 at an average annual rate of 27.3 per 1,000, which rivals the present rates of growth in those countries where the birth rate is highest and where the death rate has recently been cut very low by applications of modern medical science. It is beyond belief that such a rate of increase could have been achieved in ancient China in the face of the death rates which must have prevailed in the dense agricultural settlements with no adequate protection against infectious diseases. Only immigration on a large scale could have brought about a population increase at the rate which the statistics show, and there is no indication of immigration on such a scale having taken place during this or any other period of China's history.

¹⁹ As Bielenstein implied (2), p. 128, the cause of the discrepancy was probably faulty addition at the time when the statistics for the whole empire were originally compiled. It is possible, however, that the original additions were correct and that the discrepancy was caused by subsequent mistakes in copying the figures for local areas. If so, the empire totals as originally recorded would, of course, be preferable to the sums of the local figures.

²⁰ The totals of the local statistics for A.D. 140, without the three missing commanderies, were 48 million persons and 9.5 million households, whereas the recorded totals for the empire were 49.2 and 9.7 millions. It is difficult to agree with Bielenstein when he substitutes the totals by addition, instead of the originally recorded totals, without any allowance for the population of the missing commanderies.

²¹ *Ibid.*, pp. 139-142.

It is quite likely that some decrease of population did take place between A.D. 2 and 57, in view of the calamities which China suffered during this period. In the year 9 a usurper seized the throne, and under his rule the long peace and prosperity of the Western Han empire came quickly to an end. Ten years later a great peasant insurrection broke out, led by the Red Eyebrows Society, and spread death and destruction through the Yellow River Valley. To make matters worse, in a series of catastrophes which began soon after A.D. 2, the Yellow River broke its dykes and set out on a new course across the plain of Shantung, creating what is known as one of the most disastrous floods in Chinese history. In A.D. 23 a successor of the Han line recovered the throne, and the Eastern Han dynasty was founded. The new emperor took up the long task of bringing the rebels and the river under control; but in the meantime Huns and Tibetans mounted invasions from the north and west, and many decades passed before peace could be restored. It is likely that in the year 57 the empire was not yet under firm enough control to make it possible to carry out a complete census in all the commanderies, and therefore the result of this census was a considerable understatement of the population and an exaggeration of the decrease since A.D. 2.

A question can also be raised about the completeness of enumeration in the census of A.D. 75, since the average annual rate of increase shown by the figures for the years 75 and 88 is also suspiciously high, amounting to 19 per 1,000 population per annum. Is such a rate of increase credible under the conditions which can be assumed to have prevailed in ancient China?

During peaceful years that were relatively free of epidemics, floods, droughts, and other natural disasters, we may assume that the mortality rates were normally such as to yield an expectation of life in the neighbourhood of 30 years or less. This figure is consistent with the life tables for India during the early decades of the twentieth century and with the evidence as to mortality in the Roman Empire derived from the tombstone inscriptions of ages at death. A stable population with such mortality rates and a gross reproduction rate of 3 (which is near the highest level of fertility on record in modern times for countries at a low standard of health) would have a birth rate near 50, a death rate near 35, and an annual rate of natural increase approximating 15 per 1,000.²² Thus, if the increase shown by the Chinese statistics for any two dates exceeds an average annual rate of about 15 per 1,000, and unless there is evidence of substantial immigration during the interval,²³ there is cause for suspicion that the enumeration at the earlier date was less complete, more narrowly defined, or covered a smaller area than the later enumeration. This criterion is applicable to the statistics of all dynastic periods up to and including the Ch'ing, for there is little reason to suppose that any great progress in the control of infectious diseases was achieved in China until very recent times.

The growth of population indicated by the statistics between A.D. 75 and 88 is moderately in excess of this assumed maximum rate, and therefore some

²² United Nations (36), p. 42.

²³ In general the factor of immigration can be neglected in considering the statistics of China as a whole, for there has been no period in Chinese history when immigration was large enough to have a major effect on the growth of population in the whole country.

deficiency in the census of the year 75, over and above the extent of deficiency that was normal in the Han dynasty censuses, is to be suspected. The smallest number of persons in that year which would be consistent with the recorded total for A.D. 88 and a rate of increase not exceeding 15 per 1,000 per annum is approximately 36 millions, or 2 millions more than the recorded number. The corresponding minimum for A.D. 57 is 27 millions, or 6 millions more than the total on record for that year.

If the census of A.D. 75 was defective, it was mainly because of omissions of whole households or whole areas, rather than of individuals within the enumerated households, for the average number of persons per household shown by the statistics of this year was comparatively large. If any of the Han dynasty censuses were much affected by underenumeration of individuals in enumerated households, they would be the censuses of A.D. 2, 57, and 125-156, which showed averages in the low range of 4.9 to 5.3 persons per household, whereas the average for A.D. 75, 88, and 105 was 5.8 persons. To be sure, the statistics show rapid population growth during A.D. 75-105, contrasting with slow growth or decline during A.D. 2-57 and 125-146, and for this reason a somewhat smaller average size of households would be expected during the latter periods. But the ups and downs of the average are too abrupt to be explained by variations of the vital rates.²⁴ Furthermore, the figures for A.D. 156 do not fit this pattern; the statistics show an average of only 5.3 persons per household in that year, although the population appears to have been increasing rapidly since A.D. 146. It is therefore likely that the apparent changes in average size of households were due at least partly to less complete enumeration of household members in the years 2, 57, and 125-156 than in 75, 88, and 105.

Geographical variations in the average numbers of persons per household computed from the local statistics also suggest defects in the figures. Bielenstein's estimates for A.D. 2 (see Table A.3) show especially small households in the north, with averages ranging from 4.6 down to 4.0 persons in all provinces north of the Yangtze except Honan. In the southern provinces, except Szechwan, the averages are all on the level of 5.2 persons or higher. Between A.D. 2 and 140, if the statistics are to be trusted, the size of households decreased in every southern province except Kweichow and Yunnan, while in the north the averages increased so that in A.D. 140 their level was considerably higher, on the whole, in the north than in the south. The statistics of the T'ang dynasty, A.D. 742, show a further development of this trend. For that year averages of 5.6 persons per household or more are shown by the statistics for all the northern

²⁴ It is true that large variations of the birth rate would produce considerable changes in the average size of households. For instance, if the birth rate dropped suddenly from 40 to 30 per 1,000 and remained at the lower level for fifteen years, other things remaining equal, the average number of children under 15 years of age per household would be reduced by one-fourth at the end of the fifteen-year period, and this reduction would be enough to account for a decrease in the average number of persons per household, for instance, from 5.8 to 5.2. But variations in the rate of population growth in ancient China were almost certainly due as much, and probably more, to changes in the death rate than in the birth rate. An increase or decrease in the death rate would affect the average size of households much less than a corresponding change in the birth rate, as it would probably affect the adult population as well as the children, and so would affect the trend in the number of households as well as the number of household members.

provinces except Kansu, while the averages for the southern provinces, except Kiangsi and Chekiang, now ranged downward from 5·5 to 3·2.²⁵

Bielenstein saw in migration the main explanation of the differences between average sizes of households in different parts of the country and their changes from one census date to another.²⁶ There was an important migration from the north to the south during the Han period, and Bielenstein argued that the migrants were probably drawn chiefly from the poorest classes of the population in the north: households with little or no land, which would have been comparatively small by economic necessity. Thus their departure would have increased the average size of households in the north and reduced it in the south. Further colonization of the south took place during the T'ang dynasty, and Bielenstein took this to explain the further decrease of household size in the south and further increase in the north. He went so far as to use the average number of persons per household as a yardstick of recent migration to or from each area.

Bielenstein's explanation of the behaviour of these averages is questionable for several reasons. In the first place, when emigration occurs, unattached young people are likely to be among the first to move out, such as unmarried sons, whose departure would tend to reduce temporarily the average size of households in the areas of emigration. The emigration of young couples might also have this effect in a society where young people commonly share the homes of their parents after marriage, as has been the tradition in China. The hypothesis that emigration would have raised the average size of households in the north is therefore doubtful. So far as the south is concerned, it is plausible enough that immigration on a large scale would have tended to lower the average, but any great reduction on this account would have been only temporary. Within two or three decades, as the immigrants became established and proceeded with the building of their families, the average size of households in the immigration areas would have tended to return to normal, unless the immigration continued on a constantly increasing scale. For instance, in an area of immigration, if the average were 5 persons per household for non-migrants and 3 persons for migrants at the time of their arrival, it would take a doubling of the population by immigration within a decade or two to bring the average for the whole population down from 5 to 4 persons, and then, unless the population continued to double by immigration decade after decade, the average would tend to return to 5.

The number of persons per household would ordinarily be affected more by variations in the birth rate, in infant mortality, and in the frequency of extended households (married children and grandchildren living with the parents) than by migration. It is possible that in the south, where the density of population was relatively low, the birth rate might have been higher, the infant mortality rate lower, and the frequency of extended households might have been greater than in the more crowded north. The larger average size of households in the

²⁵ The maps appended to Bielenstein's article (2), plates VIII, IX and X show these averages for commanderies in A.D. 2, 140, and 742.

²⁶ *Ibid.*, pp. 142 ff.

south in A.D. 2 might possibly be explained in these terms, but the same explanation would not hold for A.D. 140 or 742, when the statistics show larger households in the north than in the south.²⁷ Averages in the neighbourhood of four persons per household or less are hard to reconcile with a birth rate such as must surely have been the rule in ancient China. Such extremely low averages are shown by the statistics for two northern provinces in A.D. 2 and for several southern provinces in 140 and 742.

All signs point to the conclusion that there was a tendency at each census to omit some members of the enumerated households and that the frequency of omissions varied in different parts of the country, and from one census date to the next. It is therefore possible that accuracy would be improved by discarding the reported numbers of persons and substituting estimates derived from the numbers of households, with the assumption of a constant average size of households near the maximum shown by any of the censuses. The following estimates are obtained by multiplying the recorded numbers of households by 6, after striking out the defective statistics of A.D. 57 and the suspect figures for the year 75:

Year (A.D.)	Millions of persons		
	Empire total		China proper ^a
2	... <i>b</i> 74		<i>b</i> 71
88	... 45		43
105	... 55		53
125	... 58		56
140	... 58		56
144	... 60		58
145	... 60		58
146	... 56		54
156	... 64		62

^a Figures for the years 88-156 estimated by subtracting a constant of 2 millions from the figures for the empire total. This figure of 2 millions appears to be approximately the number which would have been recorded in A.D. 140 in those parts of the empire which were outside the present area of China proper, if returns had been obtained from the areas for which data were missing. The corresponding number recorded in A.D. 2 was 2½ millions according to Bielenstein's estimates.

^b Bielenstein's total of households obtained by adding the figures for the various areas has been taken as the basis of the calculation. If the recorded total were used, the estimate would be 1 million lower.

"China proper", as we use the term in this article refers to the area of the 18 modern provinces listed in Table A.1 (excluding Manchuria, Mongolia, and other outlying areas), so far as it was included in the statistics of each period. As already mentioned, Fukien Province was outside the Han empire.

These estimates are by no means the highest that would be plausible. No correction has been made for the omission of entire households, which was almost certainly an important type of deficiency, nor for the non-Chinese population, most of whom were probably excluded from the statistics. The number of households omitted may have been much larger in some years than in others, and consequently the increases and decreases indicated by the estimates might be either exaggerated or understated.

²⁷ Balázs(1), p. 19, noted that the average size of households shown by the Tang statistics for provinces, ca. A.D. 742, varied directly with the density of population.

STATISTICS OF THE PERIOD OF DISUNITY, A.D. 221-580

During the three and a half centuries after the disintegration of the Han empire, when China was divided among a varying number of lesser empires and kingdoms, the population is represented in the records by only a few statistics showing numbers of persons and households in various parts of the country at widely scattered dates.²⁸ These statistics in general are almost certainly very incomplete, and they are practically worthless for the reconstruction of population trends.

The weakness which was very likely common to all the statistics of this period has been brought out by Bielenstein's analysis of the figures of A.D. 464 referring to the Liu Sung State, which occupied a large territory in southern and central China at that time. The number of persons recorded was only 5.3 millions and the number of households 900,000.²⁹ Bielenstein made a map of the numbers of persons recorded in the component areas, which showed that in the region around Nanking, where the capital was located, the size and distribution of the population were about the same as in A.D. 140; but throughout the rest of the territory the recorded numbers were generally few and far between. Bielenstein concluded: "Either the district officials had control only over the areas in the immediate vicinity of their residential towns, or they did not care to carry out a correct census. In both cases this indicates that the government's influence was limited to a small part of the country".³⁰

SUI AND T'ANG DYNASTY STATISTICS

The population of China as reunited under the Sui dynasty (A.D. 580-618) is represented in the records by the results of only one census, dated A.D. 606.³¹ During the T'ang dynasty (A.D. 618-905) statistics are on record for 27 dates, as listed in Table 2, but only the numbers recorded at eight dates during the interval A.D. 705-755 can be regarded as possibly approximating the population of the whole country.

If the statistics of the early years of the T'ang dynasty could be believed, it would appear that China suffered a catastrophic depopulation at the end of the Sui dynasty, followed by an increase under the T'ang emperors which made good most of the loss in about a hundred years time. The trend is very similar to that of the Han dynasty statistics between A.D. 2 and 105, and the same reservations are required with regard to probable defects of the data. Again, there is reason to believe that some decrease probably occurred, particularly during the period 618 to 623, when the empire was split into countless petty states fighting among themselves. But the small numbers recorded in A.D. 627, 634-643, 650, and 652 were probably not due so much to actual losses of life as to the effects

²⁸ Bielenstein (2), pp. 126, 145, 154-156, quotes various statistics of this period. See also Liu Nan-ming (22).

²⁹ These are presumably rounded totals of the figures recorded for local areas. The totals shown in Bielenstein's table (p. 126) and listed by Liu Nan-ming and others are 4,685,501 persons and 906,870 households.

³⁰ *Ibid.*, p. 145. Wan Kuo-ting (41), (translation, pp. 178-9) quotes the Chinese classic, *T'ung k'ao*, to the effect that the population statistics of this period were understated because the tax rates were high. "Banding together" of households in groups of as many as fifty is mentioned as a device that was used to minimize the numbers reported and to escape taxation and *corvées*.

³¹ Bielenstein (2) and Pulleyblank (27) attribute this census to the year 609, but Balázs and others dated it 606.

Table 2. *China : Recorded Population Statistics, A.D. 606-845*

Year (A.D.)	Persons	Households	Persons per Household
606 ...	46,019,956	48,907,536	5·2
627 ...	—	3,000,000	—
634-643	b12,000,000	2,992,779	4·0
650 ...	—	3,800,000	—
652 ...	—	3,850,000	—
705 ...	37,140,000	6,156,141	6·0
726 ...	41,419,712	7,069,565	5·9
732 ...	45,431,265	7,861,236	5·8
734 ...	46,285,161	8,018,710	5·8
740 ...	48,143,609	8,412,871	5·7
742 ...	c48,909,800	c8,525,763	5·7
754 ...	52,880,488	d9,069,154	5·8
755 ...	52,919,309	e8,914,709	5·9
756 ...	—	f8,018,710	—
757 ...	—	f8,018,710	—
760 ...	16,990,386	g2,933,174	5·8
764 ...	16,900,000	2,900,000	5·8
766-779	—	1,200,000	—
780 ...	—	h3,805,076	—
806-820	—	2,473,963	—
812 ...	—	2,440,254	—
812-824	—	3,944,959	—
825-826	—	3,978,982	—
827-835	—	4,357,575	—
839 ...	—	4,996,752	—
841 ...	—	2,114,960	—
845 ...	—	4,955,151	—

SOURCE : Except as noted, from Balázs (1), p. 14, where the Chinese sources are cited.

a Bielenstein (2), p. 160 obtained a total of 9,067,993 by adding the statistics for administrative divisions, excluding those for which the data were missing or confused, and excluding two commanderies in Turkestan. He dated these figures A.D. 609.

b Bielenstein (2), p. 153. Exact date not determined within the period specified. The total of persons is apparently a rounded sum of figures for administrative areas.

c Bielenstein (2), p. 161 obtained totals of 51,500,000 persons and 8,954,301 households by adding the statistics for administrative divisions, excluding those for which the data were missing or confused and excluding three commanderies in Turkestan. In addition to the totals listed, Balázs quoted from another source 45,311,272 persons and 8,348,395 households, and noted that the total of 8,535,763 households given elsewhere was a misprint.

d From another source Balázs also quoted a total of 9,619,254 households. The figure shown is preferred because it agrees better with the statistics of tax-paying and tax-free households shown on page 211 above and gives an average number of persons per household which fits better into the series.

e Liu Nan-ming (22) quoted 9,919,309 from another source.

f Compare the number recorded for A.D. 734.

g Emended by Balázs from 1,933,174. Statistics refer to only a part of the empire.

h Balázs also quoted another figure of 4,100,000.

of political disintegration and consequent failure to get complete returns from all areas.³²

Between A.D. 705 and 755 to all appearances the census machinery functioned much more effectively ; but after 755 it broke down again. The recorded number of persons dropped from nearly 53 millions in the year 755 to only 17 millions in 760. During this time China was torn by revolts which were suppressed with bloody force, including the notorious rebellion of An Lu-Shan. Many historians have affirmed that 36 million lives were lost as a result of these violent events, but Fitzgerald and others have shown that this is incredible.³³ Even if such a

³² This point is brought out by Balázs (1), p. 17-18. Bielenstein (2), p. 153, argues that the statistics of A.D. 634-643 referred to taxpayers only.

³³ Fitzgerald (12), pp. 142-44; also (13).

huge loss were conceivable, it would be naive to suppose that an accurate count of the survivors could have been carried out in the midst of the ensuing chaos. Actually, the census of the year 760 fell far short of covering the whole empire; Balázs notes that only 169 commanderies—less than half the total of A.D. 754—are represented in the record. It is unlikely that any of the censuses which were taken from this time to the end of the T'ang dynasty approximated complete coverage.

Thus the statistics of A.D. 606 and 705–755 are the only ones in the Sui-T'ang series that are useful for our purpose. The statistics of the two years 606 and 742 deserve special attention as Bielenstein has analyzed these, like the statistics of A.D. 2 and 140, for local areas.

For the year 606, although totals of both persons and households are recorded for the empire as a whole, the local records show only the numbers of households. Bielenstein found that these numbers were reported for all the 190 commanderies which made up the empire at that time, but the total of the local figures was 9,067,993 households instead of the 8,907,536 shown by the record.³⁴ From the fact that numbers of persons for local areas were missing, Bielenstein surmised that only households were enumerated in the Sui census and that the recorded total of 46,019, 956 persons was an estimate. He rejected this figure on the ground that it implied too small an average number of persons per household: only 5·2, whereas the averages shown by the T'ang statistics of A.D. 705–755 were in the range of 5·7 to 6·0. He made a set of local population estimates for A.D. 606 based on the recorded numbers of households and estimated local averages of persons per household, which yielded a total of about 54 million persons and an average of approximately 6 persons per household for the whole empire.^{35,36} Even if the recorded number of persons was not an estimate but the result of a count, its consistency with the figures for the period 705–755 is questionable unless some historical explanation can be found for a considerable increase in the size of households between A.D. 606 and 705.

When Bielenstein checked the local statistics for the year 742, he found that data for a few commanderies were missing, but their population probably did not amount to more than two or three hundred thousand. Even without these commanderies the sums of the local figures considerably exceeded the recorded totals, the totals by addition being 51·5 million persons and 9·0 million households whereas the recorded figures were 48·9 and 8·5 millions.³⁷

³⁴ Bielenstein (2), pp. 160–61. The total obtained by addition does not include two commanderies which were in Turkestan, nor two other commanderies, adjacent to one another, for which the same number of households (2,330) was recorded. Bielenstein thought it improbable that the number of households in these two commanderies was really the same, but he could find no basis for deciding which was in error.

³⁵ The method of estimation is explained *ibid.*, p. 160, and the local population estimates are charted on Plate V, appended to Bielenstein's article.

³⁶ Pulleyblank (27), pp. 172–77, criticized Bielenstein's estimates and made another set which yielded totals of 46,800,000 persons and 9,069,791 households, corresponding to the original average of 5·2 persons per household.

³⁷ Bielenstein (2), p. 161. The unrounded number of households obtained by addition was 8,954,301; Bielenstein gave only the rounded total of persons. Again, the totals by addition do not include three commanderies in Turkestan, nor two other commanderies for which the same number was recorded (9,500 households, numbers of individuals missing). Some estimates and emendations were involved in Bielenstein's calculations.

Comparing his maps of population distribution in A.D. 606 and 742 with each other and with the map for A.D. 140, Bielenstein found that the major changes were generally consistent with historical events. He interpreted the ups and downs of the statistics for the Yellow and Wei River valleys and the regions to the north and west as effects of alternately relaxing and tightening pressure of the Huns, Tibetans, and Turks on the frontiers. (See the figures for Hopei, Shansi, Shensi, Kansu, and Szechwan in Tables A.1 and A.2.) He also explained the variations in population growth in the south as results of alternating migrations from south to north and north to south, which were related to the retreats and advances of the invaders on the northern and western borders.³⁸

For certain areas, the increases and decreases shown by the statistics are rather startling ; but historical evidence might make them appear credible enough. For instance, in the eastern coastal area which corresponds to the modern province of Chekiang, Bielenstein's approximate allocation of the recorded numbers of households shows a sharp drop between A.D. 140 and 606 followed by a ten-fold increase between 606 and 742. On the face of it the trend gives some cause for suspecting a major deficit in the enumeration of A.D. 606 in this area; but Chekiang is known to have been gaining rapidly in economic importance during the T'ang period. Similar but less extreme variations are shown by the statistics for Kiangsi and Hunan. As already stated, the behaviour of the average numbers of persons per household computed from the local statistics gives reason for suspecting major defects of enumeration in some areas.

In general the scanty evidence as to the quality of the statistics is consistent with the hypothesis that the Sui and T'ang censuses, like those of the Han dynasty, generally understated the numbers of the people, in varying degree from year to year and from area to area within the country.

Assembling the recorded total and Bielenstein's estimate for the number of persons in A.D. 606, Bielenstein's total by addition of the local statistics for A.D. 742, and the totals for other years in the period 705-755, we obtain the following series:³⁹

Year (A.D.)	Millions of persons		
	Empire total	China proper ^a	
SUI DYNASTY :			
606, as recorded	...	46	46
606 Bielenstein's estimate	...	54	54
T'ANG DYNASTY :			
705	...	37	37
726	...	41	41
732	...	45	45
742	...	52	51
754	...	53	52
755	...	53	52

^a Estimates obtained by deducting a constant 0.5 million from the empire total before rounding ; this being the approximate number of persons recorded in outlying areas of the empire in both A.D. 606 and 742 as indicated by Bielenstein's figures. See Tables A.1 and A.2.

It should be noted that the part of China proper which was included in the Sui and T'ang empires was smaller than the part held by the Han emperors, as

³⁸ Bielenstein (2), pp. 145-51. See also Balázs (1), pp. 18-19 ; Pulleyblank (27), pp. 172-177.

³⁹ Figures for A.D. 734 and 740 are omitted because they cannot be reconciled with Bielenstein's total for A.D. 742 obtained by addition of the local statistics, and with the criterion of an annual rate of population growth not exceeding 1% per 1,000.

it did not include Yunnan and Kweichow. Yunnan was an important loss; more than 2 million persons were recorded there in A.D. 140.⁴⁰ Fukien, on the other hand, was now partly settled by Chinese and included in the Sui and T'ang empires.

SUNG AND CH'IN DYNASTY STATISTICS

A gap of 118 years lies between the last statistics of the T'ang dynasty and the beginning of the Sung dynasty series. During the latter part of this interval, after the T'ang dynasty fell, China was again split into several states. The area reunited under the rule of the Sung in A.D. 980 was smaller than the T'ang empire. Yunnan and Kweichow were still not included, and a part of the Yellow

Table 3. *China : Recorded population statistics, A.D. 996-1103*

Year (A.D.)	Persons	Households	Persons per house- hold	Year (A.D.)	Persons	Households	Persons per house- hold
996	—	3,574,257	—	1064	f28,823,252	12,489,481	2·3
997	—	4,132,576	—	1065	f29,077,273	12,904,783	2·3
1006	16,280,254	7,417,507	2·2	1066	f29,092,185	12,917,221	2·3
1014	21,996,965	9,055,729	2·4	1069	b23,068,230	b14,414,043	1·6
1019	19,471,556	8,545,276	2·3	1072	b21,867,852	b15,091,560	1·4
1020	22,717,272	9,716,712	2·3	1075	b23,807,165	b15,684,129	1·5
1021	19,930,320	8,677,677	2·3	1077	30,807,211	14,245,270	2·2
1023	22,455,859	9,898,121	2·3	1078	b24,326,102	b16,492,631	1·5
1029	26,054,238	10,562,689	2·5	1080	g33,303,889	g14,852,684	2·2
1031	b18,936,066	9,380,807	2·0	1083	b24,966,300	b17,211,713	1·5
1034	26,205,441	10,296,565	2·5	1086	40,072,606	17,957,029	2·2
1042	c22,926,101	10,307,640	2·2	1088	42,163,017	18,289,375	2·3
1045	b21,654,163	10,682,947	2·0	1091	41,492,311	18,655,093	2·2
1048	b21,730,064	10,723,695	2·0	1094	42,566,243	19,120,921	2·2
1050	b22,057,662	10,747,954	2·1	1097	43,411,066	19,435,570	2·2
1053	b22,292,861	10,792,705	2·1	1099	44,364,949	19,715,555	2·3
1058	b22,432,793	10,825,580	2·1	1100	44,914,991	19,960,812	2·3
1061	b22,683,112	11,091,112	2·0	1102	b45,324,154	b20,264,307	2·2
1063	f26,421,651	12,462,310	2·1	1103	45,981,845	20,524,065	2·2

SOURCE : Eichhorn (10a), where the Chinese sources are cited. Eichhorn also quoted numbers of households for certain years in the period A.D. 963-979, ranging from about 1,100,000 to 3,800,000 which referred to an expanding fraction of the subsequent Sung Empire ; also numbers of persons and households for the years 1108 and 1109, which were shown to have been calculated from an incomplete record of increases since 1103.

a Eichhorn also quoted, from another source, 10,162,689 households.

b Eichhorn believed that these figures did not come from the same lists as the figures for other years.

c Eichhorn also quoted, from another source, 20,524,735 persons and 7,436,018 households.

d Eichhorn also quoted, from another source, 21,836,004 persons.

e Eichhorn also quoted, from another source, 22,442,791 or 23,442,791 persons.

f These figures are designated as numbers of "ting" and are apparently more narrowly defined than the numbers of "k'ou" which are listed under "persons" for other years.

g Quoted by Eichhorn as "verbesserte Ziffern". Eichhorn stated that the source listed the corresponding figures for each province, and that the totals obtained by addition of the provincial figures were 33,151,989 "k'ou" and 14,525,264 households.

h Eichhorn also quoted, from another source, 43,820,769 persons and 20,019,050 households.

⁴⁰ According to Bielenstein's estimate the figure for A.D. 2 was about 600,000. Two millions seems a surprisingly large number of Chinese to be found in this remote region during the time of the Eastern Han Dynasty. Lao Kan, "Population and Geography in the two Han Dynasties" (19), (translation, p. 100) holds that this was a conquered non-Chinese population, and that it was located partly in territory now belonging to Burma.

River region also escaped the grasp of the Sung. The latter area belonged to the Liao empire, a powerful military state which was formed in the north early in the tenth century, including large parts of Mongolia and Manchuria, part of northern Shansi, and about half of modern Hopeh province, with Peking as one of its two imperial capitals.⁴¹

The population statistics of the Sung dynasty from A.D. 996 to 1103 are reproduced in Table 3. As no statistics for divisions of the Sung empire have been found in the European-language works consulted by the author⁴², the geographical coverage of the totals is unverified. In view of the trend of the totals, it is practically certain that the enumerations of households in A.D. 996, 997 and 1006 were incomplete.

The Sung statistics are unique in that they show very small average numbers of persons per household, ranging in most years from only 2·0 to 2·3 persons. Although it is possible that these incredibly low ratios are due to an exaggeration of the number of households,⁴³ the more probable explanation seems to be that the statistics of persons were limited to the male sex.⁴⁴ It is unlikely that even the males were completely enumerated, for when the numbers of persons are multiplied by two to make allowance for the females, the resulting average numbers of persons per household (4·0 to 4·6 for most years) are still too small to be easily credible.

The series of statistics shows numerous irregularities which are probably due in some cases to variations of the definitions and in other cases to defects of coverage. The numbers of persons are more erratic than the numbers of households. On the whole the numbers of households follow a strong upward trend with an average annual increase of nearly 8 per 1,000 over the whole period A.D. 1006-1103 and almost 14 per 1,000 during 1048-1086. Population estimates calculated by multiplying the numbers of households by the assumed average of six persons indicate that the population was about 55 millions at the beginning of the eleventh century and increased to about 120 millions during the next hundred years. This great increase, carrying the population for the first time high above the mark recorded in A.D. 2, has been interpreted as the result of a long period of peace and outstanding achievements in the economic sphere, including an extensive development of irrigation works and expansion of settlement in the south. Although statistics by provinces are lacking, a large part of the population growth during this period is said to have taken place in the Yangtze valley provinces.⁴⁵

⁴¹ A map of the Liao empire is shown in Wittfogel and Fêng (45), at the end of the volume.

⁴² Eichhorn (10a) refers to a work by Yüan Chen in Chinese, published in Peking in 1957, which contains tables of Sung statistics by provinces.

⁴³ This was the opinion of Sacharoff.

⁴⁴ Giles (15), pp. 481 ff. argues persuasively that this was so. Krotevich (18), p. 32, states that the Sung statistics of persons referred to "men who were able to work". Ho Ping-ti, "Early-ripening rice in Chinese history" (16), p. 206, footnote, refers to the conclusion of Shigeshi (30) (in Japanese) that the Sung statistics of persons were much too low while the household figures were relatively reliable. On the other hand Eichhorn (10a) held that the number of households was exaggerated and the number of persons understated: he thought that the population of the Sung period could be estimated approximately by increasing the numbers of persons by one-fourth.

⁴⁵ Ho Ping-ti (16), p. 206, says that between A.D. 754 and the early twelfth century, the population of the "southern provinces" roughly tripled. The data on city-wall building, however, do not indicate any unusually rapid growth of the number of cities in China as a whole during the Sung period. See Li Chi, (20), Chapter III.

Early in the twelfth century the Jurchen people of Manchuria gained control of the Liao empire and in A.D. 1126 they took the whole Yellow River basin from the Sung, forming an empire which was ruled for the next hundred years by the Ch'in dynasty, forebears of the Ch'ing (Manchus) who conquered China in the seventeenth century. The Sung retired to the south and continued to rule there until, during the thirteenth century, first the Ch'in and later the Sung succumbed to the Mongol power. Table 4 shows a selection of the statistics which are on record for the Southern Sung and Ch'in empires in the twelfth and thirteenth centuries.

Table 4. *China : Recorded population statistics, A.D. 1160-1223*

Dynasty and year (A.D.)	Persons	Households	Persons per Household
Southern Sung :			
1160	19,229,008	11,575,733	1·7
1170	25,971,870	11,847,385	2·2
1180	27,020,689	12,130,901	2·2
1193	27,845,085	12,302,873	2·3
1223	28,320,085	12,070,801	2·2
Chin :			
1187	44,705,086	6,789,449	6·6
1190	45,447,900	6,939,000	6·5
1195	48,490,400	7,223,400	6·7

SOURCES : For Southern Sung, Eichhorn (10a); for Chin, Liu Nan-ming (22). Sacharoff (29) gives almost the same figures as Liu Nan-ming.

After the partition the Sung statistics continued as before with ratios of about two persons per household while the ratios shown by the Ch'in dynasty statistics exceeded six persons per household. If the true average size of households in the Southern Sung empire is taken as 6 persons, the population of that area at the end of the twelfth century can be estimated at roughly 75 millions and the total for the combined territories of the Sung and Ch'in comes to almost 125 millions. This is about the same as the estimate for the early years of the twelfth century, prior to the partition; thus a stabilization of population after the rapid growth of the eleventh century is suggested.⁴⁶ The most remarkable feature of these estimates is that a larger total is obtained for southern than for northern China, whereas under the T'ang, Sui, and Han dynasties the statistics showed a large majority of the population in the north.⁴⁷

YUAN (MONGOL) DYNASTY STATISTICS

The Ch'in empire fell to the Mongol Chingis Khan early in the thirteenth century, and in the year 1280 Kublai Khan also took over the Sung territory and

⁴⁶ It should be recalled that the Ch'in empire included large areas in Manchuria and Mongolia, outside the boundaries of modern China proper, but the population of the Manchurian and Mongolian portions probably did not exceed 5 millions.

⁴⁷ See Table A.1. The Southern Sung empire comprised approximately the area of the present provinces of Chekiang, Kiangsi, Hupeh, Hunan, Szechwan, Kwangsi, Kwangtung, and Fukien plus substantial parts of Anhui and Kiangsu and smaller portions of Shensi and Kansu. It is a fair estimate that the population recorded in this whole area at the T'ang census of 742 was no more than about 20 millions out of the total of 51 millions for the whole territory of the T'ang dynasty in China proper. A map showing the boundary between the Sung and Ch'in will be found in Sun E-tu Zen and John de Francis, *Chinese Social History* . . . (1956).

became emperor of all China. The population of China under Mongol rule is represented by the results of five censuses which are listed in Table 5. The population of areas beyond the Great Wall was not included in these figures; the Mongols took censuses in their Central Asian dominions, but the results were recorded separately.⁴⁸

Table 5. *China : Recorded Population Statistics, A.D. 1290-1330*

Year (A.D.)	Persons	Households	Persons per Household
1290	<i>a</i> 58,834,711	13,196,206	4·5
1291	<i>b</i> 59,848,964	13,430,322	4·5
1292	<i>c</i> 53,654,337	11,638,281	4·6
1294	—	14,002,760	—
1330	—	13,400,699	—

SOURCES : Franke (14), pp. 128-29 ; Liu Nan-ming (22), p. 30. Franke and Liu Nan-ming quote the Chinese sources. Franke also quotes a series of statistics for northern China under Mongol rule during A.D. 1235-1275 and a dubious total of 60,491,230 persons dated 1362.

a According to Fitzgerald (12), p. 147, it was recorded that this total did not include "those who had taken refuge in the mountains and rebels still in arms".

b Including 429,118 "wanderers" and 213,148 Buddhist priests. Liu Nan-ming gives the number of persons for this year as 60,277,982.

c Franke suggests that these statistics might have referred only to the agricultural population. Another possibility is that they were limited to southern China.

It will be observed that the household statistics of the Mongol period are on a much lower level than those of the Sung and Ch'in dynasties at the end of the twelfth century, and the numbers of persons recorded in A.D. 1290 and 1291 are only about one-half as large as the estimate for the combined Sung and Ch'in empires in 1193-1195. But if there was actually a decrease of population during this interval, the statistics almost certainly exaggerate it, for there are several kinds of evidence to show that the enumerations during the Mongol period were very incomplete.

In the first place, not all areas of China proper were covered by the Mongol censuses. Sacharoff found statistics for small areas listed in a geography of China under the rule of Kublai Khan and discovered that for many areas no statistics were shown, or only the numbers of households or taxpayers were listed, without the numbers of persons. Yet by adding these figures, Sacharoff obtained totals of 59,908,969 persons and 13,689,294 households, which are close to the recorded totals for A.D. 1291.⁴⁹

For the years 1290 and 1291 we have separate numbers of households for northern China and the former Sung empire in southern China:⁵⁰

	A.D. 1290	A.D. 1291
Total ...	13,196,206	13,430,320
Northern China ...	1,355,406	1,999,444
Southern China ...	11,840,000	11,430,878

⁴⁸ Sacharoff (29), p. 167. Cf. Franke (14), pp. 128-129. Liu Nan-ming was apparently wrong in saying (p. 32) that Mongolia was included.

⁴⁹ Sacharoff (29), p. 169. Cf. Liu Nan-ming (22), p. 31.

⁵⁰ Figures quoted by Franke (14), pp. 128-129. The figure attributed to northern China in 1291 referred to "the interior" and the territories of Szechwan and Kuang-huai.

For southern China the numbers are not much lower than those which were recorded for the Sung empire in A.D. 1166-1223.⁵¹ But for the north the statistics show an appalling decrease from the 7·2 million households recorded under the Ch'in dynasty in A.D. 1195. A considerable decrease of population in the north might have been caused by the struggle between the Chinese and the Mongol invaders, the conversion of farmland to pasture, and emigration of farmers to the south. Still, the sheer magnitude of the decrease in the north, not balanced by any corresponding increase in the south, creates a suspicion that the census in the north was very defective. In any event, the numbers of households recorded for the north in the years 1290 and 1291 are incompatible, and the arrangement of digits in the figure for 1291 is highly suspicious.⁵²

The Mongols apparently adopted a broader definition of "persons" than the Sung employed, but still the averages of 4·5 and 4·6 persons per household derived from the Mongol statistics are substantially lower than the averages for the Han, T'ang, Ch'in, and Ming dynasties. This is another sign of relatively defective census enumeration during the Mongol period.

MING DYNASTY STATISTICS

The series of statistics begins again in 1381, thirteen years after the Mongols were driven out of China and the Ming dynasty was founded. From the census ordered in 1370, which was mentioned earlier, apparently no totals are found in the record, probably because it proved impossible to carry out the census throughout the whole empire so shortly after the end of hostilities. Numbers of persons and households for the empire as a whole are recorded for the years 1381, 1391, 1393, annually from 1402 to 1520, and decennially from 1522 to 1620, with some gaps and irregularities. The figures for 1620 are repeated for 1621, 1623, 1625, and 1626, with minor variations, and then the Ming series comes to an end. Table 6 shows this series, reproduced from van der Sprenkel's article, "Population Statistics of Ming China" (40). Statistics by provinces are recorded for the years 1381, 1391, 1393, 1491, and 1578, and undated provincial statistics are given in a Ming geography which was issued in 1557; van der Sprenkel has tentatively dated the latter figures about 1540. The provincial statistics will be found in the tables of the Appendix.

The area represented by the statistics from 1391 onward was approximately the same as the eighteen provinces of modern China proper. Statistics for Yunnan were apparently missing in 1381.

The system of population records which was established by the first Ming emperor about 1380 was apparently a system of permanent registers. It was based on a local organization of households throughout the empire. The primary units of the organization were the *chia*, composed in principle of eleven households, and the *li*, made up of ten *chia* plus a variable number of households of widows, widowers, orphans, and others who were exempt from taxation and not assigned to any *chia*. Each year forms were printed from wood blocks and distributed

⁵¹ A much smaller number of households was recorded in the Sung empire in the year 1264, but this was probably an understatement, as the power of the Sung had sunk to a low ebb by that time.

⁵² The numbers of households recorded in northern China during the period A.D. 1235-1275, quoted by Franke, were still smaller than the number of the year 1290.

Table 6. *China : Recorded population statistics, A.D. 1381-1626*

Year (A.D.)	Persons	Households	Persons per house- hold	Year (A.D.)	Persons	Households	Persons per house- hold
1381*	559,873,305	10,654,362	5·6	1460	53,747,400	9,420,033	5·7
1391*	556,774,561	10,684,453	5·3	1461	53,748,160	9,422,323	5·7
1393	560,545,813	10,642,870	5·7	1462*	54,160,634	9,209,966	5·9
1402*	56,301,026	10,626,779	5·3	1463	56,370,250	9,385,213	6·0
1403	556,598,337	11,415,829	5·0	1464	60,499,330	9,107,205	6·6
1404	50,950,470	9,685,020	5·3	1465	60,472,540	9,105,960	6·6
1405	51,618,500	9,689,260	5·3	1466	60,653,724	9,202,718	6·6
1406	51,524,656	9,687,859	5·3	1467	59,929,455	9,111,688	6·6
1407	51,878,572	9,822,957	5·3	1468	61,615,850	9,113,648	6·8
1408	51,502,077	9,443,876	5·5	1469	61,727,584	9,119,888	6·8
1409	51,694,769	9,637,261	5·4	1470	61,819,814	9,119,891	6·8
1410	51,795,255	9,605,755	5·4	1471	61,819,945	9,119,912	6·8
1411	51,446,834	9,533,692	5·4	1472*	61,821,232	9,119,970	6·8
1412*	d —	d —	d —	1473	61,823,480	9,120,161	6·8
1413	50,950,244	9,684,916	5·3	1474	61,852,810	9,120,195	6·8
1414	51,618,248	9,689,052	5·3	1475	61,852,891	9,120,251	6·8
1415	51,524,436	9,687,729	5·3	1476	61,853,...	9,120,263	6·8
1416	51,798,172	9,822,757	5·3	1477	61,853,585	9,120,278	6·8
1417	51,501,867	9,443,766	5·5	1478	61,832,198	9,126,272	6·8
1418	51,694,549	9,637,061	5·4	1479	61,850,132	9,210,660	6·7
1419	51,794,935	9,605,553	5·4	1480	62,456,993	9,127,928	6·8
1420	51,446,434	9,533,412	5·4	1481	62,457,997	9,128,119	6·8
1421	51,794,228	9,603,360	5·4	1482*	62,452,677	9,222,389	6·8
1422*	52,688,691	9,665,133	5·5	1483	62,452,806	9,202,389	6·8
1423	52,763,178	9,972,115	5·3	1484	62,885,829	9,205,711	6·8
1424	52,468,152	10,066,080	5·2	1485	62,885,930	9,205,860	6·8
1425	52,083,651	9,940,566	5·2	1486	65,442,...	9,214,...	7·1
1426	51,960,119	9,918,649	5·2	1487	50,207,134	9,102,630	5·5
1427	52,070,885	9,909,906	5·3	1488	50,207,934	9,113,630	5·5
1428	52,144,021	9,916,837	5·3	1489	50,302,769	9,406,393	5·3
1429	53,184,816	9,848,393	5·4	1490	50,307,843	9,503,890	5·3
1430	51,365,851	9,778,419	5·3	1491	450,503,356	9,807,173	5·1
1431	50,565,259	9,705,397	5·2	1492*	50,506,325	9,901,965	5·1
1432*	50,667,805	9,623,294	5·3	1493	—	9,909,561	—
1433	50,628,346	9,635,862	5·3	1494	50,614,196	9,909,725	5·1
1434	50,627,456	9,702,322	5·2	1495	50,608,953	10,100,279	5·0
1435	50,627,569	9,702,495	5·2	1496	50,727,539	10,201,183	5·0
1436	52,323,998	9,713,407	5·4	1497	50,765,186	10,205,358	5·0
1437	51,790,316	9,623,510	5·4	1498	50,805,375	10,304,374	4·9
1438	51,841,182	9,704,145	5·3	1499	50,827,568	10,306,285	4·9
1439	51,740,390	9,697,890	5·3	1500	50,858,937	10,402,519	4·9
1440	51,811,758	9,686,707	5·3	1501	50,895,236	10,405,831	4·9
1441	52,056,290	9,667,440	5·4	1502*	50,908,672	10,409,788	4·9
1442*	53,949,951	9,552,737	5·6	1503	50,981,289	10,503,874	4·9
1443	52,993,882	9,559,650	5·5	1504	50,105,835	10,508,935	4·8
1444	53,655,066	9,549,058	5·6	1505	59,919,822	10,972,974	5·5
1445	53,773,934	9,537,454	5·6	1506	55,802,050	9,151,773	6·2
1446	53,740,321	9,528,443	5·6	1507	55,906,806	9,144,056	6·1
1447	53,949,787	9,496,265	5·7	1508	59,425,208	9,243,709	6·4
1448	53,534,498	9,530,933	5·6	1509	59,499,759	9,144,095	6·5
1449	53,171,070	9,497,165	5·6	1511	60,406,135	9,152,180	6·6
1450	53,403,954	9,588,234	5·6	1512*	60,590,309	9,181,754	6·6
1451	53,433,830	9,504,954	5·6	1513	63,284,203	9,370,452	6·8
1452*	53,507,730	9,540,966	5·6	1514	62,123,324	9,383,552	6·6
1453	53,369,460	9,384,334	5·7	1515	62,573,730	9,383,148	6·7
1454	53,811,196	9,406,347	5·7	1516	62,573,736	9,380,123	6·7
1455	53,807,470	9,405,390	5·7	1517	62,627,810	9,379,090	6·7
1456	54,338,476	9,406,288	5·8	1518	62,664,295	9,309,182	6·7
1457	54,205,069	9,469,340	5·7	1519	62,695,812	9,379,081	6·7
1458	53,710,308	9,410,339	5·7	1520	60,606,220	9,399,979	6·4

Table 6—*continued*

Year (A.D.)	Persons	Households	Persons per house- hold	Year (A.D.)	Persons	Households	Persons per house- hold
1522*	61,929,862	9,704,484	6·4	1562*	63,654,248	9,638,396	6·6
1532*	61,712,993	9,443,229	6·5	1567-71	62,537,419	10,008,805	6·2
1542*	63,401,252	9,599,258	6·6	1578	60,692,856	10,621,436	5·7
1552*	63,344,107	9,609,305	6·6	1602*	56,305,050	10,030,241	5·6
				1620-26	51,655,459	9,835,416	5·3

SOURCE: Van der Sprekkel (1953), pp. 293-296, where the Chinese sources are cited.

* Years when records were due for major revision.

a Recorded figures do not agree with totals of statistics by provinces shown by Van der Sprekkel, pp. 297, 300-305. The following figures are obtained by addition of the provincial statistics:

Year	Authority	Persons	Households
1381	Ming Shih-lu	59,473,305	10,654,362
1391	Ming Shih-lu	56,874,561	10,684,435
	Van der Sprekkel's emendations...	58,474,561	10,684,435
1491	Ming Shih Ti-li-chih	55,027,236	9,251,862
1491	Ta-Ming Hui-tien	53,281,158	9,113,446
	Van der Sprekkel's emendations...	52,281,158	8,913,456

b Totals obtained by addition of provincial statistics as emended by Van der Sprekkel, pp. 300-305. The following figures are obtained by addition of the unemended statistics:

Year	Authority	Persons	Households
1393	Ming Shih Ti-li-chih	60,545,813	9,642,870
	Ta-Ming Hui-tien	60,545,812	10,652,869
1578	Ming Shih Ti-li-chih	62,791,056	10,621,436
	Ta-Ming Hui-tien	60,692,856	10,621,436

c Figures as emended by Van der Sprekkel. The unemended figures are:

Year	Persons	Households	Year	Persons	Households
1403	66,598,337	11,415,829	1502	50,908,672	14,409,788
1416	57,878,172	9,822,757	1504	60,105,835	10,508,935
1443	52,993,882	8,559,650	1505	59,919,822	12,972,974
1476	16,853,..1	9,120,263	1506	46,802,050	9,151,773
1479	71,850,132	9,210,690	1518	66,664,295	9,309,182
1497	50,765,186	12,005,358			

d Illegible figures in the Chinese sources.

e The same, or nearly identical, figures were repeated each year during this period.

to the householders, who were required to submit "an itemized statement, according to the form, of the persons, occupations, and property of their respective households". The forms were to be collected by the *chia* leaders and forwarded to the *li* chief, who passed them on to the *hsien* office, where they were checked, counted, and compared with previous records. If they showed an increase of population, the returns were regarded as satisfactory in that respect; otherwise it was laid down that the local officials should make an investigation. Every tenth year the posts of *li* and *chia* leaders were supposed to rotate, and on this occasion apparently some kind of revision of the records was to be carried out.⁵³

The total number of persons recorded in 1381 was just under 60 millions, or about one-half as large as the estimate from the Sung and Ch'in statistics of A.D. 1193-1195 and about the same as the deficient totals shown by the Mongol

⁵³ Some more details about the household organization and the prescribed method of compiling the statistics are given by van der Sprekkel (40), pp. 308-10.

censuses of 1290 and 1291. It is reasonable that the population should have decreased considerably during the fourteenth century in view of the incessant fighting and bitter hardships which marked the last phase of Mongol rule, and especially the pandemic of bubonic plague, which seems to have raged no less fiercely in China than it did in Europe about the middle of this century. But Ho Ping-ti has found evidence of important gaps in the early Ming enumerations, especially in the south-western provinces and in parts of Chekiang and Fukien. He concluded that the population during the late fourteenth century "probably exceeded 65,000,000 to an unknown degree".⁵⁴

During the fifteenth and sixteenth centuries, as Ho Ping-ti's research has revealed, the quality of the Ming population statistics deteriorated. There was a gradual shift from registration of the whole population to registration of parts, with gross omissions of women and children, increasing concentration on taxable males, growing evasions and manipulations of the registration procedures to avoid or lighten taxes. In view of Professor Ho's findings, no significance can be attached to the trend of the population totals recorded for the Ming empire from the end of the fourteenth century onward. Instead of the erratic fluctuations above and below an approximately constant level, shown by the statistics, Professor Ho believed that the true trend was fairly steadily upward throughout the Ming period, but there is little concrete evidence to support this view.

In addition to their weakness due to deterioration of the registration system, the Ming statistics seem to have been corrupted to a remarkable extent by copyists' errors and misprints. Possibly the long, monotonous columns of figures with their insignificant changes had a soporific effect on the clerks who copied and re-copied them. Van der Spreknel has made a number of emendations of apparent errors of transcription in individual figures, but an inspection of the series raises suspicions of clerical blunders on a grander scale.

It is apparent that the annual figures for the period 1404 to 1411 have been confused with those for 1413 to 1420, as the following arrangement shows :

Year	Persons	Households	Year	Persons	Households
1404 ...	50,950,470	9,685,020	1413 ...	50,950,244	9,684,916
1405 ...	51,618,500	9,689,260	1414 ...	51,618,248	9,689,052
1406 ...	51,524,656	9,687,859	1415 ...	51,524,436	9,687,729
1407 ...	51,878,572	9,822,957	1416 ...	51,878,172	9,822,757
1408 ...	51,502,077	9,443,876	1417 ...	51,501,867	9,443,766
1409 ...	51,694,769	9,637,261	1418 ...	51,694,549	9,637,061
1410 ...	51,795,255	9,605,755	1419 ...	51,794,935	9,605,553
1411 ...	51,446,834	9,533,692	1420 ...	51,446,434	9,533,412

^a Emended by van der Spreknel from 57,878,172.

The chart (Fig. 1) shows highly erratic fluctuations in the numbers of persons and households during certain periods. There is a curious discrepancy in timing in the fluctuations of the two series during the period from 1462 to 1506 ; they would fit together better if the series of household statistics were moved back, or the statistics of persons moved forward, by nineteen years.

At some points it is the incredible constancy of the figures which destroys faith in them. Between 1469 and 1477 the number of households does not increase or decrease in any year by so much as 100 out of the total of more than

⁵⁴ Ho Ping-ti (17), p. 22.

9,000,000. It is incredible that such constant numbers could have been obtained by addition of local records throughout the empire.

The statistics for provinces also exhibit incredible features. The 1391 figures for eight provinces (Kwangtung, Chekiang, Hukuang,⁵⁵ Kwangsi, Fukien, Shansi, Shantung, and Kiangsi) are irreconcilable with the 1381 and 1393 figures, as shown in Tables A.1, A.2 and A.3 of the Appendix. The ratios of persons to households computed from the provincial figures for 1491, 1540, and 1578 follow trends which are difficult indeed to accept as real changes in the average size of households. In this respect the statistics of 1381, 1391, and 1393 look plausible enough, as the ratios for most provinces range from about 5 to 7 persons per household (Table A.3). But at later dates the high provincial ratios keep rising higher and the low ones falling lower until, by 1578, the statistics of Shensi-Kansu, Hopeh, Szechwan, and Yunnan yield ratios in the incredibly high range of 10·0 to 11·8 persons per household, while those of Chekiang, Fukien, and Kwangtung have fallen to the incredibly low range of 3·3 to 3·8. Ho Ping-ti says that the high values were brought about by the frequent practice, in certain provinces, of merging households for registration as a device to reduce tax assessments.⁵⁶ Presumably the very low ratios were the result of omission of women, children, and the aged from the records, occurring on a larger scale in Chekiang, Fukien, and Kwangtung than in other provinces.⁵⁷

To sum up, the Ming statistics from the beginning of the fifteenth century onward appear to be worthless as indications of population trends. The least untrustworthy figures in the Ming series are apparently those of 1381 and 1393, which showed a total of about 60 million persons, but these were probably affected by an important degree of underregistration. In all likelihood the population of China increased during the period of Ming rule, but the amount of the increase is indeterminate.

CH'ING (MANCHU) DYNASTY STATISTICS : FIRST PERIOD (1651-1734)

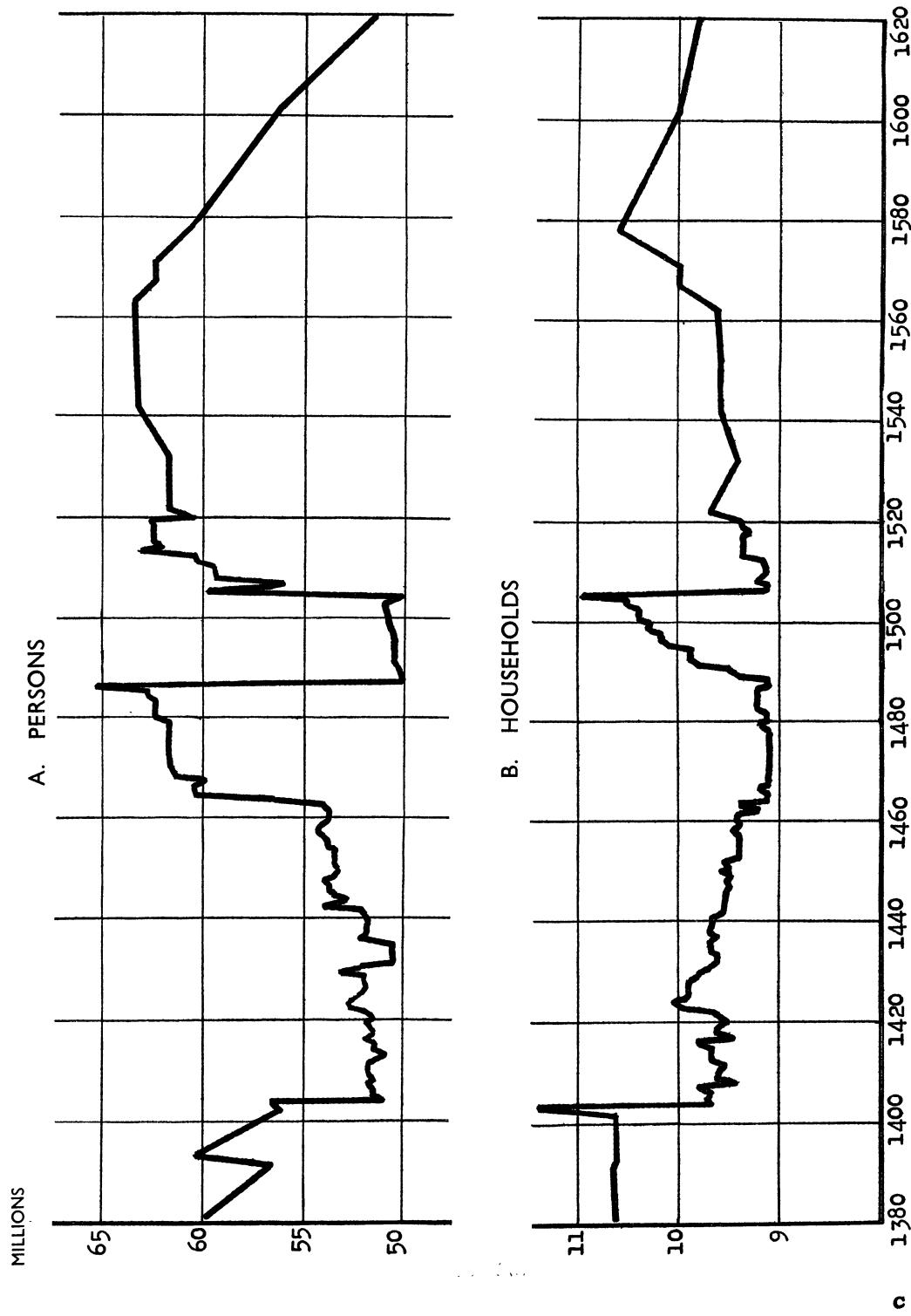
During the last years of the Ming dynasty, in the 1630's and early 1640's, China was torn by numerous revolts and struggles between opposing factions, in which millions of lives are said to have been lost. Drought and famine added to the misery of the people, and it can be taken for granted that at this time a population decrease occurred. In the midst of this chaos, Manchu invaders under the Ch'ing princes entered China. They seized Peking in 1644 and went on to complete their conquest of the Ming empire by 1662. For a time semi-autonomous princes were allowed to rule the southern provinces, paying tribute to the Ch'ing court, but in 1674 they revolted, and when the revolt was put down

⁵⁵ Hukuang was the name given in Ming times to the province which has since been split to form Hunan and Hupeh.

⁵⁶ Ho Ping-ti (17), pp. 14-15.

⁵⁷ Van der Sprekkel (40), pp. 306-308, interpreted the variations in these ratios as results of migration. He noted a close correspondence between high values of the ratio and large increases in the provincial population as recorded in the statistics. He argued that immigrants moving in with relatives already established in the provinces of immigration caused the average size of households to increase. This argument is open to the objection mentioned above in connection with Bielenstein's interpretation of the Han and T'ang dynasty statistics, that an inordinately large amount of immigration would be required to produce, in the manner indicated by van der Sprekkel, such a large increase in the ratio as the statistics for several provinces show and even then the effect would only be temporary.

FIGURE I. POPULATION STATISTICS OF THE MING DYNASTY



in 1682, all China came directly under the rule of the new dynasty. The Ch'ing regime continued until 1911, when the last emperor abdicated and the republic was declared.

The population statistics of the Ch'ing dynasty are divided into two distinct periods. During the first period, 1651-1734, the statistics referred to numbers of registered *ting*, the meaning of which will be considered presently. The second period began in 1740 with the establishment of the *pao-chia* system of population registers. From 1741 statistics of the total population were recorded annually, with a few gaps, until 1851, when the Tai-ping rebellion destroyed the unity of the empire and crippled the statistical system.

The numbers of *ting* recorded for the empire as a whole during the period 1651-1734 are listed in Table 7. Apparently no provincial statistics are on record for this period, although local figures are found in the *hsien* histories. The irregularities in the series of empire totals between 1650 and 1684 are probably due mainly to variations in geographical coverage. Coverage was doubtless incomplete from 1651 to 1656, when the Manchus were pursuing their conquest and tightening their grip on the former Ming dominions. The abrupt drop in the number of *ting* in 1674 was almost certainly due to the revolt in the south

Table 7. *China : Recorded Statistics of ting, A.D. 1651-1734*

Year (A.D.)	Number of <i>ting</i>	Year (A.D.)	Number of <i>ting</i>	Year (A.D.)	Number of <i>ting</i>
1651	10,633,326	1678	16,845,733	1708	21,621,324
1652	14,483,858	1679	16,914,256	1710	23,311,236
1653	13,916,598	1680	17,094,637	1711	24,621,324
1654	14,057,205	1681	17,235,368	1713	23,647,679
1655	14,033,900	1682	19,432,753	1714	24,741,546
1656	15,412,776	1683	19,521,361	1715	24,796,087
1657	18,611,996	1684	20,340,655	1717	24,932,448
1658	18,632,881	1685	20,341,738	1718	24,971,449
1659	19,008,913	1687	20,349,341	1719	25,020,966
1660	19,087,572	1689	20,363,568	1720	26,029,949
1661	19,037,652			1721	26,616,209
1662	19,203,233			1722	25,763,502
1663	19,284,378	1692	20,365,873	1723	25,734,854
1664	19,301,624			1724	25,111,953
1665	19,312,118	1694	20,370,654	1726	26,390,899
1666	19,353,134			1727	26,508,987
1667	19,364,881	1696	20,410,382	1728	26,521,690
1668	19,366,227	1697	20,410,682	1729	26,659,259
1670	19,396,453	1698	20,410,693		
1671	19,607,587	1699	20,410,896		
1672	19,431,567				
1673	19,393,587	1700	20,410,963	1730	26,332,457
1674	19,246,472	1701	20,411,163	1731	26,302,933
1675	16,075,552	1702	20,411,380	1732	26,364,855
1676	16,037,268	1703	20,411,480	1733	26,348,775
1677	16,216,357	1705	20,412,560	1734	27,355,462

SOURCE : Chen Chang-heng (7), pp. 45*-47*.

^a Figures emended by the author. The figures listed by Chen Chang-heng were 22,410,682 for 1697 and 20,210,693 for 1698.

which broke out at that time and doubtless caused a default in the reporting of statistics from that part of the country. By 1684 it seems that returns were again being received from the south, and from that date until 1705 the recorded totals were almost constant. In fact, between 1696 and 1705, as in the case of the Ming series between 1469 and 1477, the numbers change so slightly that it is impossible to regard them as the result of an annual summation of local records. From 1708 to 1734 they follow an irregular but decidedly upward trend.

Historians and demographers attempting to estimate the size of China's population and its increase during the early period of the Ch'ing dynasty have adopted various interpretations of the statistics of *ting*. Some have taken them to represent taxpayers, defined in principle as males between the ages of 16 and 60, and have estimated the population by dividing the statistics by an estimated ratio of this sex-age group to the total, adding allowances for men who were exempt or evaded taxation.⁵⁸ Others have interpreted the statistics as numbers of households and multiplied them by an estimated average number of persons per household, likewise making additions to represent unregistered households.⁵⁹

Chen Chang-heng made two alternative series of population estimates for this period by assuming (a) that "official figures included only males 16-60 years of age, and that such males, after due allowance for those who evaded poll taxes, amounted to only one quarter of actual total population", or (b) that "both taxpayers and local officials might have tried to report only the irreducible number of population liable to poll taxes, i.e. the heads of families" and that the average number of persons per family was five. To the results of assumption (b), which he considered more likely than (a), he added 10 per cent to allow for the "propertyless class", who would have been exempt from taxation. Thus he obtained population estimates which ranged, under assumption (a) from 76·2 millions in 1661 to 109·4 millions in 1734, and under assumption (b) from 95·2 millions in 1661 to 136·8 millions in 1734.⁶⁰

Professor Ho Ping-ti, in his study of the statistics recorded in local histories of this period, has discovered some facts which cast grave doubt on the validity of any population estimates derived from these data for the empire as a whole. It appears that in many areas the records of *ting* did not refer directly either to taxpaying individuals or households but to conventionalized fiscal units defined with reference to the amount and quality of land held by the registered households as well as the numbers of their adult male members. In fact, in some localities the numbers of *ting* were recorded in decimals.⁶¹

At best the statistics in Table 7 might give a rough indication of the trend of population growth during the second half of the seventeenth century and the first decades of the eighteenth. Their validity for this purpose depends on the assumption, which must be recognized frankly as dubious, that the total numbers

⁵⁸ For example, Liu Nan-ming (22), pp. 41-47.

⁵⁹ For example, Willcox (44).

⁶⁰ Chen Chang-heng (7), pp. 45*-48*. He carried both series of estimates back to 1651, obtaining a total of only 42·5 millions for that date on assumption (a) and 53·2 millions on assumption (b); but these figures are evidently too low because of the incomplete coverage of the statistics for the first years of the series.

⁶¹ Ho Ping-ti (17), Chapter II.

of *ting* reported for the whole empire bore a fairly constant ratio to the population. On this assumption the following rates of population growth are obtained :

	Average annual increase per 1,000 population				
1657-1671	3·7
1682-1708	4·1
1708-1734	9·0

It was during this period that the connection between registration of the population and taxation was formally severed. The action was taken in the year 1712 by the sagacious and wealthy emperor Ch'ing Shen-chu. He seems to have been concerned not only with the injustice of a system under which the *bona fide* taxpayers had to bear the burden of those who evaded registration, but also with the importance of reliable statistics as a source of information on the economic progress of the empire and the welfare of his subjects. He declared in a speech to the cabinet : "I have examined the census report of the viceroys of the provinces and have found them inaccurate. . . . During my survey I visited many places. . . . I learned of the households numbering five to six adults, only one of which paid the poll tax ; and of other households of nine or ten adults, only two or three of which were taxed. . . . The local magistrates and the viceroys of the provinces do not report the correct figures, for they fear an increase in taxes. . . . As a matter of fact, I am not interested in increasing taxation, but am anxious to know the size of the population ". Accordingly, he decreed, "Hereafter the tax returns of each province are to be in accordance with the tax records for 1711, that year being taken as a fixed base ; all those who were untaxed in 1711 are to be exempt from the poll tax ". The details of the new regulations were stated in another edict issued in the following year.⁶²

The emperor's action had no apparent effect on the trend of the recorded numbers of *ting* in the empire as a whole. The upward trend which had begun in 1708 went on haltingly for the next 22 years.⁶³ But this separation of registration from tax assessments prepared the way for the reorganization of the system of population records and statistics which marks the beginning of the second period of the Ch'ing dynasty series.

CH'ING DYNASTY STATISTICS : SECOND PERIOD (1741-1911)

An imperial decree of 1740 ordered the establishment of a new system whereby statistics of the total population in each part of the empire were to be compiled annually. The system which was put into effect at this time is known as the " *pao-chia* " from the form of the local household organization by which the records were to be kept. The scheme was as follows :

- 10 households make one *pai* ;
- 10 *pai* make one *chia* ;
- 10 *chia* make one *pao*.

⁶² Quoted by Chen Chungshen (6), p. 125*. Chen noted (p. 126*) that the decrees of 1711 and 1712 were implemented only after a long delay in some parts of the empire ; in Szechwan they were not put fully into effect before 1775.

⁶³ From 1712 to 1734, in addition to the statistics of *ting* listed in Table 7, numbers of tax-free persons or tax-free *ting* were also recorded year by year. These numbers increased from about 60,000 in 1712 to 937,000 in 1734. Annual figures are quoted by Parker (25), p. 153.

Initially each household was required to keep a tablet hanging by the door with a list of all members of the household; later the tablets were replaced by lists kept in the *pao* and *chia* offices. In principle, the method of keeping the registers and reporting the statistics was apparently much the same as that which was instituted in the early years of the Ming dynasty, and which has been described in an earlier section. The *pao-chia* registration, however, had nothing directly to do with taxation. As before, the officers of the organization at the local level had no special qualifications or training for the registration work, nor were they paid for it, and often they performed their duties in a very perfunctory way, if at all.⁶⁴

Statistics ostensibly compiled from the local *pao-chia* registers are on record annually, with some gaps, from 1741 to 1851, for the empire as a whole and each province. The empire totals are listed in Table 8 and charted in Fig. 2; they include the population of Manchuria and apparently also Sinkiang and Taiwan as well as China proper.⁶⁵ Provincial statistics for selected years in this period are reproduced in Table A-1. After 1851, as a result of the Tai-ping rebellion and subsequent disorders, the central government was no longer able to collect statistics from all the provinces.⁶⁶

Dr. Irene Taeuber and Wang Nai-chi have shown that the statistics of this period were not obtained, as a rule, by counting the names on the population registers each year. Instead, it was apparently the custom, once the population figure for a province had been established, to carry it forward with approximately constant, arbitrary increments until the central authorities complained of inaccurate reporting and demanded a revision. Then the level of the series would be suddenly raised, possibly by a very large amount. Other irregularities were created by the occasional failure of certain provinces or *hsien* to submit their reports, causing the level of the totals to drop abruptly and rise again when the missing jurisdictions resumed reporting.⁶⁷

It goes without saying that the statistics produced by such methods are worthless to represent year-to-year changes in the population of China or any of its provinces. It is possible, however, that the figures might be fairly valid as rough approximations to the magnitude of the population at a given time and the amount of its increase over a long period. Their validity from this point of view would depend, first, on the accuracy with which the initial figure for each province was established; second, on the realism of the conventional annual increments as approximations to a normal rate of population growth for each province; and finally, on the accuracy of the adjustments which were made on certain occasions.

The tabulation of long-range average annual rates of population increase derived from the provincial figures, which are presented in Table 9, gives cause for

⁶⁴ The system is described further by Chen Chungshen (6), pp. 126* ff.

⁶⁵ Statistics for Manchuria are listed separately in the provincial tables. According to Usher (39) the recorded totals up to 1882 probably include the population of Sinkiang, which was combined with Kansu Province until that date. Taiwan was included with Fukien Province. Sacharoff (29), p. 181, says that only the numbers of households were recorded in other outlying parts of the empire.

⁶⁶ Chen Chang-heng (7), pp. 51*-53*, lists the incomplete totals recorded for various years from 1852 to 1873 with the names of the missing provinces.

⁶⁷ Taeuber and Wang Nai-chi (33).

Table 8. *China: Recorded population totals, A.D. 1741-1851*

Year (A.D.)	Population (thousands)	Year (A.D.)	Population (thousands)	Year (A.D.)	Population (thousands)
1741	143,412	1779	275,043	1815	326,575
1742	159,802	1780	a277,554	1816	328,815
1743	164,454			1817	331,330
1744	166,809	1781	279,816	1818	348,820
1745	169,922	1782	281,823	1819	351,261
1746	171,897	1783	a284,734	1820	353,578
		1784	280,331		
1749	177,495	1785	288,864	1821	355,540
1750	179,539	1786	291,102	1822	372,458
		1787	292,429	1823	375,153
1751	181,811	1788	294,852	1824	374,601
		1789	297,717	1825	379,886
1753	183,678	1790	301,487		
1754	184,504			1827	383,696
1755	185,613	1791	304,354	1828	386,532
1756	186,616	1792	307,407	1829	390,501
1757	190,348	1793	310,497	1830	394,785
1758	191,673	1794	313,282		
1759	194,792	1795	296,969	1831	395,821
1760	196,838	1796	275,662	1832	397,133
		1797	271,334	1833	398,942
1761	a198,215	1798	290,983	1834	401,009
1762	200,472	1799	293,288	1835	403,052
1763	204,210	1800	295,237	1836	404,901
1764	205,591	1801	297,502	1837	406,984
				1838	409,039
1766	208,096	1802	299,750	1839	410,851
1767	209,840	1803	302,251	1840	412,815
		1804	304,461		
1769	212,024	1805	332,181	1841	413,457
1770	213,613	1806	335,309	1842	421,118
		1807	338,062	1843	417,239
		1808	350,292	1844	419,441
1771	a214,600	1809	352,900	1845	421,343
1772	216,467	1810	345,717	1846	423,141
1773	218,743			1847	425,106
1774	221,027	1811	358,610	1848	426,929
1775	264,561	1812	a361,691	1849	428,421
1776	268,238	1813	336,452	1850	429,931
1778	242,966	1814	316,575	1851	431,896

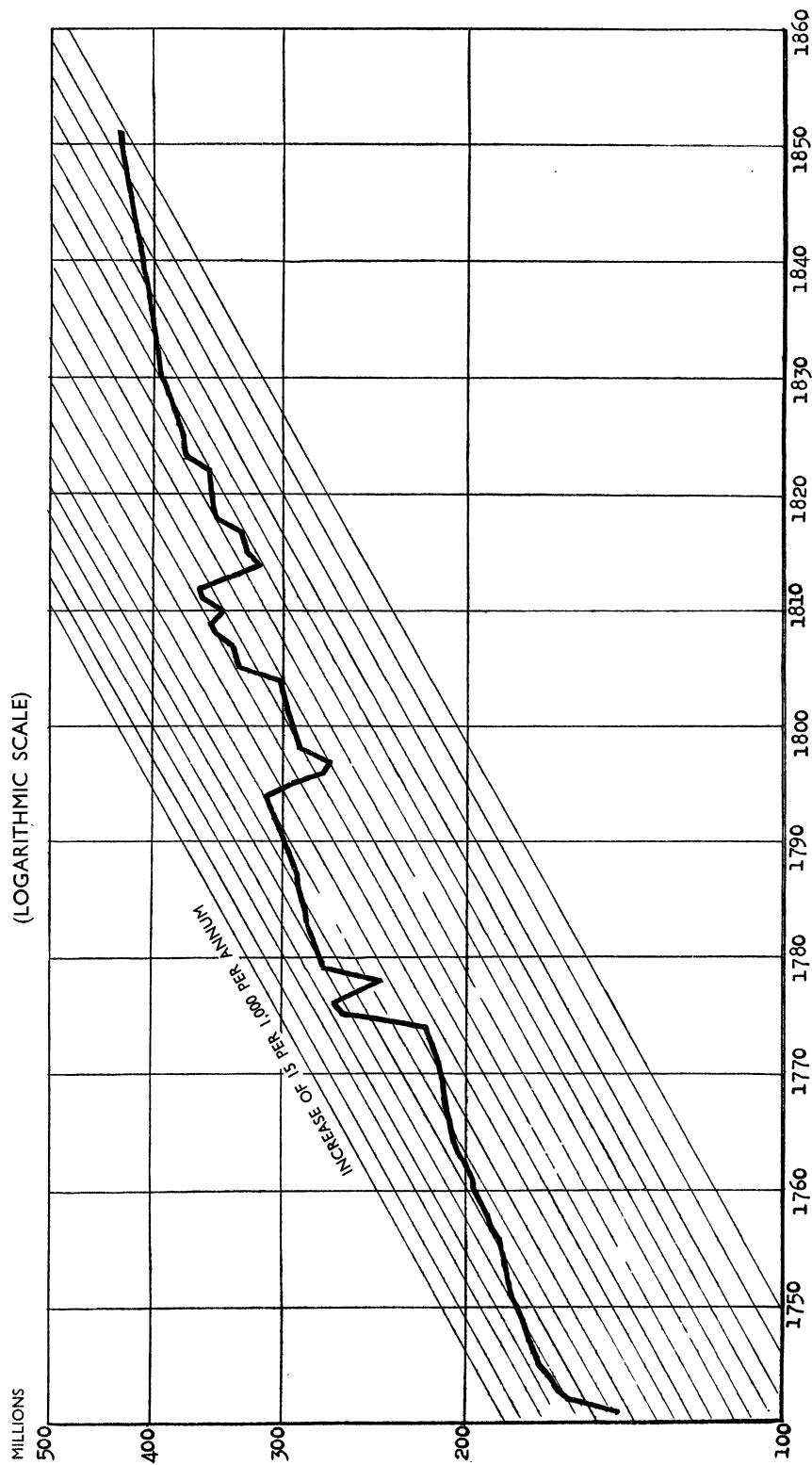
SOURCES: Krotevich (18); Institute of Economic Research, Academia Sinica (16).

^a Different totals are obtained from the statistics by provinces quoted by Sacharoff (29).

putting a certain amount of confidence in the statistics as a representation of the major features of population trends in various parts of China during the period from 1749 to 1851 considered as a whole. The comparison of the numbers reported in 1749 with the results of the census in 1953 shows the largest proportionate increases in the south-western and south-central provinces and the smallest increases in the northern and eastern regions. This pattern agrees with expectations based on the known history of agricultural expansion and economic development in these regions of China during the last two centuries. The implication is that the 1749 figures were not unrelated to the facts of population size and distribution at that time.

Furthermore, the same general pattern of provincial variations is repeated in the average annual rates of population growth derived from the statistics for

FIGURE 2. POPULATION STATISTICS OF THE CH'ING DYNASTY, SECOND PERIOD (1741-1851)



the periods 1749–1776, 1776–1851, and 1851–1953. (The erratic variations in the rates for the two parts of the former period, 1749–1771 and 1771–1776, will be considered presently.) This consistency of pattern implies that the long-range trends of increase in the provincial figures were also related at least loosely to the actual trends of population growth. To be sure, the figures for some provinces do not always fall in line; those for Kweichow, for instance, appear to be erratic. But some such deviations would be expected even if the statistics were perfectly accurate.

Table 9. *China : Average Annual Rates of Population Growth (per cent) for Provinces, 1749–1953*

Province	1749–1953	1749–1771	1771–1776	1749–1776	1776–1851	1851–1953
Szechwan	1·6	0·9	20·5	4·3	2·4
Yunnan	1·1	0·6	7·1	1·7	1·2
Kwangtung	0·8	0·4	16·0	3·1	0·9
Kwangsi	0·8	1·2	2·4	1·4	0·5
Kweichow	0·8	0·5	7·6	1·8	0·1
Hunan	0·7	0·2	10·5	2·0	0·4
Huph	0·6	0·6	11·7	2·5	1·1
Honan	0·6	1·2	3·6	1·6	0·3
Hopeh	0·5	0·9	4·2	1·5	0·2
Shensi	0·4	0·4	2·0	0·7	0·5
Kiangsu	0·4	0·7	3·5	1·2	0·6
Shantung	0·3	0·4	-3·7	-0·4	0·6
Kaingsi	0·3	1·5	7·5	2·6	0·5
Chekiang	0·3	1·7	2·5	1·8	0·6
Shansi	0·2	0·5	3·3	1·0	0·3
Anhui	0·2	0·4	3·1	0·9	0·4
Fukien	a	0·3	6·5	1·4	0·8
Kansu	a	3·9	2·7	3·7	0·0

a 1953 figures are not comparable with earlier data as they refer to a smaller territory.

The significance of these comparisons depends on the assumption that the 1953 census figures are independent of the Ch'ing dynasty statistics. Taeuber and Wang have suggested that the 1953 figures for some provinces were based partly on estimates, the origins of which could be traced in part to the population reports of 1850.⁶⁸

The most conspicuous discontinuity in the statistics is found between 1774 and 1775. At that time the figure for the total population of the empire was raised by more than 43 millions in a single year, apparently as a result of a complaint on the part of the emperor that the statistics were inaccurate and did not do justice to the economic progress of the empire. Of this increase Sacharoff wrote, "The population of China in the fortieth year of Chien Lung was overstated by the officials so as to satisfy the vanity of the emperor, and possibly this over-estimated figure, instead of being cancelled, was carried over to the census reports of later periods".⁶⁹ Other scholars have agreed with this

⁶⁸ *Ibid.*

⁶⁹ Sacharoff (29), p. 182.

indictment and rejected the statistics of 1775 and later years, substituting lower estimates which they thought were more credible.⁷⁰

The huge increase in 1775 does not necessarily mean, however, that the figures were exaggerated at that time, or in any later year. On the contrary, it seems more likely, in the light of all available evidence, that the statistics prior to 1775 were much too low, at least in certain provinces, and that the revision had the effect of bringing the figures in general nearer the truth. This hypothesis is supported by a comparison of the provincial statistics for 1771 and 1776, which are shown in Table A-1. Large increases appear in the figures for all provinces except Shantung, where the population reported in 1776 was nearly 5 millions less than in 1771, probably as a result of the White Lotus rebellion which broke out in this province in 1774, and consequent disruption of the administrative organization. In other provinces the recorded increases varied from nearly 8 millions, or 110 per cent, in Kwangtung to less than 0·8 millions, or 10 per cent, in Shensi. In addition to Kwangtung, relatively large increases were recorded in several other provinces of south-central and south-western China, including Szechwan, Hupeh, Hunan, Kweichow, and Yunnan. These were provinces of relatively rapid long-range population growth, where the increases recorded between 1749 and 1771 had lagged behind the long-range trend. (See Table 9.) More moderate additions were made between 1771 and 1776 in the figures for the northern and eastern provinces, where the trend of the statistics between 1749 and 1771 was more nearly in line with the long-range trend.

It is not only the jump in 1775 which has led certain scholars to conclude that the statistics from that time until 1851 were generally much exaggerated; they have also been impressed by the seemingly excessive rate of population growth implied in the whole series of statistics from 1741 to 1851. It is generally agreed that population growth was actually fairly rapid, at least during the eighteenth century, which was on the whole an extraordinarily peaceful and prosperous period, not marred by any major wars, internal revolts, or great natural calamities, until the White Lotus rebellion in Shantung in 1774. But even under these favourable conditions, certain scholars have been unwilling to believe that the population could have increased as much as the statistics indicate. Chen Chang-heng, for instance, discarded the statistics and substituted estimates computed by assuming that the population grew between 1741 and 1795 at an average annual rate of 10 per 1,000, which he thought was the highest plausible rate even for such an exceptionally trouble-free time.⁷¹

The maximum rate of population growth which we have accepted as credible in the statistics of earlier dynasties was 15 per 1,000 per annum, and it does not seem impossible that the population could have increased at this rate under the favourable conditions of the eighteenth century. Such a rate of growth could have been produced, for example, by an average birth rate of 45 and death rate of 30 per 1,000. The comparison of the recorded population totals for the

⁷⁰ Rockhill (28), Chen Chang-heng (7), Liu Nan-ming (22), and Willcox (44).

⁷¹ Chen Chang-heng (7), pp. 48*-51*. He observed that the 1741 figure was probably understated, but he used it anyway as his starting point.

whole empire in 1749 and 1775 implies an average annual increase of 15 per 1,000 during this interval. For the period 1775-1794 the average is 9 per 1,000 and for 1794-1851 it is 7 per 1,000.

One possibility, then, is to accept the totals for 1749 and 1775 as comparable approximations, if not accurate measures of the population at these two dates, and to assume that the large increase from 1774 to 1775 was the rectification of a deficiency which had accumulated during the interval 1749-1774. An alternative is to suppose that this deficiency was already present in 1749—in other words, that the population was understated throughout the period from the establishment of the *pao-chia* system up to 1774. If the ratio of the 1774 to the 1775 total is taken as an estimate of the degree of understatement in 1749, a corrected figure of 212 millions is obtained for 1749, or 35 millions more than the recorded total. The average rate of population growth for the period 1749-1775 then works out at 9 per 1,000. This alternative appears more plausible than the first possibility mentioned: that the 1749 and 1775 statistics were approximately comparable as recorded.⁷²

At least in the years 1741 to 1748, if not also in 1749, the recorded figures were almost certainly too low. The excessive increases recorded during these years were in all likelihood due to progressive extension of the coverage of the new statistical system in the initial phase of its operation.

To sum up the discussion of the second series of Ch'ing dynasty statistics (1741-1851), it is certainly not justified to put any faith in them as exact measures of the size of China's population or its changes from year to year. The evidence does not, however, warrant dismissing them as entirely unrealistic and useless for study of the major features of population history of the period. The figures were probably too low from 1741 to 1774. From 1775 to 1851 it is possible that they exaggerated the size of the population and the rate of growth, but there is actually no evidence that they were biased upward rather than downward. It is difficult to avoid the conclusion that the population increased greatly during the period from 1741 to 1851 as a whole, and especially during the first half of this period.

THE CENSUSES OF 1909-1911, 1912, 1928-1929 AND 1953

After 1851, as already mentioned, the tottering Imperial government was no longer able to collect population statistics from all the provinces. The *pao-chia* organization continued in existence and the local records were still maintained more or less half-heartedly, but the system of central collection of statistics broke down. Many of the provincial authorities went on as before submitting their data to Peking, but the reports from certain provinces became more and more erratic and every year figures for several provinces were missing. During the last half-century of the empire the population of China as a whole was

⁷² Ho Ping-ti (17), Chapter III, presents several kinds of evidence to support the conclusion that the population statistics of 1741-1774 were understated, including evidence that the *pao-chia* organization was not set up in some remote areas, that the regulations were not followed energetically, that women and children were incompletely registered or omitted altogether in some areas, and that the earlier system of reporting *ting* persisted in some areas. A further indication of underregistration in 1743 and 1753 is found in statistics of households for these dates quoted by Rockhill (28), pp. 307-308, and Chen Chang-heng (7), p. 29*, which show averages of less than 5 persons per household.

represented only by estimates with wide margins of error, and this state of affairs continued during the time of the republic which replaced the empire in 1911.

In 1909 a census was ordered to be taken throughout the empire, to serve as a basis for elections and the establishment of a constitutional monarchy; but this project was never completed. It was planned as a two-stage enumeration, beginning with a census of households which was to be followed by a census of persons. When the emperor abdicated in 1911, the household statistics had been compiled for most parts of the country, but the numbers of persons had been established only for Hopeh, Chekiang, and Kweichow provinces, parts of Shansi, Kiangsi, and Szechwan, and some areas in Manchuria. For some of these areas the data were manifestly incomplete.⁷³

After the republican government came into power, it proceeded in 1912 to attempt a new census. Numbers of persons were obtained from all provinces of China proper except Anhui, Kiangsi, and Kweichow, as well as from Manchuria, Mongolia, Sinkiang, etc. (see Table A-1). It is not certain, however, to what extent the figures for the different areas were the results of actual enumeration or compilation of the registration records, and to what extent they were estimates based on previous data.

The effort to take a census was repeated with less success in 1928 and 1929. This time the government was able to get reports from only eight provinces of China proper, certain parts of Manchuria, and Sinkiang. The figures are listed in Table A-1.

It is doubtful to what extent the enumerations of 1909-11, 1912, and 1928-29 could properly be called censuses. In the large cities, enumerations were carried out under the supervision of the police, but in the rural areas the organization was that of the ancient *pao-chia* system, and it is likely that the data were drawn largely from the defective registers with little or no attempt to verify the actual numbers of the people at the time. Analyses of the results have revealed evidence of important deficiencies in the enumeration of females and there is every reason to suspect that the counts of male children, at least, were also incomplete.⁷⁴

Further enumerations or compilations of registration data were carried out in various provinces from time to time during the 1930's and 1940's, but in no case did they approximate a complete census of China.⁷⁵

In 1953, for the first time in more than a hundred years, the government of the People's Republic succeeded in taking a census which covered nearly all parts of mainland China. The total number of inhabitants reported (including estimates for a few areas where the enumeration could not be carried out) amounted to 582·6 millions, exceeding by more than 100 millions the figures which had come to be widely accepted as the best estimates of China's population.

It was officially announced that the enumeration had been verified by sample checks in 343 cities with an aggregate population of 53 millions, which showed omissions of 0·25 per cent and duplications of 0·14 per cent. If these were

⁷³ The numbers of persons and households reported in this census are listed by Chen Chang-heng (7) p. 25*.

⁷⁴ On the methods of these enumerations see Chen Chungshen (6), and Jaffe (17).

⁷⁵ Orleans (24), gives a compilation of statistics for each province throughout the period 1909-1953.

reliable measures of the extent of errors, they would mean that this census was one of the most accurate ever taken anywhere in the world. Actually it may be granted that the count was probably far more accurate than any which had been made previously in China, but a consideration of the methods makes it appear very unlikely that the error was as small as the announced results of the checks would imply.

This enumeration was not strictly a census according to the accepted, modern definition, because it was not done mainly by a house-to-house canvass of all dwelling units. Instead, the method used throughout the greater part of the country was apparently that of calling upon the heads of households to come to the local census office and report the required information concerning members of their households. Experience in other countries has shown that this method is likely to yield less accurate results than the standard procedure of house-to-house canvass. It also appears that in many areas the figures were probably derived from existing records, with an indeterminate amount of checking, instead of a new enumeration. The length of time required to complete the project is indicative of the difficulties encountered. Although the reference date was 30 June, 1953, the fieldwork was spread over a period of nearly one year and the majority of the population was not enumerated before the first quarter of 1954. A very high degree of accuracy is not to be expected in these circumstances.⁷⁶

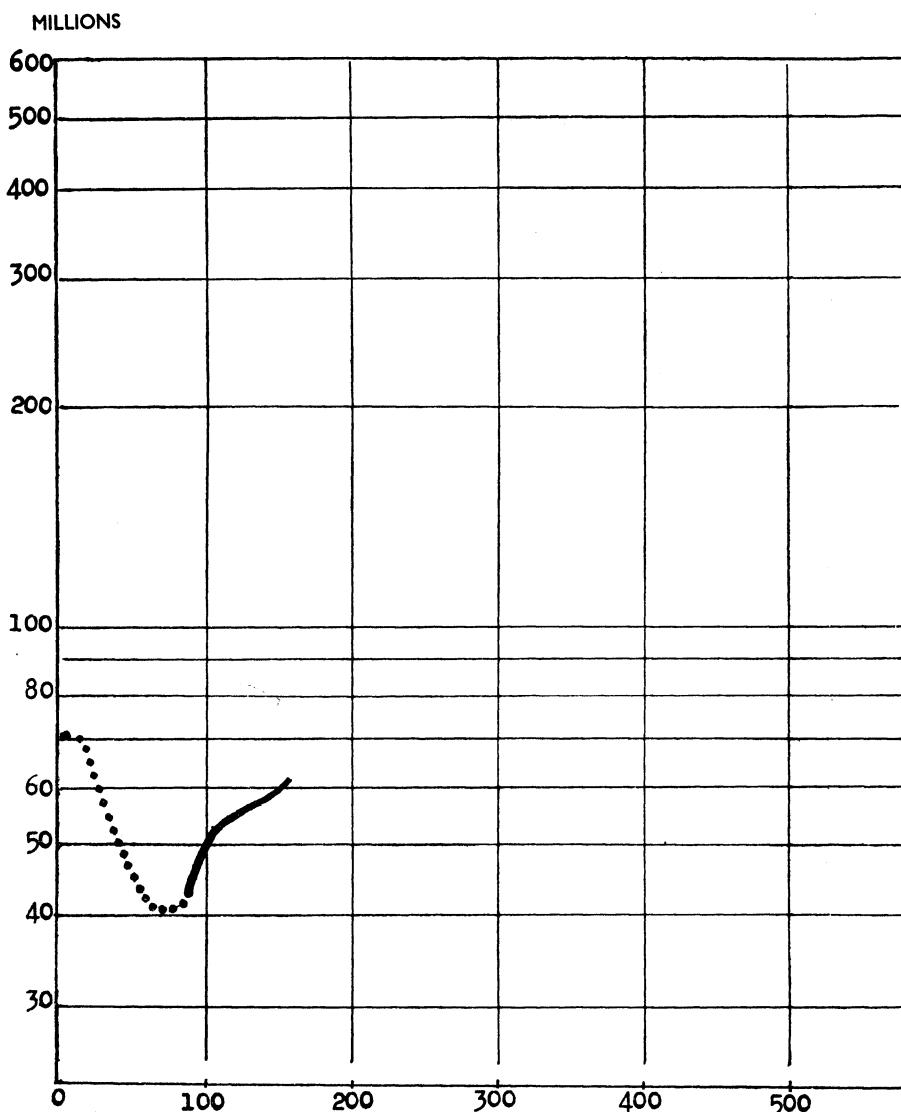
The 1953 census figures are compared in Table 10 with various estimates of the Chinese population made during the 1930's and 1940's by different authorities, on the basis of the 1909-1911, 1912, and 1928-1929 partial census results. If it is taken for granted that the 1953 figures are more reliable than the earlier estimates, the comparison makes it appear that the 1928-1929 estimates, at least, were almost certainly too low. For example, Liu Nan-ming's estimate of 408.5 millions for China proper at this date, compared with the corresponding figure of 518.4 millions for 1953, implies an average annual rate of growth of about 10 per 1,000 during the interval. Although this is perhaps not absolutely incredible, it is difficult to accept in view of the long years of fighting, which must have taken a heavy toll of the population, directly and indirectly, during the 1930's and 1940's. A considerable deficiency in Liu Nan-ming's estimate is much more plausible. Willcox's estimate for 1912 is not quite so difficult to reconcile with the 1953 figures, as it shows an average annual growth during 1912-1953 of 8 per 1,000; but this rate, too, seems rather high in view of the influenza pandemic which intervened in 1918, and the generally poor conditions of health and low level of living of the Chinese peasantry during these times. The 1909-11 estimate is clearly too low to be consistent with the other figures.

Compared with the 1851 statistics, the 1953 data indicate an increase of population in China proper amounting to 101 millions in the course of 102 years. This corresponds to an average annual increase of only 2 per 1,000, which is quite credible in view of the history of this interval, with its many tragic catastrophes.

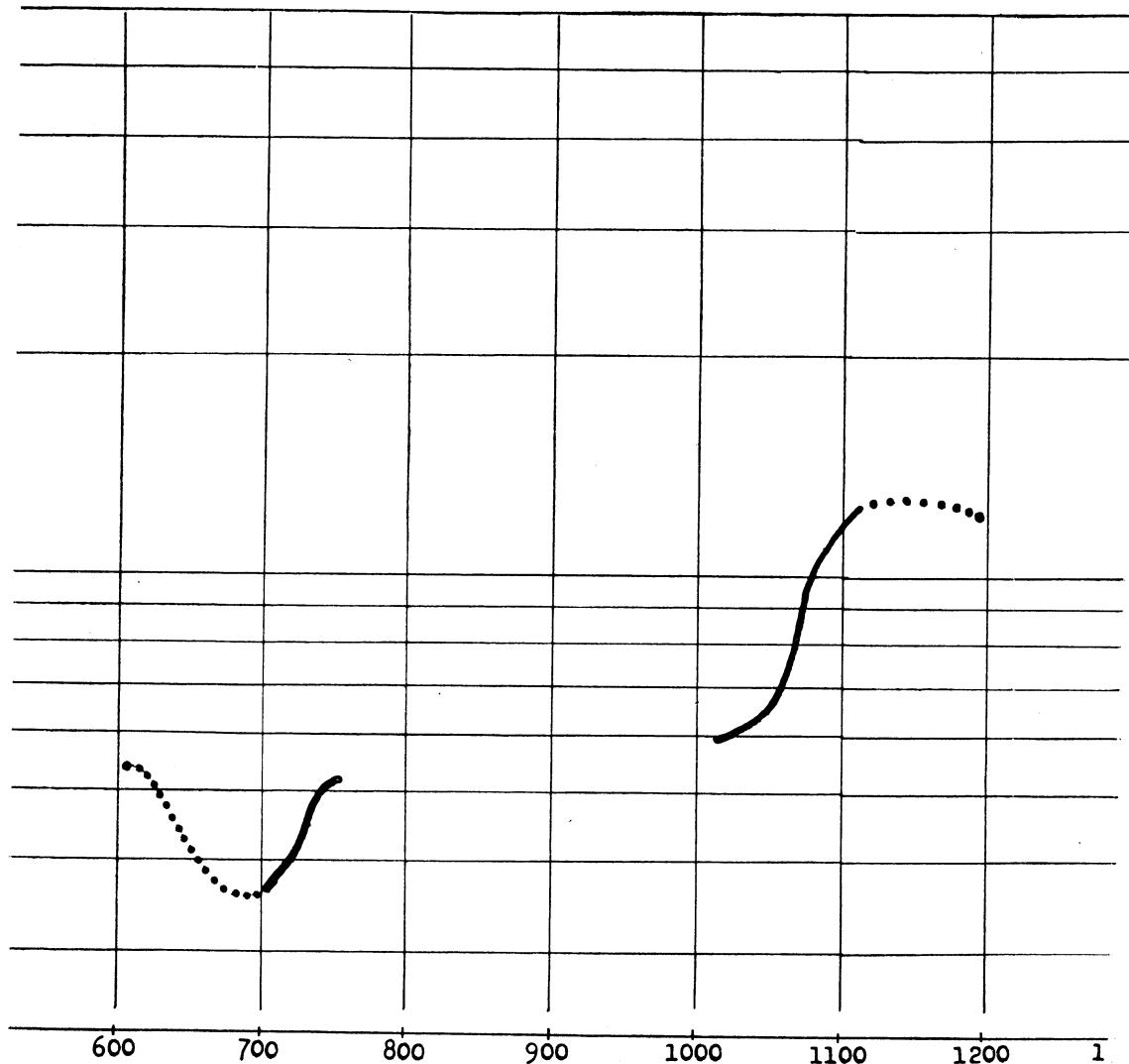
⁷⁶ On the methodological plan which was drawn up for this census, see Krotevich (18). On the modifications which it was found necessary to introduce in practice, see Taeuber and Orleans (32). On the possibility that the totals reported for certain provinces were estimates derived in part from earlier figures, see Taeuber and Wang (33).

To face page 247.

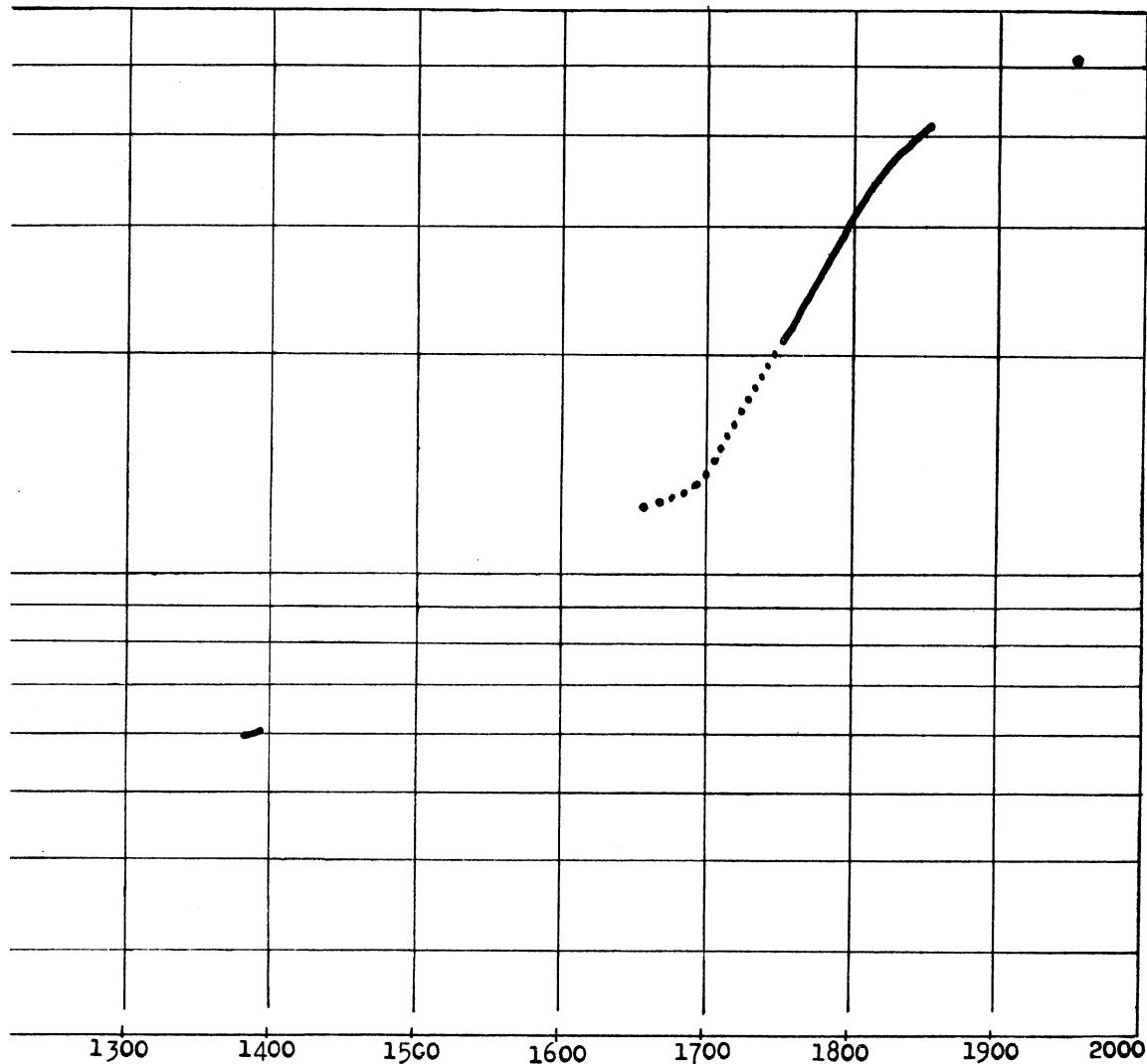
FIGURE 3. GROWTH OF POP.



F POPULATION IN CHINA PROPER, A.D. 2—1953, ACCORDING TO EMENDED SERIES OF
(LOGARITHMIC SCALE)



SERIES OF STATISTICS AND ESTIMATES



The comparison of the 1953 and 1851 statistics for provinces (Table 9) also shows a picture which is credible enough on the whole, although questions might be raised with regard to the increases and decreases indicated for certain provinces : Kiangsi, for instance. In short, the 1953 figures fit tolerably well into the long historical series of Chinese population statistics, but they can hardly be reconciled with many of the estimates which were made during the first half of the present century.

Table 10. *China : Comparison of 1953 Census Results with Population Estimates for 1909-1911, 1912 and 1928-1929*
Population in millions

		Total China and dependencies	China Proper	Outlying areas
1909-11 :				
Estimate of Chen Chang-heng ^a	...	374·2	347·9	26·3
1912 :				
Estimate of Warren H. Chen ^b	...	393·2	370·2	23·0
Estimate of W. F. Willcox ^c	...	410·6	397·4	13·2
1928-1929 :				
Estimate of Chen Chang-heng ^d	...	461·7	—	—
Estimate of Warren H. Chen ^b	...	445·0	—	—
Estimate of Liu Nan-ming ^e	...	474·8	408·5	66·3
1953 census ^f	...	582·6	518·4	64·2

^a Quoted by Liu Nan-ming (22), p. 97, together with another, closely similar estimate by Wang Chi-ta. Chen Chang-heng (7), p. 30* also gives another estimate of 386·4 millions for China and dependencies based on the 1909-1911 census, but without a division between China proper and the outlying territories.

^b Chen, Warren H. (10), pp. 56*-60*. The division of his 1912 estimate between China proper and outlying territories has been made by the present author with the data quoted by Chen and the assumptions which he stated.

^c Willcox (44), p. 523. The figures include an estimated correction of 30 millions (Willcox put it in the range of 20 to 30 millions) for underenumeration of females.

^d Chen Chang-heng (7), p. 33*.

^e Liu Nan-ming (22), pp. 113-114.

^f United States, Bureau of the Census (37).

EMENDED SERIES OF STATISTICS, A.D. 2-1953

Table 11 shows an emended series of population totals, A.D. 2 to 1953, for that part of China proper which was within the empire during each historical period. This series is charted in Fig. 3.

Statistics which have been shown to be seriously defective and inconsistent with figures for other years have been discarded in making up this emended series. From the statistics of the Ming dynasty, only the figures for 1381 and 1393 have been retained, for it seems impossible to put any faith in the later statistics of this dynasty, in view of the multiple inconsistencies found in them. Also omitted are the Yuan (Mongol) dynasty statistics and those for certain years in other dynastic series, as well as the numbers of *Ting* for 1651-1734 and the defective censuses of 1909-1911, 1912, and 1928-1929. The emended series is abridged during those periods in which statistics were recorded at short intervals, since

the data are clearly not reliable enough to provide useful measures of year-to-year changes.

The numbers shown for A.D. 2, 88-156, 606 and 1014-1103 are estimates derived from the recorded numbers of households with the assumption of a constant average of six persons per household. Such estimates are probably nearer the truth, especially for the period of the Sung dynasty, than the smaller recorded numbers of persons. Likewise, in the estimated total for the period 1193-1195, the component which represents the population of the Southern Sung empire has been derived by the same assumption from the number of households, while the recorded number of persons has been taken to represent the population of the Ch'in empire. For the year 1751 an estimate of 30 million omissions has been added to the recorded number of persons; this improves consistency with the figures for 1775 and later years.

The statistics of the Han, Sui, and T'ang dynasties have been reduced, as explained above, by the estimated populations of areas outside China proper which were included in the statistics of these periods. Likewise, the Ch'ing dynasty totals, 1751-1851, have been reduced by the numbers reported for Manchuria and by approximate estimates of the populations of Sinkiang and Taiwan. On the other hand, no attempt has been made to add estimates of the population in those areas of modern China proper which were not covered by the statistics of the earlier dynasties, since the basis for such estimates is completely lacking. The deficiency on this account is most important in the case of the Sung dynasty statistics and less important in the Han, Sui, and T'ang statistics.

In making the chart (Fig. 3), some irregularities in the statistics have been smoothed out and hypothetical trends have been sketched in, as shown by the dotted lines, for those intervals in which partial statistics or historical evidence seemed adequate to indicate at least approximately the form of the population curve. The trend for the early Ch'ing period, 1657-1734, has been sketched with reference to the increases in the statistics of *Ting*.

Although the figures presented in this emended series for the Han, Sui, and especially the Sung dynasty are larger than the recorded numbers, they are by no means the highest estimates which would be defensible. No allowance have been made for the non-Chinese population nor for social classes of the Chinese who were probably excluded from the statistics, and no attempt has been made to correct deficiencies in the counts of households due to oversight, evasion, deliberate underreporting by local officials, or other kinds of malfunctioning of the statistical organization. For reasons which were enumerated earlier, the statistics of all dynastic periods prior to the Ch'ing were almost certainly understated, and the substitution of estimates based on the numbers of households, instead of more defective statistics of individuals, is not likely to be a sufficient correction.

It is likely, for reasons indicated above, that the amount of understatement varied from one date to another, and consequently the increases and decreases of the figures for some periods may be considerably distorted. Although the emendations have removed the most obviously erratic fluctuations, the series as emended is still likely to exaggerate the population losses during periods of social

disorganization and economic adversity as well as the gains in times of prosperity, re-unification, and population growth. The chart of the emended series may therefore be something of a caricature of the variability of China's population trend over the last twenty centuries.

Possibly the weaknesses of the statistics are more fundamental; possibly the major outlines of the long-range trends are distorted beyond recognition. But the examination of the statistics and available information concerning their definitions and methodological basis does not provide sufficient justification for so sweeping a condemnation. Without definite knowledge of such major errors it would be a mistake to ignore these data and what they tentatively imply with regard to the population history, not only of China but also of the world as a whole.

Table 11. *China Proper : Emended Series of Population Statistics, A.D. 2-1953*

Dynasty and year (A.D.)	Population (millions)	Dynasty and year (A.D.)	Population (millions)
Western Han :		Sung-Ch'in :	
2	71	1193-1195 ...	123
Eastern Han :		Ming :	
88	43	1381	60
105	53	1393	61
125	56		
140	56	Ching :	
156	62	1751	207
Sui :		1781	270
606	54	1791	294
T'ang :		1811	347
705	37	1821	344
726	41	1831	383
732	45	1841	400
742	51	1851	417
755	52	People's Republic :	518
Sung :		1953	
1014	60		
1029	61		
1048	64		
1065	77		
1075	94		
1086	108		
1094	115		
1103	123		

APPENDIX
PROVINCIAL STATISTICS

Available population statistics for the provinces of China proper from A.D. 2 to 1578 and a selection of the available figures from 1749 to date are reproduced in Tables A-1, A-2, and A-3. Table A-1 shows the recorded number of persons, Table A-2 the number of households, and Table A-3 the ratio of persons per household. For the Han, Sui, and T'ang dynasties, the figures shown are Professor Bielenstein's estimates. The author is indebted to him for making these figures available and giving permission to publish them.

The division of China proper into provinces has remained approximately the same since the time of the Ming dynasty, although there has been some splitting of provinces and some provincial names have been changed. During the Ming period Hunan was combined with Hupeh under the name of Hukuang, Kiangsu and Anhui were combined under the name of Nanking, and Kansu was a part of Shensi. Kweichow was formed in 1411 from parts of Yunnan, Szechwan, and Hukuang. Under the Ch'ing dynasty Taiwan was included in Fukien, and Kansu included Sinkiang.

During the Han, Sui and T'ang dynasties the administrative divisions were entirely different. Bielenstein's allocation of the local statistics for A.D. 2, 140, 606, and 742 to the areas of the modern provinces is necessarily only approximate, but the approximation should be close enough for most analytical purposes, particularly in view of the large errors of other kinds to which the statistics are subject.

Table A-1. *China: Numbers of Persons Recorded by Provinces, A.D. 2-1953*

Province	Area (square miles)	Thousands of persons					
		A.D. 2	140	742	1381	1391	1393
Total, China proper	1,463,505	55,130	47,265	50,964	59,473	56,875	60,546
Kansu	241,254	1,518	468	61,130	2,155	2,490	2,317
Shensi	72,554	3,344	820	4,229			
Shansi	60,396	3,415	1,307	3,888	4,030	4,413	4,072
Hopeh	54,498	6,998	6,657	6,005	b1,893	b1,981	b1,927
Shantung	56,946	13,700	9,342	7,131	5,197	5,673	5,256
Honan	63,763	12,630	9,864	7,030	1,891	2,107	1,913
Anhui	56,490	4,350	3,233	2,993	10,241	10,162	10,756
Kiangsu	42,469	2,530	1,722	3,476			
Chekiang	39,633		481	4,319	10,550	18,662	10,488
Kiangsi	63,809	352	1,669	1,586	8,982	8,106	8,982
Hupeh	71,958	938	1,013	1,355	i4,593	i4,092	i4,703
Hunan	79,065	561	2,312	1,223			
Szechwan	117,231	3,514	4,797	4,987	i1,465	i1,568	i1,467
Yunnan	162,348	580	2,008	a—	j—	i355	i259
Kweichow	65,715	153	267	a—	k—	k—	k—
Kwangsi	84,530	296	c467	f349	i1,463	i1,392	i1,483
Kwangtung	84,468	251	838	g853	3,172	2,582	3,008
Fukien	46,378	a—	a—	412	3,840	3,293	3,917
Ouilying areas	—	2,542	d—	536	—	—	—
Total recorded	—	b57,671	49,150	b51,500	b59,473	b56,875	60,546

TABLE A-1 *continued*—

Province	Thousands of persons				
	1491	c.a. 1540	1578	1749	1771
Total, China proper	53,281	60,216	60,693	177,089	213,896
Kansu	13,912	3,934	4,502	5,710	13,216
Shensi	4,360	5,084	5,319	6,734	7,425
Shansi	3,431	3,413	4,265	13,933	16,770
Hopeh	6,760	6,760	5,664	24,012	26,000
Shantung	2,614	5,106	5,194	12,848	16,679
Honan	7,984	9,967	10,503	21,568	23,684
Anhui	5,306	4,525	5,153	20,972	24,278
Kiangsu	6,550	7,923	5,859	11,877	17,092
Chekiang	2,598	2,104	3,102	8,448	11,745
Hunan	126	1,433	1,476	7,527	8,532
Szechwan	259	512	291	8,672	9,082
Yunnan	1,676	1,055	1,186	3,075	3,458
Kweichow	1,817	1,978	2,041	3,688	4,794
Kwangtung	2,106	2,083	1,739	6,461	7,068
Fukien	—	—	—	17,620	18,171
Outlying areas	—	—	—	407	751
Total recorded	b53,281	60,216	60,693	177,495	b214,647

TABLE A-1 *continued*—

Province	Thousands of persons					
	1776	1812	1851	1912	1928-29	1953
Total, China proper	267,399	360,443	428,709	—	—	518,405
Kansu	15,068	15,355	15,440	4,988	—	12,928
Shensi	8,193	10,207	12,010	12,364	11,802	15,881
Shansi	12,503	14,004	15,693	10,082	12,088	14,314
Hopeh	20,567	27,991	23,455	26,658	31,118	41,447
Shantung	21,497	28,959	33,266	30,989	—	48,877
Honan	19,858	23,037	23,928	28,518	—	44,215
Anhui	27,567	34,165	37,631	—	21,715	30,344
Kiangsu	28,808	37,844	44,303	32,283	34,130	47,457
Chekiang	19,365	26,257	30,107	21,440	20,623	22,866
Kiangsi	16,849	23,047	24,516	23,988	—	16,773
Hupeh	14,815	27,370	33,810	29,590	26,696	27,790
Hunan	14,990	18,653	20,648	27,617	31,500	33,227
Szechwan	7,790	21,436	44,752	48,130	—	62,304
Yunnan	3,103	5,561	7,403	9,468	—	17,473
Kweichow	5,003	5,288	5,436	9,526	—	15,037
Kwangsi	5,382	7,314	7,823	—	—	19,561
Kwangtung	14,821	19,174	28,389	—	—	34,770
Fukien	11,220	14,779	20,099	15,849	—	13,143
Outlying areas	839	1,250	3,187	22,470	21,688	64,199
Total recorded	268,238	b361,693	431,896	353,260	211,361	582,603

SOURCES : A.D. 2-742—Data supplied to the author by Professor Bielenstein ; 1381-1578—Van der Sprenkel (40), pp. 297-305 ; 1749, 1771, 1776, 1812—Sacharoff (29), p. 193 ; 1851—Institute of Economic Research, Academia Sinica (16) ; 1912-1929—Warren H. Chen (10), pp. 56*, 59*-60* ; 1953—United States, Bureau of the Census (37).

a Area not included in the empire at this date.

b Total of recorded local figures. The totals recorded for the empire were :

	Thousands			
A.D. 2	59,595
742	48,910
1381	59,873
1391	56,775
1491	50,503

c Incomplete : areas for which statistics were lacking reported a population of roughly 75,000 in A.D. 2.

d Recorded figures are very incomplete.

e Incomplete ; areas for which statistics are lacking reported a population of roughly 25,000 in A.D. 140.

f Incomplete ; areas for which statistics are lacking reported a population of less than 25,000 in A.D. 140.

g Incomplete ; areas for which statistics are lacking reported a population of roughly 50,000 in A.D. 140.

h Incomplete.

i Including a part of Kweichow.

j No figure on record for this year.

k Kweichow was organized as a province in 1411 from parts of Yunnan, Szechwan, and Hupeh.

l The following emendations were proposed by van der Sprenkel because the recorded figures were out of line with data for other years :

Province	Date	Emended figure (thousands)
Shensi-Kansu	..	1491
Shansi	..	1391
Chekiang	..	1391
		10,662

m Figures from *Ta-ming Hui-tien* (preferred by van der Sprenkel) do not agree with those from *Ming Shih Ti-li-chih*, which are as follows :

Province	Date	Thousands of persons
Hopel	..	1578
Honan	..	1491
Kwangtung	..	1578
		5,041

n Totals for China proper apparently include Taiwan (combined in the statistics with Fukien) and Sinkiang (combined with Kansu).

Table A-2. *China : Numbers of Households Recorded by Provinces, A.D. 2-1929*

Province	Thousands of households					
	A.D. 2	140	606	742	1381	1391
Total, China proper ..	11,822	9,295	8,987	8,852	10,654	10,684
Kansu .. .	383	108	352	6214	285	295
Shensi .. .	762	172	755	755		
Shansi .. .	785	212	867	658	596	593
Hopeh .. .	1,612	1,023	1,256	911	6339	6341
Shantung .. .	3,092	1,723	1,638	1,054	752	720
Honan .. .	2,360	1,985	1,935	1,243	315	330
Anhui .. .	954	614	308	467	1,935	1,877
Kiangsu .. .	553	384	386	515		
Chekiang .. .		123	73	729	2,150	2,282
Kiangsi .. .	67	406	86	259	1,554	1,567
Hupeh .. .	182	221	450	246	786	739
Hunan .. .	99	515	54	221		
Szechwan .. .	765	1,175	504	1,168	215	233
Yunnan .. .	82	261	a—	a—	a—	76
Kweichow .. .	24	32	a—	a—	f—	f—
Kwangsi .. .	52	6111	152	6109	210	208
Kwangtung .. .	48	230	159	6211	706	607
Fukien .. .	a—	a—	12	91	811	817
Outlying areas ..	545	6161	d81	102	—	—
Total recorded ..	b12,366	9,699	b9,068	b8,954	10,654	10,684

TABLE A-2 *continued*—

Province	Thousands of households					
	1393	1491	ca. 1540	1578	1912	1928-29
Total, China proper ..	10,643	9,113	9,677	10,620	—	—
Kansu .. .	295	307	363	394	986	—
Shensi .. .					1,636	2,103
Shansi .. .	595	575	590	596	2,100	2,292
Hopeh .. .	6335	395	419	425	5,013	5,445
Shantung .. .	754	771	771	1,372	5,653	—
Honan .. .	316	8437	589	633	4,731	—
Anhui .. .	1,903	1,512	1,963	2,069	—	3,830
Kiangsu .. .	1,903	1,512	1,963	2,069	6,077	6,877
Chekiang .. .	g2,138	1,503	b1,242	1,542	4,745	4,647
Kiangsi .. .	1,554	1,364	1,583	1,341	4,579	—
Hupeh .. .	776	505	532	541	4,844	5,545
Hunan .. .	776	505	532	541	5,767	6,455
Szechwan .. .	216	254	164	263	9,259	—
Yunnan .. .	60	16	134	136	1,904	—
Kweichow .. .	f—	43	149	43	2,063	—
Kwangsi .. .	211	b460	186	219	—	—
Kwangtung .. .	676	467	483	531	—	—
Fukien .. .	816	506	509	515	3,012	—
Outlying areas ..	—	—	—	—	3,425	3,567
Total recorded ..	10,643	b9,113	9,677	10,620	65,795	40,761

SOURCES: see Table A-1.

a Area not included in the empire at this date.

b Total or recorded local figures. The totals recorded for the empire were 12,233,000 in A.D. 2, 8,908,000 in 606, 8,526,000 in 742, and 9,807,000 in 1491.

c Incomplete; see notes to Table A-1.

d Incomplete; areas for which statistics are lacking reported a population of roughly 50,000 in A.D. 140.

e No figure on record for this year.

f Kweichow was organized as a province in 1411 from parts of Yunnan, Szechwan, and Hupeh.

g Figures from *Ta Ming Hui-tien* (preferred by van der Sprengel) do not agree with those from *Ming Shih Ti-li-chih*, which are as follows:

Province	Date	Thousands of households
Honan	1491	575
Chekiang	1393	1,138

h The following emendations were proposed by van der Sprengel because the recorded figures were out of line with those for other years:

Province	Date	Thousands of households (amended)
Kwangsi	1491	260
Chekiang	1540	1,542

Table A-3. *China: Average Numbers of Persons per Household, by Provinces: A.D. 2-1929*
(Computed from Tables A-1 and A-2)

Province	A.D. 2	140	742	1381	1391	1393	1491	1540	1578	1912	1928-29
Total, China proper	..	4·7	5·1	5·8	5·6	5·3	5·7	5·8	6·2	5·7	—
Kansu	..	4·0	4·3	5·3	7·6	8·4	7·9	12·7	10·8	11·4	{ 5·1
Shensi	..	4·4	4·8	5·6	7·6	8·4	12·7	10·8	11·4	7·6	5·6
Shansi	..	4·4	6·2	5·9	6·8	6·4	6·8	7·6	8·6	8·9	4·8
Hopeh	..	4·3	6·5	6·6	5·6	5·8	5·8	8·7	8·1	10·0	5·3
Shantung	..	4·4	5·4	6·8	6·9	7·9	7·0	8·8	8·8	4·1	5·5
Honan	..	5·4	5·0	5·7	6·0	6·4	6·1	6·0	8·7	8·2	6·0
Anhui	..	4·6	5·3	6·4	5·3	5·4	5·7	5·3	5·1	—	5·7
Kiangsu	..	4·6	4·5	6·7	5·3	5·4	5·7	5·3	5·1	5·3	5·0
Chekiang	..	3·9	5·9	4·9	43·8	4·9	3·5	43·6	3·3	4·5	4·4
Kiangsi	..	5·3	4·1	6·1	5·8	5·2	5·8	4·8	5·0	4·4	5·2
Hupeh	..	5·2	4·6	5·5	5·8	5·5	6·1	7·5	8·2	8·1	6·1
Hunan	..	5·7	4·5	5·5	5·8	5·5	6·1	7·5	8·2	8·1	4·8
Szechwan	..	4·6	4·1	4·3	6·8	6·7	6·8	10·2	12·8	11·8	5·2
Yunnan	..	7·1	7·7	—	—	4·7	4·3	7·9	10·7	10·9	5·0
Kweichow	..	6·4	8·3	—	—	—	—	6·0	3·4	6·8	4·6
Kwangsi	..	5·7	4·2	3·2	7·0	6·7	7·0	43·6	5·7	5·4	—
Kwangtung	..	5·2	3·6	4·0	4·5	4·3	4·5	3·9	4·1	3·8	—
Fukien	..	—	—	4·5	4·7	4·0	4·8	4·2	4·1	3·4	5·3
Outlying areas	4·7	—	5·3	—	—	—	—	—	—	6·6	6·1
Total recorded	4·7	5·1	5·8	5·6	5·3	5·7	5·8	6·2	5·7	5·4	5·2

a Emendation of the numbers of persons and households, as proposed by van der Sprekkel, would yield the following averages :

Province	Date	Persons per household
Shensi-Kansu ..	1491	9·5
Shansi ..	1391	6·8
Chekiang ..	1391	4·7
	1540	2·9
Kwangsi ..	1491	6·5

REFERENCES

- (1) Balázs, Stefan. "Beiträge zur Wirtschaftsgeschichte der T'ang-Zeit (618-906)". *Mittheilungen des Seminars für Orientalische Sprachen zu Berlin*. Erste Abteilung (Ostasiatische Studien). Jahrgang XXXIV, pp. 1-92; XXXV, pp. 1-73; XXXVI, pp. 1-62. 1931-1933. (Berlin. Universität. Ausland-Hochschule. Mittheilungen.)
- (2) Bielenstein, Hans. "The census of China during the period 2-742 A.D." *Bulletin of the Museum of Far Eastern Antiquities* (Stockholm), No. 19. 1947.
- (3) Biot, Edouard. "Mémoire sur la population de la Chine et ses variations depuis l'an 2400 avant J.C. jusqu'au XIII^e siècle de notre ère". *Journal Asiatique*, sér. 3, Vol. I, pp. 369-394, 448-474; Vol. II, pp. 74-78; Vol. V, pp. 305-331. 1836-1838.
- (4) Bowring, J. "The Population of China". *Journal of the Royal Statistical Society*, Vol. XX, 1857.
- (5) Britton, R. S. "Census in ancient China". *Population* (London), Vol. I, No. 3. 1934.
- (6) Chen Chungshen, S. "The Chinese census of population since 1712". *Bulletin de l'Institut International de Statistique*, Vol. XXXV, Part 2. 1931.
- (7) Chen Chang-heng. "Some phases of China's population problem". *Bulletin de l'Institut International de Statistique*, Vol. XXV, Part 2. 1931.
- (8) Chen Ta. *Population in modern China*. Chicago, 1946.
- (9) —— "New China's population census of 1953 and its relations to national reconstruction and demographic research". *Bulletin de l'Institut International de Statistique*, Vol. XXXVI, Part 2. 1958.
- (10) Chen, Warren H. "An estimate of the population of China in 1929". *Bulletin de l'Institut International de Statistique*, Vol. XXV, Part 2. 1931.
- (10a) Eichhorn, Werner, "Gesamtbevölkerungsziffern des Sung Reiches," *Oriens extremus* (Hamburg), Vol. IV, No. 1. July, 1957.
- (11) Fitzgerald, C. P. "A new estimate of the Chinese population under the T'ang Dynasty in 618 A.D." *The China Journal* (Shanghai), Vol. XVI, No. 1, pp. 5-14; No. 2, pp. 62-72. Jan.-Feb. 1932.
- (12) —— "Further historical evidence for the growth of the Chinese population". *Sociological Review*, Vol. XXVIII. 1936.
- (13) —— "The consequences of the rebellion of An Lu-shan upon the population of the T'ang Dynasty". *Philobiblon* (Nanking), Vol. II, No. 1. 1947.
- (14) Franke, Herbert. *Geld und Wirtschaft in China unter der Mongolen-Herrschaft. Beiträge zur Wirtschaftsgeschichte der Yuan-Zeit*. ("Das Mongolische Weltreich", Vol. III.) Leipzig, 1949.
- (15) Giles, Lionel. "A census of Tun-huang". *T'oung Pao* (Leiden), Vol. XVI. 1915.
- (16) Ho Ping-ti. "Early-ripening rice in Chinese history". *Economic History Review*. Second Series, Vol. IX, No. 2, Dec. 1956.
- (17) —— *Studies on the population of China, 1368-1953*. Cambridge, Mass. 1959.
- (16) Institute of Economic Research, Academia Sinica. *A compilation of selected statistical materials on the economic history of modern China*. (In Chinese.) Peking, Science Publication Society, 1955.
- (17) Jaffe, A. J., "A review of censuses and demographic statistics of China". *Population Studies*, Vol. I. December 1947.
- (18) Krotevich, S. "Vsekitayskaya perepis' naseleniya 1953 g.". *Vestnik Statistiki*, No. 5. Sept.-Oct. 1955.
- (19) Lao Kan. "Population and geography in the two Han Dynasties." Article first published in Chinese, 1935. Translation in: Sun E-tu Zen and de Francis, John. *Chinese Social History. Translation of Selected Studies*. Washington, American Council of Learned Societies, 1956.
- (20) Li Chi. *The formation of the Chinese people. An Anthropological Inquiry*. Cambridge, Mass., 1928.
- (21) Lieu, D. K. and Chen Chung-min. "Statistics of farm land in China." *Chinese Economic Journal*, Vol. II, No. 3. March 1928.
- (22) Liu Nan-ning. *Contribution à l'étude de la population chinoise*. Geneva, 1936.
- (23) Maspero, H. "Le protectorat général d'Annam sous les T'ang. Essai de géographie historique." *Bulletin de l'Ecole française d'Extrême-Orient* (Hanoi), Tome X. 1910.
- (24) Orleans, Leo A. "The 1953 Chinese Census in Perspective". *Journal of Asian Studies*. Vol. XVI, No. 4. August 1957.
- (25) Parker, E. H. "Some Chinese Statistics." *Journal of the Royal Statistical Society*, Vol. LXII. 1899.

- (26) Pressat, Roland. "La population de la Chine et son économie". *Population* (Paris), 13e année, No. 4. Oct.-Dec. 1958.
- (27) Pulleyblank, Edwin G. *The Background of the Rebellion of An Lu-shan*. Oxford, 1955.
- (28) Rockhill, William Woodville. "Inquiry into the Population of China". *Smithsonian Miscellaneous Collections*, Vol. XLVII, No. 2, Part 3, 1904.
- (29) Sacharoff, J. "Historische Übersicht der Bevölkerungs-Verhältnisse Chinas". *Arbeiten der Kaiserlichen Russischen Gesandtschaft zu Peking*, Vol. II. Berlin, 1898. (Translated from Russian.)
- (30) Shigeshi, Kato. *Studies in Chinese Economic History*. (In Japanese, English summary.)
- (31) Taeuber, Irene B. *The Population of Japan*. Princeton, 1958.
- (32) — and Orleans, Leo A. "A note on the population statistics of Communist China". *Population Index*, Vol. XXII, No. 4. Oct. 1956.
- (33) — and Wang Nai-chi. "The population reports of the Ch'ing dynasty and the growth of China's population". American Association for the Advancement of Science, Section K. Chicago, 1959.
- (34) Taylor, K. W. "Some aspects of population history". *Canadian Journal of Economics and Political Science*, Vol. XVI. August 1950.
- (35) United Nations. *The determinants and consequences of population trends*. (ST/SOA/Series A. Population Studies, No. 17.) New York, 1952.
- (36) — *The future growth of world population*. (*Ibid.*, No. 28.) New York, 1957.
- (37) United States, Bureau of the Census. *The population of Communist China*: 1953. (International population reports, Series P-90, No. 6.) Washington, 4 March 1955.
- (38) United States, Library of Congress. *Annual report of the Librarian of Congress*, 1940. Washington, 1941.
- (39) Usher, Albert Payson. "The history of population and settlement in Eurasia". *Geographical Review*, Vol. XX. 1930.
- (40) Van der Sprenkel, Otto Berkelbach. "Population statistics of Ming China". *Bulletin of the School of Oriental and African Studies* (London), Vol. XV, Part 2. 1953.
- (41) Wan Kuo-ting. "The system of equal land allotments in mediæval times". Article first published in Chinese in 1931. Translation in: Sun E-tu Zen and De Francis, John. *Chinese social history. Translation of selected studies*. Washington, American Council of Learned Societies, 1956.
- (42) Willcox, Walter F. "A Westerner's effort to estimate the population of China and its increase since 1650". *Bulletin de l'Institut International de Statistique*. Vol. XXV, Part 3. 1931.
- (43) — "Increase in the population of the earth and of the continents." In: National Bureau of Economic Research, *International Migrations*, Vol. II, Interpretations. New York, 1930.
- (44) — "The population of China and its modern increase". In: Willcox, *Studies in American Demography*. Ithaca, N.Y., 1940.
- (45) Wittfogel, Karl A., and Fêng Chia-sheng. *History of Chinese society, Liao: General Introduction*. (Transactions of the American Philosophical Society, Vol. XXXVI.) Philadelphia, 1946.