A DEMOGRAPHIC STUDY
OF 38,256 RURAL FAMILIES IN CHINA

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IT IS no part of the present report to re-estimate the number of China's total population or even the aggregate number of the rural inhabitants with which this study explicitly deals. Various estimates of the total population range from about 350 millions to more than 550 millions. Most observers believe that the rural population constitutes 80 or perhaps even 85 per cent of the total. Wherever the truth may lie, little imagination is required to see that the welfare of these uncounted hundreds of millions is the welfare of China, and that in the small world of modern communications, with its political and economic uncertainties, the welfare of the Chinese farmer is a matter of importance to all of humanity.

It is with the composition, characteristics, and vital processes of this vast population, rather than with its numbers, that the present study deals. On those matters the Population Survey under consideration yields much the most extensive and detailed information thus far available. The survey was conducted with the cooperation of the Milbank Memorial Fund in connection with the China Land Utilization Study under the direction of Professor John Lossing Buck of the University of Nanking. In the present report it is possible only to present in condensed factual manner a summary of some of the more important findings. A more complete analysis will appear as a chapter on population of Professor Buck's report.[2]

THE SAMPLE

The data for the population study were collected by the investigation of a large number of communities, each selected because it

was thought to be typical of its class.[3] From each of these communities field investigators were chosen on the recommendation of local leaders. These investigators were carefully trained in the use of the schedules and given field experience under the supervision of a regional investigator. They were then required to secure the necessary data from every family in the areas assigned them. There were 119 such localities, with populations ranging from 396 to 6,260 inhabitants, located in sixteen provinces. Altogether, information was collected and analyzed for 46,601 families. The data obtained related to the status of the population as of an enumeration day and to the events which occurred during a twelve-month period ending with that day. The enumeration day and year varied from place to place, but all of the data were collected in the years 1929 to 1931. In every case an effort was made to have the enumeration day coincide with some festival or other easily remembered time so that the informants would be clear as to the exact period covered.

In spite of the care taken to obtain reliable data, examination of the crude birth and death rates for individual localities showed that a number of them had been inaccurately enumerated. Some of the rates were impossibly low, indicating a failure on the part of certain field workers to record all of the births and deaths, and suggesting the possibility of other inaccuracies less easily detected. Such a finding is not surprising when one considers the obstacles facing the investigation of an illiterate peasant population by enumerators with little experience in making field studies and only a hazy idea of the use to which their reports would be put. The surprising thing is not that the survey was poor in a few areas, but that it was apparently so reliable in the great majority of them.

In order to secure as accurate information as possible, a somewhat arbitrary procedure was adopted by which the data were rejected for those localities in which it was most obvious that a substantial proportion of the births and deaths had been omitted. If, after ample allowance was made for the fact that low rates might be due to specific local conditions or to chance errors arising from small numbers, the birth or death rates appeared unbelievably low, all of the data for the locality were rejected.[4] There were eighteen such areas but, with two exceptions, they were ones enumerated early in the investigation on a schedule form which was later changed. The highest birth and death rates on the basis of which any area was rejected were 20.7 and 10.5 respectively.

Fig. 1. Location of areas from which data were secured.

This rejection left 101 localities distributed as shown in Figure 1 and Table 1, in which records were secured from an aggregate of

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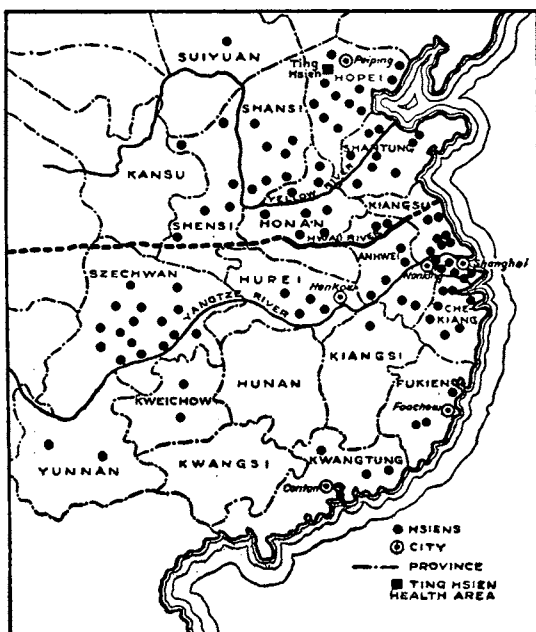4 The actual procedure was to rank the areas which had been enumerated on a revised schedule form in the order of their crude birth and death rates, and to select the first quartile limits. Curves were then plotted which represented these limits minus 3 sigmas for a series of n's. When either the birth or the death rate of any locality fell below the curves, all of the data for that locality were rejected. A similar test applied to the upper limits would have yielded no rejections except in the case of five localities where there had been epidemics. It should be clearly understood that this procedure resulted in the retention of data for some small localities in which the recorded birth and death rates were lower than those which determined the rejection of data for larger localities. This makes allowance for the fact that the low rates which indicated inaccurate enumeration in large localities may for small samples have reflected simply chance errors.

Region and Province	Areas Surveyed	Resident Families	Resident Population
Total Sample	101	38,256	202,617
North China	44	17,581	97,511
Anhwei	2	718	4,017
Hopeh	11	3,415	20,689
Honan	8	4,603	24,949
Shansi	7	2,741	13,539
Shantung	9	3,197	18,174
Shensi	6	2,706	15,248
Suiyuan	1	201	895
South China	57	20,675	105,106
Anhwei	6	2,830	14,334
Chekiang	7	2,837	12,228
Fukien	3	801	3,922
Hupeh	4	1,728	9,111
Kiangsi	1	616	3,205
Kiangsu	13	5,416	26,970
Kwangtung	3	1,104	7,185
Kweichow	2	1,235	6,271
Szechwan	16	2,872	15,581
Yunnan	2	1,236	6,299

Table 1. Geographic distribution of the sample.

38,256 resident families comprising 202,617 persons resident on the enumeration days and 5,499 who died during the enumeration years. The lowest birth and death rates recorded for any of the 101 localities retained were 10.2 and 9.7 respectively, and for all areas combined the crude birth rate was 38.3 and the crude death rate 27.1. It is probable that even these rates are lower than the actual conditions warranted since all localities were retained whenever it appeared possible that the low rates might be due to sampling errors. Doubtless some of them were actually due to faulty enumeration. Therefore, the remaining data somewhat underestimate the true force of both mortality and fertility and are less than precise in other particulars, but carefully interpreted they afford a much better picture of the composition and vital processes of the rural Chinese population than has hitherto been available.

THE FAMILY

The patriarchal family retains an important place in Chinese rural life, particularly in North China where the means of communication are less developed and prosperous cities, with their disintegrating influence on ancient tradition, are more difficult to reach. In the North, that is in the wheat regions, about one-third of the family members did not belong to the immediate families of the household heads. In the South, that is in the rice and tea regions, these other kin constituted a little over one-quarter of the total. Similar differences existed between the size of families of the two regions. As may be seen from Table 2, the average was about 5½ persons in the North and about 5 persons in the South.

In both the North and the South there was an intimate relation between size of the family and productive capacity of the farms, as measured roughly by crop area. It seemed unwise to examine this relationship by merely classifying all farms with equal crop areas together, because so many different types of agricultural regions were included in the sample. In some regions, where the land was rich and the cultivation intensive, small farms yielded higher incomes than the larger farms of districts with poor soil and semi-arid climate. The difficulty was at least partially avoided by classifying

Table 2. The relation of crop area of the farm to the mean size of family.

| CROP AREA OF FARM[1] | MEAN SIZE OF FAMILY | | | CROP AREA IN HECTARES | | | |
| | | | | North China | | South China | |
	Total Sample	North China	South China	Smallest Farm	Largest Farm	Smallest Farm	Largest Farm
TOTAL	5.21	5.44	5.01	0.01	127.50	0.00	367.50
Group I	3.96	3.98	3.94	0.01	2.24	0.00	1.21
Group II	4.52	4.57	4.48	0.03	3.44	0.06	2.67
Group III	5.02	5.13	4.93	0.05	4.96	0.07	4.19
Group IV	5.76	6.07	5.49	0.08	7.52	0.14	11.03
Group V	7.31	7.92	6.80	0.10	127.50	0.34	367.50
Nonfarm or Crop Area Unknown	4.29	4.72	3.83	—	—	—	—

[1] See text for explanation of crop-area groups.

the size of each farm in relation to that of the farms in its own locality. The families of each of the 101 localities were arranged in order of increasing crop area of their farms. They were then divided into five equal groups, and the corresponding groups of all localities were combined. Group I thus obtained, therefore, included the fifth of all the families which had the smallest farms in their own localities and Group V included the fifth which had the largest farms in their own localities. As may be seen from Table 2, crop areas included in each group vary greatly, but they increase directly from the lowest to the highest group.

The size of family increased sharply with the crop area of the farm thus classified. The average of 3.96 persons per family found on the smallest farms rose to 7.31 persons per family on the largest farms. The relationship was found both in the North and the South although in each group the average number of persons per family was somewhat smaller in the South. This positive association between crop area and size of family indicates simply that most Chinese rural families had about as many members as the farms could support.

AGE AND SEX

DISTRIBUTIONS

In both North and South China, the resident rural population was characterized by a large proportion of males, as may be seen in Table 3. The ratio of 108 males per 100 females was larger than that for any other country listed, but was nearly approached by the ratio for India which was 106. In each case

Table 3. Sex ratio of the population, for various countries.

Country	Year	Males per 100 Females
China (Total Sample)	1929–1931	108
North China	1929–1931	108
South China	1929–1931	109
British India[1]	1931	106
Japan[1]	1930	102
Australia[1]	1931	104
England and Wales[1]	1931	92
Sweden[1]	1930	97
United States		
Total Population[2]	1930	103
Rural Population[2]	1930	108

[1] *See* bibliography reference 13, p. 485.
[2] *See* bibliography reference 22, pp. 99, 102.

AGE	CHINA (1929–1931)			INDIA[1] (1931)	JAPAN[2] (1925)	ENGLAND AND WALES[3] (1927)	FRANCE[3] (1926)	UNITED STATES[4] (1930)	
	Total Sample	North	South					Total	Rural
TOTAL	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	99.9
Under 10	25.0	24.1	25.7	28.5	25.4	16.9	14.8	19.6	22.7
10–19	19.3	19.1	19.4	20.7	21.1	17.7	16.2	19.2	21.5
20–29	17.0	16.7	17.3	18.1	15.8	16.7	16.5	16.9	15.1
30–39	13.8	13.4	14.2	13.9	12.0	14.3	13.9	14.9	12.6
40–49	11.4	12.3	10.6	9.3	10.5	13.2	13.3	12.3	10.9
50 +	13.5	14.4	12.8	9.5	15.1	21.2	25.2	17.1	17.1

[1] *See* bibliography reference 2, Vol. I, Part I—Report, p. 98.
[2] *See* bibliography reference 9, p. 16.
[3] *See* bibliography reference 19, p. 98.
[4] *See* bibliography reference 22, pp. 577, 588-589.

Table 4. Age distribution of the population, for various countries.

the large proportion of males probably was due in part to the under-enumeration of females. The chief factor, however, was the unfavorable mortality experience of females.

China is spoken of as an old country, and so its culture is. But its population is young, judged by present-day Western standards. (Table 4.) Its youth is, of course, the inevitable result of high birth and death rates. Many are born but few survive the hazards of infancy and childhood. The South, with its higher birth and death rates, has a younger population than the North. The population of India is even younger. Japan, on the other hand, is in a transitional stage. Modern sanitation and medicine are counterbalancing the effect of a somewhat lower fertility, to yield an age distribution not sharply different from that found in China. In a very real sense the East is young.

MARRIAGE

The central fact about marriage in rural China is that virtually every one marries as soon as possible. After age 30 the bachelor is rare and the spinster virtually nonexistent. Monogamy is the rule. In the survey population there were eighty-one wives to each con-

cubine enumerated. China and India lead all the countries listed in Table 5 in the proportion which married persons formed of the population in the important reproductive ages. Among males the proportion married was slightly higher in India, but among the females China was highest with 85 per cent married as against India's 81 per cent. The large proportion of widows in India accounts for the difference. In Japan, on the other hand, only 67

Table 5. Distribution by marital condition of the population 15-44 years of age, for various countries.

Sex and Country	Total Number 15-44 Years of Age	Per Cent				
		Total	Single	Married	Widowed	Divorced
MALE						
China (Total Sample) (1929-1931)[1]	46,434	100.0	28.3	68.1	3.5	0.1
North China	21,560	100.0	28.9	67.7	3.3	0.1
South China	24,874	99.9	27.8	68.4	3.6	0.1
India (1931)[2]		100.0	23.2	72.0	4.8[2]	—
Japan (1925)[3]		99.9	42.6	54.5	1.2	1.6
England and Wales (1921)[4]		100.0	50.4	48.6	0.9	0.1
France (1926)[4]		99.9	46.3	52.1	1.0	0.5
United States (1930)[5]						
Total		99.9	45.9	52.0	1.1	0.9
Rural		100.0	47.8	50.3	1.2	0.7
FEMALE						
China (Total Sample) (1929-1931)[1]	42,438	99.9	10.5	84.8	4.6	0.0
North China	19,801	100.0	9.8	85.5	4.7	0.0
South China	22,637	100.0	11.2	84.2	4.6	0.0
India (1931)[2]		100.0	5.4	80.7	13.9[2]	—
Japan (1925)[3]		100.1	28.0	66.7	3.1	2.3
England and Wales (1921)[4]		100.0	48.4	48.5	3.0	0.1
France (1926)[4]		100.0	37.6	57.1	4.5	0.8
United States (1930)[5]						
Total		100.1	34.6	61.1	3.0	1.4
Rural		100.0	32.7	63.9	2.5	0.9

[1] Exclusive of Cheng, Honan Province (North China) and Tehtsing, Chekiang Province (South China), where data relating to marital condition were not collected.
[2] *See* bibliography reference 2, Vol. I, Part II, Imperial Tables, p. 120 (Divorced included with widowed).
[3] *See* bibliography reference 9, pp. 16-17.
[4] *See* bibliography reference 19, p. 104.
[5] *See* bibliography reference 22, pp. 843, 848; (Persons of unknown marital condition not included).

per cent of the women of childbearing age were married and in the West the proportions were still lower. The unusual prevalence of marriage in the Indian and Chinese populations is obviously an important factor in their high fertility.

Table 6. Mean age at marriage of all persons contracting marriage, for various countries.

Country	Year	Male	Female
China (Total Sample)	1929–1931	20.5	18.2
North China	1929–1931	20.3	17.7
South China	1929–1931	20.7	18.7
Australia	1931[1]	29.0	25.3
England and Wales	1930[2]	29.0	26.5
New York State (Exclusive of New York City)	1930[3]	28.8	25.2

[1] *See* bibliography reference 13, p. 518.
[2] *See* bibliography reference 15, pp. 112, 113.
[3] *See* bibliography reference 8, pp. 250-252.

The average age at marriage is substantially lower in China than in the West, as may be seen in Table 6. The Chinese data, in this case, relate to marriages contracted in the survey year. The average age was lower for females than for males; and for both sexes, but particularly for females, it was lower in the North than in the South. More than half of the males marrying for the first time were under 20 years of age, and in North China, where child marriage is most common, 12 per cent were under 15 years of age. Of the females marrying for the first time, 98 per cent were under 25; 81 per cent were under 20; and in North China 13 per cent were under 15 years of age. The contrast with the West is clear when one considers that in New York State, exclusive of New York City, marriages under 20 years of age constituted only 3 per cent of the total for males instead of the 54 per cent found in China, and only 30 per cent of the total for females instead of 81 per cent as in China.

<div align="center">FERTILITY</div>

Reports of annual births as obtained from single-year surveys have a serious shortcoming in China which is seldom encountered in the West. China is exposed to frequent catastrophes so severe that they undoubtedly have an important effect on reproductive performance. Obviously, the survey was not made in the midst of a

major epidemic, famine, flood, or war. The material presented relates to relatively quiet years, and it must constantly be borne in mind that the results obtained may differ sensibly from those that would have been secured had it been possible to observe average conditions over a ten-year or longer period. The reproductive performance pictured is that of a time when the most ruthless and acute checks on population growth were inoperative.

As was noted in the discussion of the sample, internal evidence suggests that the number of births recorded was somewhat smaller than the number which actually occurred. A further but less definite suggestion that the births during the survey year were not completely reported may be found from the recorded sex ratios at birth appearing in Table 7. In North China there were 112 male births and in South China 113 male births per 100 female births. These ratios may be compared with 108.5 males per 100 females recently obtained by the Central Field Health Station from a series

Table 7. Crude birth rates, births per 1,000 married females 15–44 years of age, and the sex ratios at birth.

	Total Sample	North China	South China
Births per 1,000 Population	38.3	37.4	39.0
Births per 1,000 Married Females 15–44 Years of Age[1]	207.1	201.5	212.0
Males per 100 Female Births	112.6	112.2	113.0
Births			
Total	7,751	3,649	4,102
Male	4,105	1,929	2,176
Female	3,646	1,720	1,926
Population	202,617	97,511	105,106
Areas in which Marital Condition was Reported[1]			
Births (Total)	7,454	3,412	4,042
Population	194,102	91,251	102,851
Married Females 15–44 Years of Age	35,997	16,934	19,063

[1] Exclusive of Cheng, Honan Province (North China) and Tehtsing, Chekiang Province (South China), where data relating to marital condition were not collected.

of 54,748 infants born in 227 hospitals.[5] The odds would be about 6 to 1 against the sex ratio observed in the study of hospitals and that found in the present study arising from independent samplings of the same universe. It seems likely that there was a greater tendency to disregard female than male births.

The crude birth rate computed from the total sample was 38.3 (Table 7.) This is probably a conservative statement of the actual rate, which may well have been over 40.[6] The rate was definitely higher in the South than in the North, and the sex ratios for the two regions do not suggest that the difference was due to less complete recording of births in the North. Moreover, the higher fertility of the South was achieved in spite of the fact that a somewhat smaller proportion of the females were married in that region. When this difference is taken into account by expressing fertility as the number of births per 1,000 married females 15 to 44 years of age, the higher fertility of the South is even more apparent.[7] Statistically, the differences are highly significant.

A comparison of the birth rates of a number of countries with those of China is possible from Table 8 which presents both the crude birth rates and the number of births per 1,000 married women 15 to 44 years of age. The two types of rates are not always for the same dates, but in general the comparison is valid. The rates for China were higher than those for each of the other countries listed except the Soviet Republics. Although there may be some doubt as to whether the rates given for India and China show the actual relation of fertility in those countries, it is clear that the birth rate was higher in China than in Japan where, in turn, it was higher than in any Western country listed. In the United States, in 1930, the birth rate was about one-half that for the Chinese sample.

5 *See* bibliography reference 1, page 61.

6 All of the rates shown are based on the resident population at the end of the enumeration years instead of at the middle of the years, but the error introduced by this procedure is probably small compared with that arising from incomplete enumeration.

7 The records indicate that illegitimacy was negligible in the population considered.

COUNTRY	BIRTHS PER 1,000 POPULATION		BIRTHS PER 1,000 MARRIED FEMALES 15-44 YEARS OF AGE	
	Year	Rate	Rate	Year
China (Total Sample)	1929–1931	38.3	207	1929–1931
North China	1929–1931	37.4	201	1929–1931
South China	1929–1931	39.0	212	1929–1931
India	1931[1]	34.3	—	—
Japan	1930[2]	32.4	230	1925[3]
Soviet Republics	1928[2]	42.7	—	—
Australia	1931[2]	18.2	154	1929–1931[3]
England and Wales	1931[2]	15.8	131	1927[3]
France	1931[2]	17.4	131	1926[3]
Sweden	1930[2]	15.4	130	1930[3]
United States (Registration Area)	1930[2]	18.9	131	1930[4]

[1] *See* bibliography reference 21, p. 56.
[2] *See* bibliography reference 13, p. 502.
[3] *See* bibliography reference 19, p. 133. (Legitimate births only.)
[4] Computed from official reports.

Table 8. Crude birth rates and births per 1,000 married females 15–44 years of age, for various countries.

The comparison of the rates for the Chinese sample with those for Japan is particularly interesting. The Chinese crude birth rate is definitely the higher, not because married women were more fertile in China but because there were more of them. The Chinese married women were apparently less fertile than the Japanese. But, as appeared in Table 5, 85 per cent of the Chinese women of childbearing age were married, while in Japan only 67 per cent were married. The universality of marriage in China more than counteracts the effect of the lower fertility of married women, yielding a higher crude birth rate in China than in Japan.

Studies of Western experience, with only one clear-cut exception, have shown that the poorer classes are more fertile than the well-to-do. The exception is in Stockholm[8] where fertility and economic status are positively associated, but where the birth rates of all classes have reached extremely low levels. Data recently assembled by Lamson,[9] from a series of small samples drawn largely from

[8] *See* bibliography references 7 and 10.

[9] *See* bibliography reference 11.

urban communities, suggest that the same unusual direct association between fertility and economic status exists in the much more fertile urban communities of China.

Data collected in the present study afford an opportunity to examine the relation of fertility and economic status in the rural population. Field workers inquired not only concerning births during the survey year, but also concerning the total number of children ever born to each married woman. The tabulation of these data for the married women of each tenure-of-land group indicated no association whatever. There was no evidence that married women in the families of land owners were significantly either more or less fertile than those in the families of landlords or tenants.

In order to study the association between fertility and economic status on the basis of data relating to the crop area of the farm, the classification of farms outlined in the discussion of the family was used. (Table 2.) This procedure, it will be recalled, rated the size of each farm in terms of the farms of its own locality, rather than on the basis of its absolute crop area. The first group, therefore, included all the smallest farms of each locality, and the fifth group all of the largest farms of each locality. Each married woman was assigned to the group in which the family to which she belonged was classified. Since the families on the large farms were large, there were more married women in the upper than in the lower groups.

The total numbers of children born per 100 wives are presented in Table 9 for the married women who were 45 or more years of age. The differences in the rates of the different groups are small, but fertility apparently increased slightly with size of farm. This direct association was more definite in the South than in the North. The records indicate that in the South women living on the smallest farms had borne an average of 5.11 children while those on the largest farms had borne an average of 5.87 children.

The significance of the direct association between size of farm

CROP AREA OF FARM[2]	TOTAL CHILDREN BORN PER 100 WIVES			NUMBER OF WIVES[3]		
	Total Sample	North China	South China	Total Sample	North China	South China
TOTAL	528	507	550	10,700	5,457	5,243
Group I	503	494	511	1,514	735	779
Group II	506	500	513	1,697	847	850
Group III	528	513	544	1,845	938	907
Group IV	535	506	568	2,284	1,203	1,081
Group V	551	519	587	2,946	1,548	1,398

[1] Exclusive of Cheng, Honan Province (North China) and Tehtsing, Chekiang Province (South China), where data relating to marital condition were not collected.
[2] Group I represents smallest farms of each constituent area. See text for explanation.
[3] Total includes women on farms of unknown size, and those not on farms. It does not include 272 women who bore an unknown number of children.

Table 9. The relation of crop area of the farm to the fertility of married women 45 or more years of age at enumeration.[1]

and fertility is difficult to determine. If such a relationship were found in the present-day West, it would be interpreted with some confidence as indicating that low income brought into play checks on reproduction. In the present instance this interpretation is difficult to reconcile with the absence of any association between land tenure and fertility. The central fact, however, is that the differences in the fertility of different economic groups are much less important in China's rural population than they are in the West. To the extent that they do exist, they are, like those found by Lamson for urban communities, in the opposite direction.

MORTALITY

Interpretation of the mortality data collected by the survey offers difficulties similar to those encountered in the consideration of fertility. The mortality observed was that of relatively uneventful years, and was undoubtedly less than would have been found over a long period which included years of widespread devastation. Even for such a relatively favorable period the death rates obtained were too low. The records of deaths, as well as those of births, undoubtedly were incomplete. The actual death rate for the entire

sample may well have been over 30 per 1,000 inhabitants, instead of 27.1 as the records indicate.[10]

The rates obtained do agree fairly well with those secured from experimental registration areas. (Table 10.) The rates for these areas differ from place to place and year to year as conditions change. In this particular, the fact that the enumeration year varied from locality to locality within the period 1929 to 1931 is probably an advantage. The situation pictured is not that of a single year, but of more or less average conditions in a relatively quiet period.

The death rate was higher in the South than in the North due probably to the warmer climate of the South with its more favorable conditions for the spread of epidemic and infectious diseases. (Table 11.) In the South the death rate for males exceeded that for females, as is almost universally the case in Western experience. In the North, however, the rate was higher for females, reflecting quite possibly the hardships attendant on the inferior status of women in that more conservative section of the country.

Some appreciation of the enormous toll of mortality in China

Table 10. Crude death rates, for several samples of the Chinese population.

Area and Year		Deaths per 1,000 Population
Present Study		
Total Sample	1929–1931	27.1
North China	1929–1931	24.1
South China	1929–1931	30.0
Ting Hsien, Hopeh[1]		
Registration Area		
	1932	31.6
	1933	27.2
	1934	22.6
	1935[2]	29.1
Tinghsien City		
	1933	32.3
	1934	25.8
Sample Village		
	1933	21.6
	1934	18.8
	1935[2]	36.0
Chujung Hsien, Kiangsu[3]		
(Based on July to December)	1934	22.6

[1] *See* bibliography reference 4, p. 70.
[2] *See* bibliography reference 3, p. 10.
[3] *See* bibliography reference 1, p. 56.

[10] The death rates are based on deaths during the enumeration years, and, like the birth rates, are expressed in terms of the resident population at the end of the year.

can be obtained from Table 12, which gives the crude death rates for a number of countries. India is the only one listed in which the mortality approximated that of China. The official death rate was somewhat lower than that found in the present study but it doubtless was based on incomplete data. The

Region and Sex	Deaths per 1,000 Population	Deaths in Enumeration Year	Population
TOTAL SAMPLE			
Total	27.1	5,499	202,617
Male	26.7	2,817	105,427
Female	27.6	2,682	97,190
North China			
Total	24.1	2,351	97,511
Male	22.1	1,121	50,633
Female	26.2	1,230	46,878
South China			
Total	30.0	3,148	105,106
Male	31.0	1,696	54,794
Female	28.9	1,452	50,312

Table 11. Crude death rates for each sex.

rates for both Japan and the Soviet Republics were substantially lower than the rates for China, while the rates for England and Wales and the United States were less than half, and the rate for Australia less than one-third of that for the Chinese sample.

The hazards of life in China may be compared with those in several other countries from Tables 13, 14, and 15, which give for each sex at selected ages the probability of dying, the number of sur-

Table 12. Crude death rates, for various countries.

Country	Year	Deaths per 1,000 Population
China (Total Sample)	1929-1931	27.1
North China	1929-1931	24.1
South China	1929-1931	30.0
British India[1]	1931	24.9
Japan[2]	1930	18.2
Australia[2]	1931	8.7
England and Wales[2]	1931	12.3
France[2]	1931	16.3
Soviet Republics[2]	1928	18.8
Sweden[2]	1930	11.7
United States[2] (Registration Area)	1930	11.3

[1] *See* bibliography reference 21, p. 52.
[2] *See* bibliography reference 13, p. 523.

vivors from 100,000 persons born alive, and the expectation of life. Since the Chinese tables constructed from survey data have been discussed in detail elsewhere,[11] only a few points will be noted in this report.

[11] *See* bibliography reference 17.

It must be re-emphasized that the experience on which the life tables were constructed is simply that of a population observed during the enumeration years. The life tables organized this experience *as if it were* the experience of a generation passing through life. Actually, the two are the same only if the risk of death remains unchanged for nearly 100 years. In China any generation must be exposed in some degree to the risks of famine, war, flood, and epidemic. The data gathered during the relatively uneventful three-year period of the present study yield life tables which present a somewhat over-optimistic picture of conditions as

Table 13. Mortality rates per 1,000 population ($1,000q_x$).

AGE	CHINA[1] (TOTAL SAMPLE) 1929–1931	INDIA[2] 1931	JAPAN[3] 1921–1925	NEW ZEALAND[4] 1931	ENGLAND[5] AND WALES 1930–1932	UNITED STATES[4] 1929–1931
	MALE					
0	161.5	248.7	162.0	38.4	71.9	60.9
1	100.9	91.8	48.5	4.5	15.3	9.9
5	29.5	19.3	7.0	1.4	3.4	2.5
10	8.1	7.9	3.2	1.2	1.5	1.5
20	8.3	12.7	10.8	2.4	3.2	3.1
30	9.2	19.3	8.2	2.8	3.4	4.1
40	11.8	29.4	10.5	4.6	5.6	6.8
50	17.7	41.0	18.6	8.9	11.3	12.7
60	38.6	57.9	39.2	18.8	24.2	26.4
70	69.8	97.6	84.8	46.0	60.4	57.3
	FEMALE					
0	154.9	232.3	144.0	25.5	54.6	48.2
1	104.7	86.5	47.6	3.7	13.5	8.7
5	27.5	16.5	7.8	1.7	3.0	2.1
10	7.6	8.1	3.7	.6	1.3	1.1
20	11.6	17.6	12.1	1.9	2.7	2.7
30	11.9	25.1	10.5	3.3	3.2	3.7
40	12.7	34.5	11.3	3.7	4.4	5.3
50	16.5	43.1	13.8	6.8	8.2	9.6
60	33.0	54.3	26.4	16.3	17.7	20.6
70	64.0	88.8	61.6	38.5	44.5	48.4

[1] *See* bibliography reference 17.
[2] *See* bibliography reference 2, Vol. I, Part I—Report, pp. 173, 174.
[3] *See* bibliography reference 16.
[4] *See* bibliography reference 12, p. 6.
[5] *See* bibliography reference 14, pp. 48, 49.

COUNTRY AND SEX	AGE					
	0	5	10	20	40	60
China (Total Sample) (1929–1931)[1]						
Male	100,000	64,541	58,670	53,834	44,716	29,642
Female	100,000	64,909	59,431	53,885	42,395	29,207
India (1931)[2]						
Male	100,000	60,161	56,467	51,203	34,563	14,933
Female	100,000	62,817	59,369	52,833	31,778	13,210
Japan (1921–1925)[3]						
Male	100,000	75,567	73,749	69,336	57,618	38,517
Female	100,000	77,110	75,102	69,379	55,536	41,055
New Zealand (1931)[4]						
Male	100,000	95,086	94,466	92,956	87,388	72,353
Female	100,000	96,491	95,934	94,868	89,288	76,884
England and Wales (1930–1932)[5]						
Male	100,000	90,069	89,023	87,245	80,935	63,620
Female	100,000	92,024	91,082	89,383	83,690	70,204
United States (1929–1931)[6]						
Male	100,000	91,869	90,973	89,099	81,685	62,170
Female	100,000	93,362	92,629	91,125	84,468	68,643

[1], [2], [3], and [5] *See* corresponding notes on Table 13.
[4] Data kindly furnished by the Statistical Bureau of the Metropolitan Life Insurance Company.
[6] *See* bibliography reference 6, pp. 14-17. (Exclusive of Texas and South Dakota. The data relate only to the white population.)

Table 14. Number of survivors to selected ages from 100,000 persons born alive (l_x), for various countries.

they would have been if such events had not occurred.

Even this picture is not a pleasant one. The mortality in childhood and early adult life is exceedingly high, higher than that in every country listed except India. The infant death rates yielded by the survey records were not higher than those of Japan, but there is reason to believe that there were substantial omissions in the recording of infant deaths. In the late years of life, for which modern sanitation and medicine have accomplished little, the Chinese experience differs less sharply from that of the West. The higher female than male mortality in China arises exclusively from the excessive female mortality during the childbearing period.

This high mortality in the reproductive ages is even more marked in India than in China and exists to some extent in Japan. In the West the female mortality rate rarely exceeds that of males in the corresponding ages even during the reproductive period.

The tables showing the number of survivors from 100,000 persons born alive and the expectation of life for selected ages require little discussion. (Tables 14 and 15.) The terrific mortality of the early years of life in China and India is brought out dramatically by the survival figures. In these countries less than 60 per cent of the persons born alive survive the tenth year, while at age 10 in England and Wales and the United States about 90 per cent, and in New Zealand about 95 per cent of those born are still living. One-

Table 15. Expectation of life in years ($\overset{\circ}{e}_x$) at selected ages, for various countries.

COUNTRY AND SEX	AGE					
	0	5	10	20	40	60
China (Total Sample) (1929–1931)[1]						
Male	34.85	47.58	47.05	40.74	26.84	14.19
Female	34.63	46.95	46.00	40.08	28.05	15.22
India (1931)[2]						
Male	26.91	38.96	36.38	29.57	18.60	10.25
Female	26.56	36.61	33.61	27.08	18.23	10.81
Japan (1921-1925)[3]						
Male	42.06	50.35	46.53	39.10	25.13	11.87
Female	43.20	50.71	47.00	40.38	28.09	14.12
New Zealand (1931)[4]						
Male	65.04	63.35	58.75	49.61	32.07	16.22
Female	67.88	65.30	60.67	51.28	33.80	17.30
England and Wales (1930–1932)[5]						
Male	58.74	60.11	55.79	46.81	29.62	14.43
Female	62.88	63.24	58.87	49.88	32.55	16.50
United States (1929–1931)[4]						
Male	59.31	59.47	55.03	46.07	29.25	14.73
Female	62.83	62.22	57.70	48.55	31.53	16.05

[1] *See* bibliography reference 17.
[2] *See* bibliography reference 2, Vol. I, Part I—Report, pp. 173, 174.
[3] *See* bibliography reference 16.
[4] *See* bibliography reference 12, p. 6.
[5] *See* bibliography reference 14, pp. 48, 49.

half of the people born in India scarcely attain their majority and one-half of those born in China die before they are 28 years of age. In New Zealand, on the other hand, one-half of the people surpass even the biblical standard of 70 years.

The expectation of life at birth is particularly interesting because it summarizes the mortality experience at all ages. .Unfortunately, it is less reliable than the expectation figures for other ages because of the inaccuracy of the data relating to infant mortality. It appears probable, however, that due to the higher mortality of the reproductive ages the expectancy of

Table 16. Death rates from selected causes of death.

Cause of Death	Deaths per 100,000 Living	
	Male	Female
ALL CAUSES	2,671	2,760
Typhoid	198	194
Typhus	15	12
Smallpox	205	209
Measles	126	118
Scarlet Fever	29	27
Diphtheria	67	62
Cholera	168	159
Dysentery	196	236
Plague	10	6
Tetanus	27	15
Tuberculosis	178	184
Leprosy	9	6
Malaria	30	45
Pneumonia	57	23
Skin Disease	48	38
Accidents and Suicide	122	76
Other Causes	1,003	1,139
Cause Unknown	182	209

females does not exceed that of males in China and in India as it does in other countries. Life expectancy at birth in China is more favorable than in India, and less favorable than in Japan where, in turn, it is much less favorable than in the West. It is greater in New Zealand than in any other country of the world. In Japan today the expectation of life is about the same as it was in Massachusetts 45 years ago, while in China it is not much different from what it was in Massachusetts and New Hampshire nearly 150 years ago.[12]

The higher mortality of childhood and early adult life was largely due to the ravages of contagious and infectious diseases which continue virtually unchecked. Some impression of their

[12] *See* bibliography reference 18, p. 164.

importance may be obtained from Table 16, which gives the death rates from a selected list of diseases. These diseases account for more than one-half of the total number of deaths. Undoubtedly the rates are not entirely accurate but the general impression given by them is valid. Of the sixteen causes for which information was sought, the five most important were smallpox, dysentery, typhoid, tuberculosis, and cholera, in the order named. This order doubtless changes as epidemics come and go, but the appalling harvest of "preventable deaths" continues.

<p style="text-align:center">NATURAL INCREASE</p>

If, by some magic, it suddenly became possible to eliminate the mortality from "preventable causes" of death, sober students might ponder long before utilizing that power. Observers are unanimous in the belief that the population of China is already redundant and that, with existing productive capacities, a large increase in the population can only take place at the expense of a serious decline in the standard of living, which is already pitifully low. A sudden check in mortality unaccompanied by a corresponding drop in fertility would, before many years, drive larger and larger sections of the population to economic levels at which subsistence is no longer possible. Hunger would accomplish what disease was prevented from doing. It is perhaps fortunate that any improvement in mortality rates will, if it comes, come gradually, and may be accompanied by a corresponding decline in fertility.

The rate of growth of the Chinese population during the past fifty years is still a disputed matter. During the enumeration years the survey records indicate that there were 38.3 births and 27.1 deaths per 1,000 population, or an annual excess of births over deaths of 11.2 per 1,000 inhabitants. Superficially this rate of natural increase, which would double the population in less than 65 years, suggests that the population of China has increased rapidly. Unfortunately the problem is not so simple. Since the birth and death

rates are not completely trustworthy, their difference is still less trustworthy even though the bias in the rates is in the same direction. Nevertheless, during the survey years there undoubtedly was a substantial excess of births over deaths. This does not necessarily mean that there has been a long period of population growth, because the figures relate, as has been repeatedly indicated, to a relatively uneventful period. The population increase coming from such periods may have been wiped out entirely in other years of famine, war, and pestilence.

The significance of the observed rate of natural increase lies, not in the information it yields concerning past trends, but in its implications for the future. So long as uneventful periods such as those studied yield a rapid increase in population, just so long will the tragically eventful periods occur. With its present productive capacity, China cannot stand such growth. Here, at least, the Malthusian checks are a grim reality.

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